

METRO REGIONAL PARKS AND GREENSPACES ADVISORY COMMITTEE MEETING NOTICE

Date: Tuesday, July 1, 1997
Time: 6:00PM - 8:00PM
Place: Metro Regional Center, 600 NE Grand Ave, Portland
Room 270

AGENDA

- I. Introductory comments and announcements (5 min)
- II. Open Spaces acquisition update **Q&A** (Jim Desmond) (15 min)
- III. Draft Regional Framework Plan Presentation (1 hour)
 1. Framework Plan overview and process to approval (Mark Turpel) (15 min)
 2. Water resources, floodplains, fish and wildlife habitat: WRPAC update (Rosemary Furfy) (15 min)
 3. Parks and natural areas policies in Framework Plan (Charles Ciecko, Jennifer Budhabhatti) (15 min)
 4. Role of RPAGAC and next steps **RPAGAC discussion/Q&A**
- IV. Proposed Metro easement policies for parks and open spaces (Charles Ciecko) (20 min)
Q&A, RPAGAC review and recommendation

The July meeting marks the beginning of an intensive and extensive process that will lead to the adoption of the Regional Framework Plan by Metro Council in December. Representatives from the Metro Growth Management department will be on hand to provide an overview of the process and focus on the natural resources component of the plan. The committee will discuss how they can be involved in the approval process.

Jim Desmond will give a brief update on open space acquisition efforts and answer questions. The meeting will close with a proposal to set utility easement standards for Metro parks and open space.

Committee consideration of the draft Oxbow Regional Park Master Plan will be deferred to the August 5 meeting.



METRO
Regional Parks and Greenspaces
600 NE GRAND AVE. PORTLAND, OR 97232-2736 (503) 797-1850



METRO

Date: July 1, 1997

To: Metro Councilors
Executive Officer

From: Charles Ciecko, Director, Regional Parks and Greenspaces Department *Cks*
Jim Desmond, Manager, Open Spaces Acquisition Division *J*

Subject: Quarterly Report – Open Spaces Bond Measure

Period Covered: April 1 to June 30, 1997

Pursuant to the Open Spaces Implementation Work Plan, the Executive Officer or his designee is required to prepare and present a quarterly update to the Council summarizing activity in each of the target areas. The Executive Officer has asked the Regional Parks and Greenspaces Department to prepare the summary which follows.

Acquisition

Total to date:	2,354.77	acres acquired	62 transactions
% of 6,000-acre goal:	39%		
FY95-96:	936.07	acres acquired	16 transactions
FY96-97:			
First quarter:	233.95	acres acquired	5 transactions
Second quarter:	387.45	acres acquired	10 transactions
Third quarter:	447.51	acres acquired	13 transactions
Fourth quarter:	349.79	acres acquired	18 transactions
FY96-97 goal per work plan and budget:	1,200	acres	
FY96-97 total:	1,418.7	acres acquired	46 transactions

(4th quarter acquisitions are highlighted in bold type)

Clear Creek: 115% of acre goal; 79% of allocated dollars

- 18.92 acres: Wallace
- 342.02 acres: Goheen
- 32 acres: Lewis

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Columbia River Shoreline: 231% of acre goal; 35% of allocated dollars

- **Final 1/6 interest in privately-owned portion of Government Island**
- 219.41 acres: 5 separate interests in 5/6 of the privately-owned portion of Government Island.

Cooper Mountain: 28% of acre goal; 22% of allocated dollars

- 121.5 acres: Cooper Mountain Joint Venture

East Buttes/Boring Lava Domes: 14% of acre goal; 11% of allocated dollars for East Buttes/BLD; 34% of Options allocated dollars

- 43 acres: Burt
- 5 acres: Holbrook
- 5 acres: Yonemura
- 5 acres: Menard
- 19 acres: Jenne Butte

Fanno Creek Greenway: goal: up to 12 miles of greenway; 22% of allocated dollars

- 6.8 acres: Lowery
- 3.24 acres: Kenny (\$100,000 contributed by the City of Portland and Multnomah County)
- 2.14 acres: Shiels (\$100,000 contributed by THPRD)

Forest Park: 99% of acre goal; 36% of allocated dollars

- 4.12 acres: Wilson
- 3.1 acres: Voss
- 3.3 acres: Norwich/Miller
- 3.08 acres: Rivera
- 31.41 acres: Thomas
- 152.05 acres: Kent
- 115 acres: J.J & Associates
- 1.7 acres: Portland Area Camp Fire Council
- 4.75 acres: Wyatt

Gales Creek: 13% of acre goal; 19% of allocated dollars

- 51 acres: Duyck
- 4 acres: F & C, Inc.
- 43.11 acres: AMT Resources, Inc.

Newell Creek: 31% of acre goal; 56% of allocated dollars

- 4.7 acres: Rivergate Development Co.
- 5 acres: Chapin
- 8.72 acres: Durant
- 13.49 acres: Welsh Family Trust (Newell Crest Joint Venture #2)
- 8.4 acres: Emerson
- 3.5 acres: Newell Crest Joint Venture
- 1.38 acres: Spencer
- 3.96 acres: VanDerWerf
- 9.16 acres: McEwen
- 45 acres: Northridge Development
- 10.47 acres: Younger

Peninsula Crossing Trail: no acre goal; 9% of Willamette Cove Target Area allocated dollars

- 1.46 acres: Hill

Rock Creek: 14% of acre goal; 46% of allocated dollars

- 20.37 acres: Nofziger
- 7.78 acres: Holscher
- 4.95 acres: Courtney
- 5.3 acres: Ehler
- 3.11 acres: Sneddon

Sandy River: 44% of acre goal; 23% of allocated dollars

- 158.11 acres: Spencer
- 39.85 acres: J.J. & Associates
- 160 acres: Elhart

Tonquin Geologic Area: 29% of acre goal; 7% of allocated dollars; 4% of Options allocated dollars

- 57.68 acres: The Trust for Public Land (Coffee Lake)
- 22.05 acres: Richen/Stefan

Tryon Creek Linkages: 125% of acre goal; 86% of allocated dollars

- 2.07 acres: Pollack/Carpenter
- 0.17 acres: Victory Fellowship
- 11 acres: Lindstrom
- 9.6 acres: Tree Products Enterprises/Foley
- 2.24 acres: Jensen

Tualatin River Greenway: 103% of acre goal; 57% of allocated dollars

- 6.25 acres: White
- 147.81 acres: Morand
- 6.19 acres: Tolbert
- 114 acres: Stahlke

Willamette River Greenway: 18% of acre goal; 14% of Willamette River Greenway allocated dollars; 21% of Options allocated dollars

- 148 acres: Hegele (Multnomah Channel)
- 22.48 acres: Del-mar Investments, Inc. (Canemah Bluff)
- 27 acres: Trust for Public Land (Willamette Cove)

Option Properties: 34% of Options allocated dollars

- 5.07 acres: Whitaker Ponds - Klein
- 18.8 acres: Marquam Woods - The Trust For Public Land

Due Diligence

Completed on all closed properties listed above; commenced on 15-20 additional properties currently under option, being negotiated or otherwise under consideration for acquisition.

Staffing

Open Spaces hired Tim McNeil on April 14 as a Real Estate Negotiator to fill a vacant position. A recruitment for a review appraiser did not provide adequate candidates. In conjunction with the Office of General Counsel, Open Spaces increased an existing contract with Craig Zell to provide review appraiser services, including Metro office hours to assist staff with negotiations and due diligence.

Second-Year Anniversary Events/Outreach/Media Tours

In conjunction with the two-year anniversary of the passage of the bond measure, Metro prepared a detailed report outlining progress to date and held a series of presentations related to the anniversary:

May/June 1997	A two-year "Report to Citizens" was written and disseminated to more than 1600 citizens, interest groups, elected officials and media representatives.
May 6, 1997	Media and citizen tour of one Tryon Creek acquisition
May 15, 1997	Slide show and presentation to the Metro Council
May 15, 1997	Slide show and presentation to citizens and key stakeholders of the bond measure and campaign
May 20, 1997	Media tour of one Rock Creek acquisition
June 18, 1997	Slide show and presentation to Metro Committee on Citizen Involvement (MCCI)
June 30, 1997	Slide show and presentation to local parks providers and the Greenspaces Technical Advisory Committee (GTAC)
May/June 1997	Slide show and presentation to (2) Kiwanis and (1) Lions clubs.

Peninsula Crossing Trail

Metro Open Spaces continued to be very active this quarter in coordinating with consultants and other agencies to plan the Peninsula Crossing Trail in North Portland. Metro submitted final drawings, plans and specifications to the Portland Department of Transportation (PDOT) and the Oregon Department of Transportation (ODOT) for review and approval.

CMAQ funds originally planned for the OMSI to Springwater Corridor are now planned for the Peninsula Crossing Trail. Metro submitted a CMAQ project prospectus and environmental section to ODOT for review, and drafted IGAs with the City of Portland to allow transfer of the CMAQ funds.

As required by Metro ordinance, at least one percent of the trail budget is designated for art, and Metro initiated a public art project with the Regional Arts Council.

The following public Peninsula Crossing Trail public events were held:

- | | |
|----------------|--|
| April 19, 1997 | Annual SOLV-IT clean-up conducted along trail alignment, attended by approximately 175 volunteers. Metro Executive Mike Burton and Portland City Commissioner Charlie Hales were among those participating. |
| May 8, 1997 | Third and final public open house and workshop for design alternatives for the trail. Held at the Water Lab at Cathedral Park. |
| May 17, 1997 | Tour of the trail alignment with North Portland residents, as part of the Smith and Bybee Lakes Days. Approximately 15 in attendance. |

Public Celebrations/Tours

The Open Spaces Acquisition Division has organized or been involved in various public events, working closely with the executive office, Council, local jurisdictions and community groups, as follows (in addition to those listed under Peninsula Crossing Trail):

- | | |
|-------------|--|
| May 1, 1997 | Forest Park/Balch Creek: Open house and conservation easement workshop held at the Audubon House in conjunction with the Audubon Society, the Friends of Forest Park and Portland's Bureau of Environmental Services. |
| May 6, 1997 | Hagg Lake/Sain Creek Recreation Area: Celebration and dedication for local share project. Event hosted by Washington County. Councilor McLain and other Metro representatives participated. |

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- May 29, 1997 **Newell Creek Canyon:** Open house and tour of open space acquisition. Participants included the city of Oregon City (Mayor Dan Fowler), John Inskeep Environmental Learning Center, the Friends of Newell Creek Canyon and the Crossroads School.
- June 2, 1997 **Oaks Bottom:** Celebration and ribbon cutting ceremony for local share project. Hosted by the city of Portland. Participants included Metro Council Presiding Officer Jon Kvistad, Portland City Commissioner Charlie Hales and Portland Parks and Recreation Director Charles Jordan.
- June 28, 1997 **Tualatin River:** Discovery Day canoe trip and environmental fair held on-site of newly acquired Metro property. Sponsored, in part, by Metro. One hundred fifty canoes and more than 300 citizens participated.

Public Outreach / Media

- May 1997 **Press Release:** "Two years and counting – open spaces acres adding up" – At least 23 print articles, mostly primary feature stories, including one magazine (The Daily Journal of Commerce) article and four broadcast news stories on successes to date and select acquisitions.
- May 1997 **Newsletter:** "Open Spaces Update – Newell Creek Canyon." One-page newsletter mailed to approximately 1,000 citizens, landowners and elected officials.
- June 1997 **Postcard mailer:** Approximately 400 postcards mailed to neighborhood associations, Citizen Participation/Planning Organizations (CPOs) and interest groups (offering to give a Metro Open Spaces update at one of their upcoming meetings).
- Summer 1997 **GreenScene:** Feature article on Newell Creek Canyon acquisitions. Distributed approximately 30,000 copies.

Local Share

A local share project managers' meeting was held on June 30 and attended by 33 people. The meeting featured a report and slide show on regional open spaces acquisitions in the two years since the bond measure was passed and a review of the regional framework plan. Metro hosted two workshops for local share project managers to assist them with implementing their local share acquisitions and projects. Metro Open Spaces staff, consultants and a title company representative lead the four-hour workshops:

- April 9, 1997 **Property Acquisition Workshop** (30 attendees)
May 7, 1997 **Construction and Project Management Workshop** (10 attendees)

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Local Share (continued)

To date, nineteen (19) jurisdictions/providers have drawn down funds from the local share fund for 33 different projects. Three jurisdictions have completed their IGAs and drawn all of their allocated local share funds. A summary of local share draws is attached. The following is a summary of local share activity to date:

Total local share bond funds disbursed to date:*	\$5,718,751
Total local share bond funds disbursed 4th quarter:*	\$790,224
% of bond local share (\$25 million) disbursed to date:*	23%
Number of local share projects funded to date:*	33
Local share funds remaining:*	\$19,281,249

Regional Fund Summary

Total regional share bond funds disbursed to date:*	\$28,938,396
% of regional bond funds (\$110.6 million) disbursed to date:*	26%
Regional share funds (including interest and other revenue) remaining (approximate):*	\$98,409,609

*Figures available as of June 30, 1997; complete 4th quarter figures are not available until July 31, 1997.

Loc. Prov.	Project	Council	Proj #	Draws	Per 95-2215	Attach A	Orig Est	NEW THREE YEAR TIME LINE B		
		Dist				Totals	Total	6/30/96	6/30/97	6/30/98
Clackamas County	219200									
904588	Barton Park Improvements	o/s	53300			700,000	750,000	50,000	650,000	
	Springwater Corridor Acquisition	o/s	53310			120,000	130,000	10,000	110,000	
	Clackamas River Acquisition	o/s	53320			300,000	350,000		300,000	
	Damascas Area Acquisition	2	53330			606,235	750,000		606,235	
	Clackamas River, Carver, Acquisitions	o/s	54300	128,147		150,000		150,000		
				128,147	1,876,235	1,876,235	1,980,000	210,000	1,666,235	0
NCP&RD	219211									
904589	Kellogg Creek Acquisition	7	53340			127,000	155,000		127,000	
	Boardman Slough Acquisition	7	53350	4,140		65,000	70,000		65,000	
	Mt. Talbert Acquisition	2,6	53360			280,000	300,000			280,000
	Portland Traction Co. Acquisition	7,2	53370			571,025	571,000		50,000	
				4,140	1,043,025	1,043,025	1,096,000	0	242,000	280,000
Gladstone	219212									
904590	Meldrum Bar Park Improvements	2	53380	23,511		6,857	63,350		56,857	
	Cross Park Improvements	2	53390	2,640		15,000	15,000			15,000
	Glen Echo Park Acq & Improvements	2	53400			85,000	85,000			85,000
	Picnic Shelters at Dahl Beach	2	new			12,688				
	Land Acq. at Valley View Rd.	2	new	37,313		37,313				
				63,463	156,857	156,857	163,350	0	56,857	100,000
Happy Valley	219213									
904591	Mt. Scott Creek Trail Improvements	2	53410			17,500	18,767		8,825	8,825
	Scott View Nature Park Improvements	2	53420			17,805	18,000	0	17,655	
Amended 1/17/96				0	35,305	35,305	36,767	0	26,480	8,825
Lake Oswego	219214									
904592	South Shore Natural Area Acquisition	2	54310	697,166		697,166				
FULLY DRAWN				697,166	697,166	3,397,455	725,537	697,166	0	0
Milwaukie	219215									
904593										
	Milwaukie Waterfront Acquisition	7,2	53490			310,000	300,001		310,000	
	Kellogg Lake Acquisition	7,2	53500			39,020	23,000		39,020	
				0	349,020	349,020	363,001	0	349,020	0
Oregon City	219216									
904594	High Rocks River Bank Acquisition	2	53550			40,000	20,000	0	40,000	
	Barclay Hills Park Improvements	2	53560			50,000	20,000		50,000	
	Clackamette Park Improvements	2	53570	10,000		41,322	223,000	10,000	31,322	
	Singer Creek and Holmes Lane Acquisition	2	54320			60,000			60,000	
	River Access Trail Clackamette Park, Cap Im	2	54330			52,000			52,000	
	Atkinson Park Natural Area Acquisition	2	54340			25,000			25,000	
	Park Place Park Soft Trail Cap Improve.	2	elim			0				
	High Rocks River Access Trail, Acquisition	2	elim			0				
	Clackamette Park Fishing Dock Improvement	2	53580				16,000			
				10,000	268,322	268,322	279,000	10,000	258,322	0

Loc. Prov.	Project	Council	Proj #	Draws	Per 95-2215	Attach A Totals	Orig Est Total	NEW THREE YEAR TIME LINE B		
		Dist						6/30/96	6/30/97	6/30/98
Rivergrove	219217									
904595	Tualatin River Boat Ramp Improvements	2	53590	5,673		5,673	5,980		5,673	
FULLY DRAWN				5,673	5,673	5,673	5,980	0	5,673	0
West Linn	219218									
904596	Burnside Park Addition Acquisition	2	53600			333,385	347,190		333,385	
	Not broken out			0	333,385	333,385	347,190	0	333,385	0
Wilsonville	219219									
904597	Memorial Park Access Trail Improvements	3	53610	19,410		96,135	100,000	20,000	76,135	
	Restoration Projects at City Schools	3	53620	672		19,225	20,000	3,000	16,055	
	Wilsonville City Trail System Improvements	3	53630	16,587		53,835	56,000		53,835	
Deleted, infeas. 1/1/	Gordons Run Improvements	3	0			0	46,000		9,000	35,222
	Memorial Park Trail Improvements	3	53650			4,805	5,000		4,805	
Add 1/1/97	Design & Construct Pic Shelter at Memorial P	3	53640	1,381		25,000				
Add 1/1/97	Wetland Restoration at Wilsonville Park	3	53645			19,222				
				38,051	218,222	218,222	227,000	23,000	159,830	35,222
Multnomah County	219220									
904598	Whitaker Ponds Acquisition	5	53900	3,888		300,000	300,000	20,000	280,000	
	Hogan Cedars Acquisition	1	53910			300,000	300,000		300,000	
	Tryon Creek Acquisition	7	54010			300,000	300,000		300,000	
	FOFP Ancient Forest Improvements	5	54020			150,000	150,000			150,000
	Howell Territorial Park Improvements	o/s-5	54030			275,000	275,000		275,000	
	Oxbow Park Improvements	o/s	54040			1,250,000	1,250,000			1,250,000
	Burlington Bottom Improvements	o/s-5	54050			200,000	200,000		200,000	
	M. James Glisan Boat Ramp Improvements	5	54060			90,000	90,000			90,000
	Sauvie Island Boat Ramp Improvements	o/s-5	54070			50,000	50,000			50,000
	Blue Lake Park Improvements	1	54080			205,000	205,000		205,000	
	Springwater Corridor Trail Improvements	1,6,7	54090			250,000	250,000		250,000	
Added	Contingency		54350			31,545				31,545
				3,888	3,401,545	3,401,545	3,370,000	20,000	1,810,000	1,571,545
Fairview	219221									
904602	Fairview Creek Restoration & Improvements	1	54100			169,109	168,659		84,555	84,554
				0	169,109	169,109	168,659	0	84,555	84,554
Gresham	219222									
904600	Springwater Corridor Trail Improvements	1	54110			588,178	576,295		300,000	288,178
	Fairview Creek Restoration & Improvements	1	54120			288,148	288,148			100,000
	Butler Creek Trail Improvements	1	54130			172,889	172,889		72,889	100,000
	Kelly Creek Greenway Acquisition	1	54140			90,000	90,000		90,000	
	Kelly Creek Greenway Improvements	1	54150			25,259	25,259			25,259
				0	1,164,474	1,164,474	1,152,591	0	462,889	513,437

Loc. Prov.	Project	Council	Proj #	Draws	Per 95-2215	Attach A Totals	Orig Est Total	NEW THREE YEAR TIME LINE B		
		Dist						6/30/96	6/30/97	6/30/98
Portland	219223									
904599	Terwilliger/Marquam Acquisition	7	54160	908,998		1,500,000	1,500,000	500,000	500,000	500,000
	Columbia Slough/Johnson Creek Acqs.	1,6,5	54170	468,317		2,000,000	2,000,000	500,000	1,000,000	500,000
	Southwest Portland Acquisitions	7	54180	311,898		1,230,868	1,150,000	150,000	300,000	780,000
	Hoyt Arb/Leach Gdns/Crystal Spgs Acqs	7/6,1/7	54190	5,644		1,000,000	1,000,000		500,000	500,000
	Trail Acquisitions and Improvements	1,6,5,7	54200	368,153		1,250,000	1,250,000	100,000	500,000	650,000
	Forest Pk/Powell Bte/Oaks Btm Impvmnts	5/1/07	54210	69,837		500,000	500,000	75,000	200,000	225,000
				2,132,848	7,480,868	7,480,868	7,400,000	1,325,000	3,000,000	3,155,000
Troutdale	219224									
904601	Beaver Creek Greenway Acquisition	1	54220			102,327	100,000		101,460	
	Beaver Creek Trail Improvements	1	54230			25,000	25,800		25,000	
	Beaver Creek Restoration Projects	1	54240	6,084		130,000	130,000		130,000	
				6,084	257,327	257,327	255,800	0	256,460	0
Wood Village	219225									
904603	Wood Village Park Acq & Improvements	1	54250	101,377		169,109	168,622	50,000	119,109	
				101,377	169,109	169,109	168,622	50,000	119,109	0
Washington County	219230									
904604	Henry Hagg Lake Improvements	o/s	53660	180,319		180,319	150,720		180,319	
	Bethany/Reedville/Cedar Mill/ Bull Mtn Acqs	3/4	53670	181,729		768,730	659,094	20000	748,730	
587,001				362,048	949,049	949,049	809,814	20,000	929,049	0
THP&RD	219231									
904605	Johnson Creek (Bvrtn) Acquisition	3	53680	552,834		718,649	720,000	600,000	118,649	
	Koll Center Acquisition & Improvements	3	53690			149,700	150,000		149,700	
	Cedar Mill Creek Acquisition	3	53700			878,562	880,000		875,562	
	Fanno Creek Greenway Improvements	3	53710			169,660	170,000		169,660	
	Golf Creek Corridor Acquisition	3	53720			399,200	400,000		199,200	200,000
	165815			552,834	2,315,771	2,315,771	2,320,000	600,000	1,512,771	200,000
Beaverton	219232									
904606	Johnson Creek Acquisition #1	3	53730	551,398		551,398	725,600	550,000		
	Johnson Creek Acquisition #2	3	53740			287,500	384,400		287,500	
	Stonegate Woods Acquisition	3	53750	160,793		280,000	280,000		280,000	
	Forest Glen Park Improvements	3	53760	9,421		14,700	14,700		14,700	
new	Land Acquisition in Area One Cooper Mtn	3				239,056			240,454	
				721,612	1,372,654	1,372,654	1,404,700	550,000	822,654	0
Cornelius	219233									
904607	12 and Baseline Nature Park Acquisition	4	54360	120,057		110,000		110,000		
	12 and Baseline Nature Park Acquisition	4	54360			37,186		37,186		
	Cornelius Acquisition	4	53770				158,000			
				120,057	147,186	147,186	158,000	147,186	0	0
Durham	219234									
904608	Durham City Park Trail Improvements	3	53780	28,538		28,538	60,000		28,538	
FULLY DRAWN				28,538	28,538	28,538	60,000	0	28,538	0

Loc. Prov.	Project	Council		Draws	Per 95-2215	Attach A	Orig Est	NEW THREE YEAR TIME LINE B		
		Dist	Proj #			Totals	Total	6/30/96	6/30/97	6/30/98
Forest Grove	219235									
904609	David Hill Forest Park Acquisition	4	53790			243,954	250,000		243,954	
	Gales Creek Linear Park Acquisition	4	53800			33,318	39,364		33,318	
	Fernhill Wetlands Improvements	4	53810			43,954	50,000		43,954	
				0	321,226	321,226	339,364	0	321,226	0
Hillsboro	219236									
904610	Noble Woods Park Improvements	4	53820	109,703		250,000	350,000	36,878	213,122	
	Rood Bridge Road Park Improvements	4	53830	443,272		650,000	450,000	179,789	470,211	
	Rock Creek Greenway Acquisition	4	53840			89,745	168,572		89,745	
				552,974	989,745	989,745	968,572	216,667	773,078	0
Sherwood	219237									
904611	Cedar Creek Greenway Acquisition		53850			0	40,417		103,705	
	Cedar Creek Greenway Trail Improvements		53860			103,705	40,418			
				0	103,705	103,705	80,835	0	103,705	0
Tigard	219238									
904612	Fanno/Summer Creek Greenway Imprvmnts	3	53870				377,500		80,000	229,954
	Park Acquisition	3	53880				377,500	125,000	448,000	
	Fern Street Project Acquisition	3	54400	125,000		125,000				
	Cook Park Addition	3	54410			45,954				
	Bull Mountain Area Addition	3	54420			293,000				
	Bond St & 82nd Ave Proj Add	3	54430			118,000				
	Fanno Creek Trail Hall-Durham	3	54440			100,000				
	Fanno Creek Trail Main -Tiedmon	3	54450			76,000				
				125,000	757,954	757,954	755,000	125,000	528,000	229,954
Tualatin	219239									
904613	Tualatin River Greenway Acquisition	3	53890	64,850		388,528	444,897	64,850	323,678	
				64,850	388,528	388,528	444,897	64,850	323,678	0
	TOTAL			6,718,751	24,999,998	27,700,287	25,080,679	4,058,869	14,173,514	6,178,537

Metro Open Spaces Acquired Properties as of 6-30-97

File #	Target Area and Seller	Date	Acres	Goal	Acres /Miles	% Acre Goal	% of regional TA bond \$
Beaver Creek Canyon Greenway							
				8 miles			
	Total		0				
Burlington Northern Rails-to-Trails							
				7 miles			
	Total		0				
Clackamas River Greenway							
				8 miles			
	Total		0				
Clear Creek Canyon							
				343 acres			
12.01	Goheen	2/1/96	342.02				
12.03	Lewis	5/24/96	32				
12.06	Wallace	12/5/96	18.92				
	Total		392.94			115%	79%
Columbia River Shoreline							
				95 acres			
10.01	5 separate interests in 5/6 of Govt. Is. property	2/11/97	219.41				
10.01.	MacDonald Living Trust: 1/6 interest in Govt. Is.	5/19/97	(line above)				
	Total		219.41			231%	35%
Cooper Mountain							
				428 acres			
5.01	Cooper Mountain Joint Venture	2/7/97	121.5				
	Total		121.5			28%	22%
East Buttes/Boring Lava Domes							
				545 acres			
20.06	Jenne Butte: TPL*	9/12/96	19				
2.05	Lyle and Joyce Burt	2/13/97	43				
2.06	Lewis G. Holbrook	2/13/97	5				
2.07	Norman and Pauline Yonemura	2/13/97	5				
2.08	Marc Papageorges and Michelle Menard	2/13/97	5				
	*Jenne Butte property paid for from Options funds. See Options below.						
	Total		77			14%	11%
Fanno Creek Greenway							
				12 miles			
16.01	Shiels	6/6/96	2.14				
16.04	Kenny (Taylor Woods)	1/28/97	3.24				
16.05	George and Helen Lowery	6/9/97	6.8				
	Total		12.18				22%

Metro Open Spaces Acquired Properties as of 6-30-97

File #	Target Area and Seller	Date	Acres	Goal	Acres /Miles	% Acre Goal	% of regional TA bond \$
Forest Park Expansion							
				320	acres		
6.02	J.J. & Associates	9/1/95	115				
6.01	Portland Area Camp Fire Council	9/19/95	1.7				
6.03	Wyatt	10/2/95	4.75				
6.24	Rivera	12/5/96	3.08				
6.23	Thomas	12/17/96	31.41				
6.08	Kent	12/24/96	152.05				
6.07	Rob Norwich and Nicky Miller	4/25/97	3.3				
6.27	Jenifer Wilson	5/22/97	4.12				
6.33	Donna Voss	6/20/97	3.1				
	Total		318.51			100%	36%
Gales Creek							
				775	acres		
9.01	AMT Resources, Inc.	9/23/96	43.11				
9.05	Thomas and Vicki Duyck	4/14/97	51				
9.13	F & C, Inc.	6/13/97	4				
	Total		98.11			13%	19%
Jackson Bttm./Dairy & McKay Cks.							
				333	acres		
	Total		0			0%	0%
Newell Creek Canyon							
				370	acres		
3.04	McEwen	10/3/95	9.16				
3.02	Northridge	1/31/96	45				
3.03	Younger	2/14/96	10.47				
3.38	Spencer	11/15/96	1.38				
3.20	VanDerWerf/Niemeyer	12/2/96	3.96				
3.09	Newell Crest Joint Venture	1/10/97	3.5				
3.26	Emerson	1/31/97	8.4				
3.27	Welsh Family Trust (Newell Crest Joint Vent. 2)	2/5/97	13.49				
3.25	Galen Durant	2/26/97	8.72				
3.23	Dennis and Rose Chapin	3/17/97	5				
3.07	Rivergate Development Co.	4/7/97	4.7				
	Total		113.78			31%	56%
Peninsula Crossing							
25.02	Bradford Hill	4/4/97	1.46				
	*Bradford Hill property paid for with adjacent Willamette Cove Target Area funds.						
	Total		1.46				0%*
Rock Creek							
				300	acres		
13.19	John R. and Doris J. Sneddon	4/3/97	3.11				
13.17	Kevin and Cindy Ehler	4/3/97	5.3				
3.18	Darrell and Charlotte Courtney	4/3/97	4.95				
13.2	Eldo, Elroy and Charles Nofziger	4/24/97	20.37				
13.16	David and Virginia Holscher	5/1/97	7.78				
	Total		41.51			14%	46%

Metro Open Spaces Acquired Properties as of 6-30-97

File #	Target Area and Seller	Date	Acres	Goal	Acres /Miles	% Acre Goal	% of regional TA bond \$
Sandy River Gorge							
				808	acres		
4.02	Spencer	12/5/95	158.11				
4.01	J.J. & Associates	12/5/95	39.85				
4.03	Elhart	8/21/96	160				
	Total		357.96			44%	23%
Tonquin Geologic Area							
				277	acres		
20.13	The Trust for Public Land/Coffee Lake*	5/5/97	57.68				
8.06	John Matthew Richen and David Stefan	6/16/97	22.05				
	*TPL/Coffee Lake property paid for with Options funds. See Options below.						
	Total		79.73			29%	7%
Tryon Creek Linkages							
				20	acres		
14.01	Lindstrom	10/3/95	11				
14.02	Tree Products Enterprises/Balmer/Foley	7/16/96	9.6				
14.04	Jensen	7/25/96	2.24				
14.05	Victory Fellowship	10/7/96	0.17				
14.07	Donald Pollack and Richard Carpenter	6/17/97	2.07				
	Total		25.08			125%	86%
Tualatin River Access Points							
				266	acres		
11.03	Stahlke	6/26/96	114				
11.01	Morand	11/25/96	147.81				
11.02	Tolbert	12/4/96	6.19				
11.04	Linda and Timothy White	3/27/97	6.25				
	Total		274.25			103%	51%
Willamette River Greenway							
				1103	acres		
	Canemah Bluff						
21.01	Del-mar Investments Inc.	11/5/96	22.48				
	Total		22.48				3%
Multnomah Channel							
23.01	Charles and Carleen C. Hegele	4/23/97	148				
	Total		148				25%
OMSI to Springwater Corridor Trail							
	Total		0				0%

Metro Open Spaces Acquired Properties as of 6-30-97

File #	Target Area and Seller	Date	Acres	Goal	Acres /Miles	% Acre Goal	% of regional TA bond \$
Willamette Cove							
25.01	The Trust for Public Land*	2/28/96	27				
25.02	Bradford Hill**	4/4/97	**				
*Willamette Cove/TPL property paid for with Options funds. See Options below.							
**Bradford Hill acreage listed under adjacent Peninsula Crossing Target Area.							
Total			27				9%
Willamette Narrows							
Total			0				0%
Willamette River Greenway Total			197.48			18%	14%
Options							
20.01	Whitaker Ponds - Klein	8/9/95	5.07				
25.01	Willamette Cove: The Trust for Public Land*	2/28/96	*				
20.06	Jenne Butte: The Trust for Public Land**	9/12/96	**				
20.05	Marquam Woods: The Trust for Public Land	6/12/96	18.8				
20.13	Coffee Lake: The Trust for Public Land***	5/5/97	***				
*Willamette Cove acreage listed under Willamette River Greenway							
**Jenne Butte acreage listed under East Buttes Target Area							
***Coffee Lake acreage listed under Tonquin Target Area							
Total			23.87				94%
Regional Acquisitions to date			2,354.77			39%	22%
Total number of regional acquisitions to date: 62							
Multnomah County Local Share							
Whitaker Ponds							
20.02	Talbert	9/18/95	0.6				
20.03	Stickler	9/8/95	0.6				
20.04	Krueger	11/28/95	0.6				
20.09	Espedal	12/3/96	4.81				
Mult. Co. Local Share Acq. to date			6.61				10%
Open Spaces Program							
Total Acquisitions to date			2,361.38				
Total number of Open Spaces acquisitions to date: 66							



METRO

TO: Water Resources Policy Advisory Committee Members

FROM: John Fregonese, Director, Growth Management Services Department

DATE: June 9, 1997

RE: *Draft Policy Analysis and Scientific Literature Review for Title 3*



I am sending you the enclosed copy of the Draft *Policy Analysis and Scientific Literature Review* for Title 3 in the Metro Urban Growth Management Functional Plan. This draft report will be presented to the Water Resources Policy Advisory Committee (WRPAC) at its next meeting on Monday, June 16, 1997 at 1:30 p.m. at Metro in Room 370.

This report has been peer reviewed by a group of scientists and resource managers in the Pacific Northwest for accuracy and completeness. I am very pleased with the responses we received from the peer reviewers and their comments have served to make a very good document even better. The following peer reviewers submitted written comments to Metro after reviewing the April 1997 draft of this report:

- Dr. Derek Booth, Center for Urban Water Resources Management, University of Washington, Seattle, Washington
- Michael Rylko, EPA Region 10, Ecologist, Watersheds Section
- Dr. Klaus Richter, Senior Ecologist, King County, Surface Water Management, Seattle, Washington
- Dr. Lorin Reinelt, Water Resources Engineer
- Russell Peterson, State Supervisor, U.S. Fish and Wildlife Service, Portland, Oregon
- Andy Castelle, Director, Natural Sciences, Alolfson Associates, Seattle, Washington
- Fred Wright, Unified Sewerage Agency, Hillsboro, Oregon
- Mike McGuire and Gerry Uba, Metro, Natural Hazards
- Ralph Rogers, Ecologist, EPA, Oregon Field Office, Portland, Oregon

After reviewing the peer review comments, staff made additions and corrections to the April 1997 draft and the changes are reflected in the draft June 1997 report I am submitting to WRPAC. The additions are highlighted in shaded areas and the deletions

are shown as cross outs. This allows you to see the changes staff has made based on the peer review comments. The written peer review comments submitted as letters to Metro are also enclosed for your review. Three reviewers marked their comments in the text of their draft report (Booth, Rogers and McGuire). These more bulky comments will be available for anyone wishing them at the WRPAC meeting or before the meeting by calling Paulette Allen at 797-1562.

Please review this report prior to the WRPAC meeting on June 16, 1997. The report will be presented to WRPAC and there will be an opportunity for WRPAC members to discuss the report with staff. WRPAC members will then have two weeks to submit any written comments to staff before a final report is produced. Please contact Rosemary Furfey at 797-1726 if you have questions regarding the report or the upcoming WRPAC meeting.

REGIONAL FRAMEWORK PLAN

Discussion Draft

June 1997

CHAPTER 4: WATER MANAGEMENT

Part I: URBAN WATER SUPPLY

Overview

- clean and sufficient quantities of water are essential to people of the region
- commerce, agriculture and economic viability
- natural environment, fish and wildlife habitat

Background

- Metro and CRAG's past involvement in regional water resource planning
- formation of Metro Water Resources Policy Advisory Committee
- adoption of RUGGOs that included chapter on Water Supply and Regional Watershed Planning
- RUGGO Chapter 13 identifies policies and planning activities

Regional Water Supply Planning

- Metro joins region's water providers in 1994 to plan for future water supply
- five years of study, analysis and public involvement result in the *Regional Water Supply Plan* which is adopted by Metro Council and regional participants in 1996
- Regional Water Providers Consortium formed end of 1996 and Metro is a member
- Regional Water Providers Consortium will implement *Region Water Supply Plan*

Metro goals and policy will concentrate on the following:

- promoting and achieving regional water conservation and demand management goals as defined in the *Regional Water Supply Plan*;
- promoting the coordination between regional growth management programs and water supply planning;
- promoting the coordination between land use planning and achieving the goals of the *Regional Water Supply Plan*; and
- setting benchmarks and evaluating achievement of the targets and goals established in the *Regional Water Supply Plan* in coordination with the region's water providers.

Planning activities in ensure coordination between Framework Plan and RWSP:

- identify the future resource needs of the region for municipal and industrial water supply
- identify the transmission and storage needs and capabilities for water supply to accommodate future growth
- identify water conservation technologies, practices and incentives for demand management as part of the regional water supply planning activities
- adopt Metro requirements for water supply and storage based on the results of the RWSP that provide for the development of new sources, efficient transfer and storage of water, including water conservation strategies, which allow for the efficient and economical use of water to meet future growth

Metro has not adopted a functional plan element for regional water supply.

List of Specific Policies Adopted in the *Regional Water Supply Plan*:

Efficient Use of Water: maximize efficient use of water resources

Water Supply Shortages: minimize the frequency, magnitude and duration of water shortages

Impacts of Catastrophic Events: minimize the magnitude, frequency and duration of service interruptions

Water Quality: meet or surpass all current federal and state water quality standards

Economic Costs and Cost Equity: minimize the economic impact of capital and operating costs for new water resources on customers

Environmental Stewardship: avoid, reduce and/or mitigate the impact of water resource development on the natural and human environment

Flexibility to Deal with Future Uncertainty: maximize the ability to anticipate and respond to unforeseen future events and changes in forecasted trends

Growth and Land Use Planning: be consistent with Metro's regional growth strategy and local land use planning

Part II: WATERSHED MANAGEMENT AND WATER QUALITY

Overview

- watershed management essential to fish and wildlife habitat, livability and future growth
- interconnected web of rivers and streams important to history of region and economic success
- recognition of inherent conflict between resource management and growth
- need for watershed planning as an integrated tool for multi-objective resource management

Background

- Clean Water Act
- pollution discharge management
- state water quality requirements
- Section 303(d) listed streams: 34 segments and 213 miles in Metro region

Metro Policies

- Regional Wastewater and Stormwater Management Plans
- RUGGOs Chapter 12: Watershed Management and Regional Water Quality

Analysis

- Water Quality Problems
- Riparian and Wetland Areas Impacts
- Impacts of Urbanization: nonpoint source pollution, soil erosion and water quality impacts
- Federal and State Implications

Policies for Overall Watershed Management

- manage watershed to protect, restore and ensure to the maximum extent practicable the integrity of streams, wetlands and floodplains, and their multiple biological, physical and social values
- comply with state and federal water quality requirements
- protect designated beneficial water uses
- implement multi-objective management of the region's watershed to the maximum extent practicable
- require the use of techniques relying on natural processes to address flood control, stormwater management, abnormally high winter and low summer stream flows and nonpoint pollution reduction

Water Quality Goals

Metro should protect and enhance the water quality of the region by:

- establishing vegetative corridors along streams
- encouraging urban development which minimize soil erosion
- implementing best management practices (BMPs)
- maintain vegetative corridors along riparian areas

Urban Planning and Natural Systems

Fish and Wildlife Habitat Conservation Area

establish standards to conserve, protect and enhance fish and wildlife habitat

Policy Analysis and Scientific Literature Review

For Title 3 of the Urban Growth
Management Functional Plan:

Water Quality and Floodplain
Management Conservation

July 1997



METRO

Growth Management Services Department

Metro, the regional government that serves the 1.3 million people who live in Clackamas, Multnomah and Washington counties and the 24 cities in the Portland metropolitan area, provides regional services that guide growth and help ensure that livable communities are created for the future.

Metro is responsible for growth management, transportation and land-use planning; solid waste management; operation of the Metro Washington Park Zoo; regional parks and greenspaces programs; and technical services to local governments. Through the Metropolitan Exposition-Recreation Commission, Metro manages the Oregon Convention Center, Civic Stadium, the Portland Center for the Performing Arts and the Expo Center.

Metro is governed by an executive officer, elected regionwide, and a seven-member council elected by districts. Metro also has an auditor who is elected regionwide.

For more information about Metro or to schedule a speaker for a community group, call 797-1510 (public affairs) or 797-1540 (council).

For more information about job opportunities at Metro, call 797-1777.

Metro's web site: www.metro-region.org

Executive Officer

Mike Burton

District 4

Susan McLain

Auditor

Alexis Dow, CPA

District 5

Ed Washington

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Our thanks to the members of the Peer Review Committee for their time and expertise in reviewing this document

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1. SUMMARY

Metro's policy of managing growth and protecting natural resources was embodied in law with the adoption of Title 3 of the *Urban Growth Management Functional Plan*. The intent of Title 3 is to protect the beneficial uses and functional values of water resources by limiting or mitigating the impacts of development activities. This paper reviews Title 3's consistency with existing policy and analyzes scientific literature to determine the effectiveness of Title 3 standards.

The objectives of this paper are to:

1. Analyze Title 3's consistency with federal, state, and regional policies.
2. Analyze the conclusions of scientific studies to determine the effectiveness of Title 3's balanced cut and fill provision to protect the functions and values of flood areas.
3. Analyze the conclusions of scientific studies to determine the effectiveness of Title 3's regional erosion control standards to protect water quality.

This paper analyzes scientific findings and compares them with Title 3 policy for the following: floodplain management, water quality, and erosion and sediment control. This paper makes the following conclusions:

1. Title 3 standards for floodplain management should prove effective at slowing the rate of increase of future costs associated with floods. The balanced cut and fill standard and expanding the flood area to include the boundary of historic floods and not just the Federal Emergency Management Agency (FEMA) 100-year floodplain exceed federal standards. The balanced cut and fill standard helps to reduce the loss of flood storage capacity.
2. Based on the scientific literature review, Title 3's vegetated corridor width standards are within the recommended range of widths essential for protecting water quality. It is important to emphasize that Title 3's 50 foot vegetated corridor is at the low end of the range of recommended widths, *but it is in the range*.
3. Title 3 is consistent with and exceeds federal and state standards for erosion and sediment control. Title 3 emphasizes erosion prevention to reduce the amount of sediment that is detached during construction and to prevent sediment from entering runoff. Title 3 exceeds federal and state requirements by requiring erosion and sediment control for all new development within the Metro boundary regardless of the size of the development.

It is recognized that Title 3 addresses certain aspects of water quality protection, flood control and the hazard associated with development on steep slopes (only steep slopes associated with vegetated riparian corridors). To more thoroughly address the protection of water quality, and prevention of flooding and erosion will require watershed planning, a regional Goal 5 analysis and establishment of performance measures to monitor the effectiveness of Title 3.

2. INTRODUCTION

During the last five years, the number of people living in the four-county area (Washington, Multnomah, Clackamas and Clark Counties) rose an estimated 186,000 residents, or an average rate of 2.5 percent growth per year. This growth rate, considerably higher than the 1 percent growth rate for the entire United States, is attributed to the region's economic strength and attractive quality of life (Metro, 1996). Metro's policy of managing growth and protecting natural resources was embodied in law with the adoption of Title 3 of the *Urban Growth Management Functional Plan*. This paper will review Title 3's consistency with existing policy and analyze scientific literature to determine the effectiveness of Title 3 standards.

2.1 The Nature of Water Resource Problems in the Region

Currently, the Portland metropolitan region is experiencing water resource problems that are, unfortunately, all too common in American cities. As witnessed in the February 1996 flood, homes and businesses built in the floodplain sustained serious economic damage, to say nothing of the human hardship experienced. Also occurring with greater frequency in recent years is poor water quality in many urban and urbanizing streams. Of those where monitoring information is available, many exceed the standards for turbidity, temperature, dissolved oxygen, and fecal coliform. Finally, the lack of erosion prevention and sediment control at construction sites results in increased sediment loadings to streams and wetlands, further reducing water quality. These three topics are discussed in more detail below.

For several years prior to 1996, the region experienced relatively low rainfall and no catastrophic flood events. During that time, the Portland metropolitan region experienced economic growth and a resulting building boom which included more and more homes and businesses located in floodplains. In the Metro region, there are an estimated 8,840 units in or close to the floodplain, and approximately 1,080 household units were built in or close to the floodplain between 1992 and 1995 (Metro, 1997).¹

In February 1996, a catastrophic, rain-on-snow event did occur, swelling receiving streams and rivers. In addition, rain-drenched soils on steep slopes produced numerous landslides affecting mostly roads and requiring costly repairs. Cost estimates of the February 1996 flood and landslide disaster in the entire tri-county region (Clackamas, Multnomah and Washington counties) were almost \$60 million dollars (Oregon Emergency Management Office, 1997). An estimated 189 household units built since 1992 in the Metro region were inundated with flood waters (Metro, 1997).¹

Surface water quality is addressed in the Clean Water Act (CWA). Section 303(d)(1) and (2) of the CWA requires each state to identify those waters which do not meet water quality standards. The state is also required to submit to the Environmental Protection Agency (EPA) reports which "establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters." These reports describe the following: 1) water quality status of rivers and streams, including water quality limited streams, 2) a list of water quality limited streams still requiring total maximum daily loads (TMDL), and 3) a ranking of these streams according to severity of pollution.

¹These housing unit numbers were generated by counting parcels which had at least 50 percent of the property within the floodplain. There is no practical way of knowing, however, whether the structure is or is not located in the floodplain portion of the parcel. The point, however, is that development has occurred and continues to occur in the floodplain.

Oregon's 1994/1996 List of Water Quality Limited Waterbodies, or the 303(d) list, contains 34 stream/river segments (over 213 miles) and lakes in the Metro region as shown on the map in Figure 1 and listed in Appendix B. A waterbody may be water quality limited and not be on the 303(d) list if a TMDL has been approved or other actions are being taken that will result in the attainment of water quality standards. DEQ suspects other waterbodies in the Metro region have water quality problems, but corroborating data are lacking due to insufficient monitoring stations and limited resources. Therefore, the extent of the water quality problems may be greater than indicated by the 303(d) list.

For 303(d)-listed waters, the state is required to develop a water quality recovery plan and submit it to EPA for approval. This plan establishes the TMDL at a level necessary to attain and maintain the applicable water quality standard including a margin of safety which takes into account any lack of knowledge. Currently in the Metro region, DEQ has established TMDLs for the Tualatin River and is developing TMDLs and a management strategy for the Columbia Slough. TMDLs for dioxin have been set for the Willamette and Columbia Rivers. TMDLs and management plans have not been developed for any of the other listed waterbodies (DEQ, 1994).

Without proper controls installed and maintained at the site, clearing and grading at construction sites cause sediment to be deposited in streams and wetlands causing severe water quality problems. Erosion is the movement of soil particles resulting from the actions of water or wind. Erosion produces sediment that moves in suspension from its site of origin by air, water, or gravity. Uncontrolled construction site sediment loads have been reported to be at a rate of 35 to 45 tons per acre per year, compared to the rate from undisturbed woodlands which is typically less than 1 ton per year (EPA, 1993). Each year in the United States, an estimated 80 million tons of sediment are washed from construction sites into receiving streams and lakes. The estimated cost to replace this amount of topsoil is approximately \$41.6 billion per year (Goldman et al., 1986). The damage to stream, lakes and wetland ecosystems is also at a great cost to society.

2.2 The Regional Response To These Problems

Metro is the elected regional government responsible for addressing regional issues and concerns in the Portland metropolitan area. The Metro Council adopted the *Urban Growth Management Functional Plan* (UGMFP) in November, 1996. The functional plan establishes policies, which apply to all 24 cities and 3 counties within the Metro region. The functional plan contains both requirements and recommendations that are implemented by changes to local government comprehensive plans and ordinances. The functional plan contains ten titles, with the third title being the topic of this paper.

The process for Title 3 policy development took place over more than a one-year period. Title 3 was developed by the Water Resource Policy Advisory Committee (WRPAC), a standing committee to the Metro Council, Executive Officer and Metro staff. WRPAC advises on policy and technical matters relating to water and natural resources planning and management. Its members represent a broad spectrum of water resources including stormwater management, municipal water providers, natural resources agencies, and citizens. Metro Council took testimony on Title 3 as part of the adoption process for the UGMFP. The Metro Council adopted WRPAC's recommendation without modification.

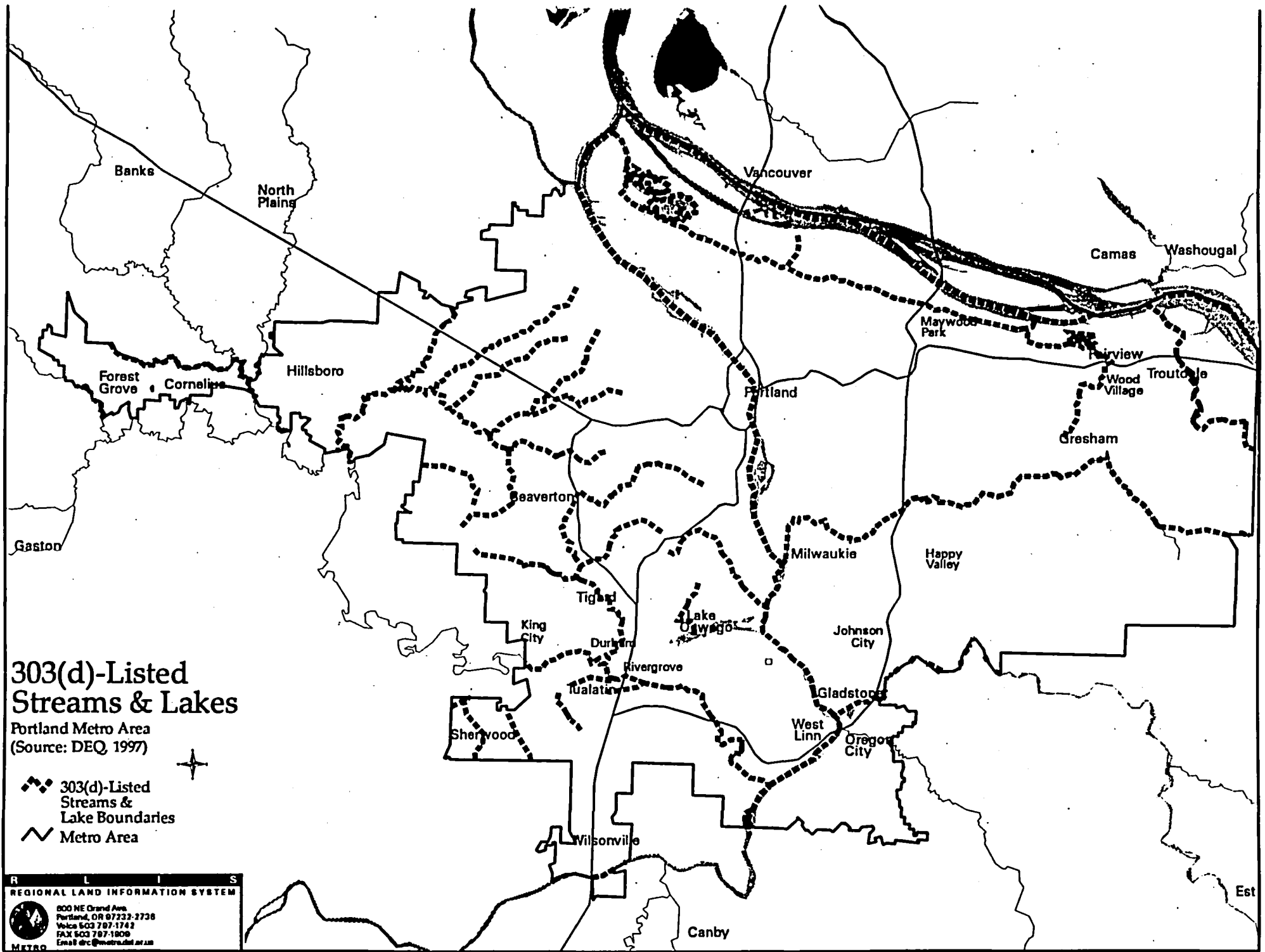


Figure 1 – 303(d) Listed streams and lakes



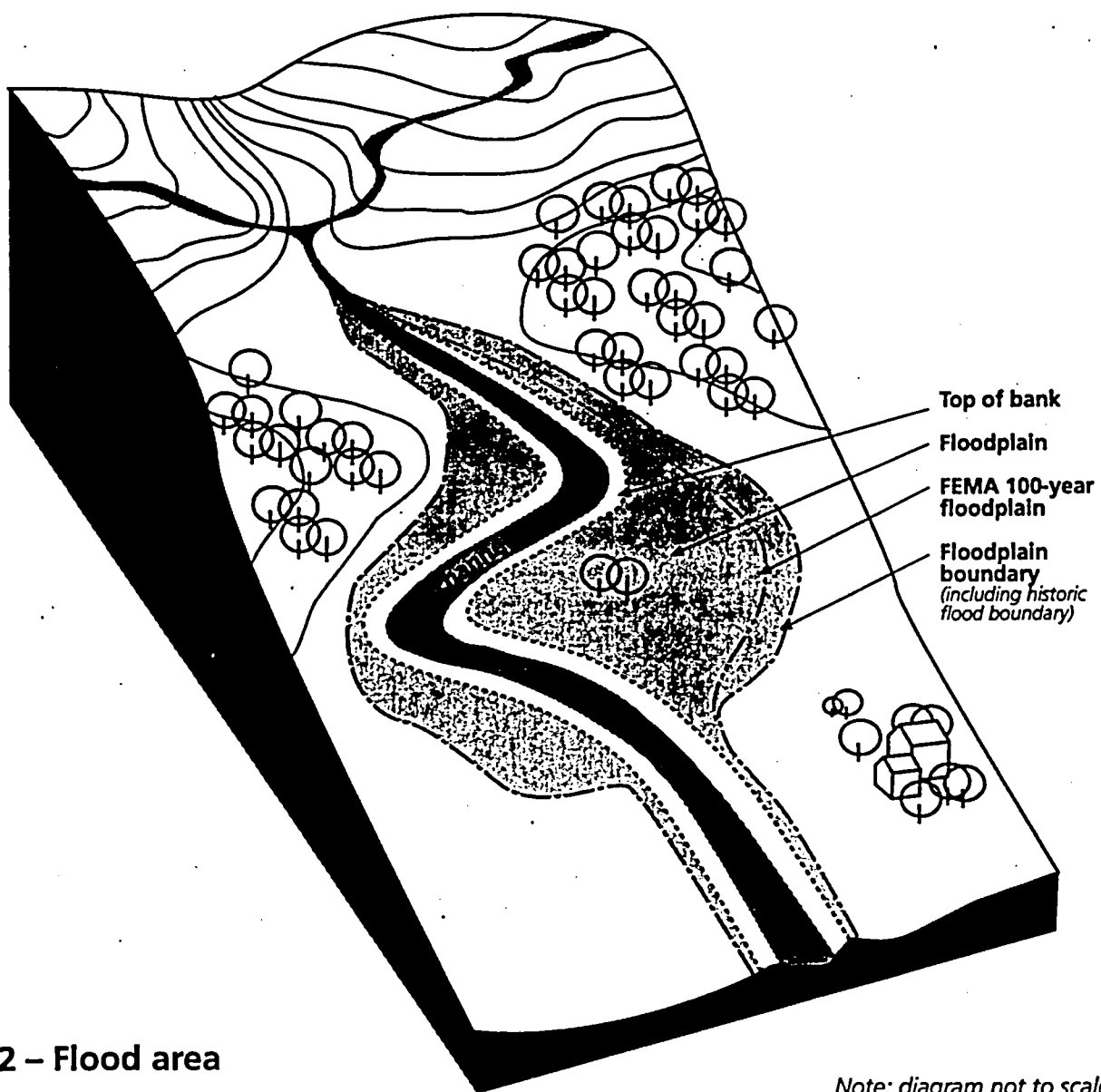


Figure 2 – Flood area

Note: diagram not to scale

Title 3: Water Quality and Flood Management Conservation embodies the recognition that the region must start implementing water resource protection strategies now. There are surface water management agencies, however, that have been addressing water resource protection since 1990 in the Metro region. The intent of Title 3 is to protect the beneficial uses and functional values of water resources by limiting or mitigating the impacts of development activities. Refer to Appendix A for the Title 3 language.

Policymakers know that providing water quality protection and flood control are complex and difficult tasks requiring comprehensive watershed approaches. They have, therefore, chosen to focus Title 3 *for now* on only part of the solution by instituting standards that focus on two water resource issues: flooding and water quality. The purpose of each is: 1) to prevent and reduce risk to human life and properties, and 2) to protect the beneficial uses of rivers and streams as defined by state statute.

The following Title 3 performance standards are intended to, at least, partially address these water resource issues. These solutions are supported in scientific literature which is reviewed in subsequent sections of this paper.

Title 3 performance standards for flood mitigation are: 1) balanced cut and fill, and 2) applying flood standards to a more comprehensive physical area than just the FEMA 100-year floodplain, referred to as "flood areas" (shown in Figure 2). For balanced cut and fill, all fill placed in the flood area shall be balanced with an equal amount of soil material removal also from the flood area. Flood areas are all land within the FEMA 100-year floodplain and all land that has physical or historical evidence of flooding in the last 100 years. Both standards exceed the minimum federal requirements. FEMA standards now require only that finished floor elevations be at least one foot above the design flood height.

Title 3 performance standards for maintaining and providing opportunities to improve water quality are: 1) erosion prevention and sediment control applied to all development in the region, 2) vegetation retention in corridors on streams and wetlands, and 3) prohibit new uses of uncontained areas of hazardous materials.

Currently, erosion and sediment control is not required for development of less than five acres; except for development within the boundary of the Unified Sewerage Agency of Washington County and Portland's environmental zone. Title 3 extends the requirement for all new development. Vegetated corridors are areas along streams that are intended to remain vegetated instead of being developed. Vegetated corridors help maintain stream temperatures, filter out sediment and nutrients and help maintain the stream channel by providing bankline stability and reducing erosion. (These topics will be addressed in detail in later sections.) Even if a corridor's vegetation has been cleared or altered from its natural state, it can still be restored. These areas can be revegetated and, overtime, regain their water quality functions.

In Title 3's model ordinance, vegetated corridors are referred to as "water quality resource areas" (WQRA) (shown in Figure 3) and are defined as 50 feet from top of bank on both sides of streams with less than 25 percent slope, and 200 feet from top of bank on either side of the stream for areas greater than 25 percent slope for streams draining areas greater than 100 acres. Streams draining 50 to 100 acres have a total width of 30-foot WQRAs. There is a 50-foot vegetated WQRA from the edge of a mapped wetland.

In addition, Metro has developed two other tools to support local government efforts to comply with Title 3: model code and maps. The model code provides an example of code language that achieves the performance standards for Title 3. Metro has mapped the WQRAs using state-of-the-art Geographic Information Systems and digital orthogonal air photos. Local governments have extensively reviewed the maps to reflect ground conditions as accurately as possible. Local governments may adopt customized codes and maps, so long as they meet the performance standards in Title 3.

Uses allowed in the WQRA are minimal. Title 3's first priority is to have no development in the WQRA. However, it is recognized that certain uses, like trails and roads (with no practicable alternative) will intrude into the WQRA.

Also, when a parcel is rendered unbuildable by application of Title 3, a hardship variance is provided which allows for building with the WQRA. Title 3 requires local governments to provide for the transfer of density to mitigate the economic impacts of not developing in the WQRA or flood area. Essentially, credit is given when development is transferred from the WQRA or flood area to a buildable portion of the parcel.

2.3 Limitations of Title 3

As already mentioned, policymakers recognize that water resource protection is complex and difficult. Title 3 addresses certain aspects of water quality protection, flood control and the hazard associated with development on steep slopes (only steep slopes associated with vegetated riparian corridors). To more thoroughly address all aspects of these topics would require watershed planning and regulation. As required in the Metro Charter, Metro plans to determine tasks and a timeline for watershed planning which will be included in the Regional Framework Plan in December 1997.

At this time, Title 3 recommends local governments address fish and wildlife habitat protection. The reason for this is that fish and wildlife habitat protection is addressed in Goal 5, one of the 19 Statewide Planning Goals of Oregon with which Metro and local governments must comply. Goals 6 and 7 address water quality and natural hazards. Goal 5's administrative rule was being revised when Title 3 was developed. Because the Goal 5 rule was changing, Title 3 addresses Goals 6 and 7 only. Title 3, however, specifies a timeline to identify and address significant Goal 5 resources. Metro recognizes the importance of the fish and wildlife habitat function of the WQRA and the need to study whether the current WQRA widths are adequate for its protection.

3. FOCUS OF THIS PAPER

The objectives of this paper are to:

1. Analyze Title 3's consistency with federal, state, and regional policies.
2. Analyze the conclusions of scientific studies to determine the effectiveness of Title 3's balanced cut and fill provision to protect the functions and values of flood areas.
3. Analyze the conclusions of scientific studies to determine the effectiveness of Title 3's regional erosion control standards to protect water quality.

Title 3 applies to the entire Metro region as shown in Figure 1.

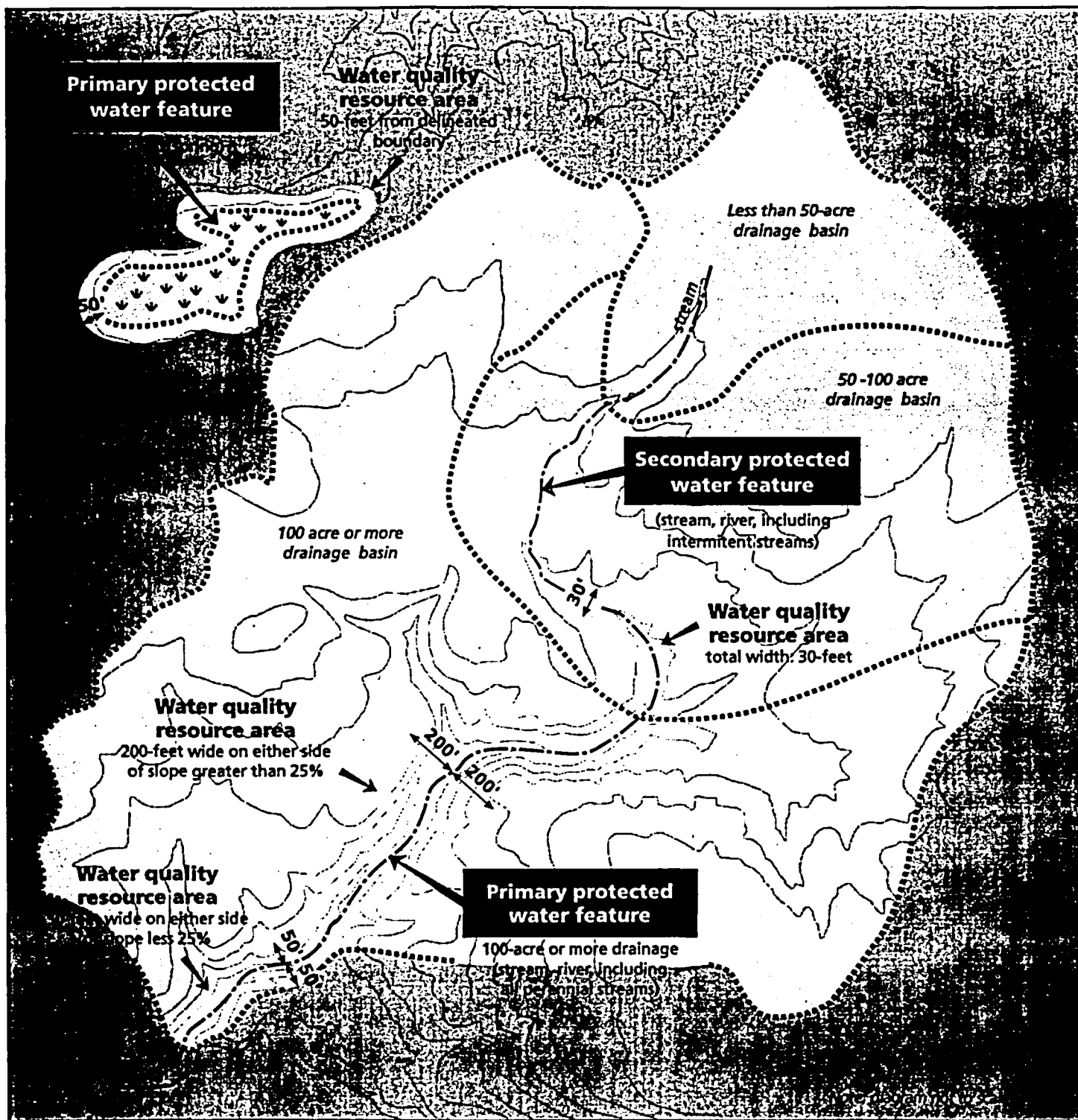


Figure 3 – Water quality resource areas

4. BACKGROUND

The purpose of this section is to explain why streams, rivers, and wetlands are important and should be protected. It then describes why, in order to protect water resources, floodplains and vegetated corridors should be protected by limiting development.

4.1 The Importance of Streams and Rivers

The region's livability and future growth depend heavily on having an adequate supply of clean water. Adequate water resources are essential to the commerce, agriculture and economic viability of the region. The interconnected web of rivers and streams which have played such an important role in this region's history and economic success, are also vital to maintain our prosperity and quality of life (Metro, 1993).

Healthy streams provide recreational opportunities for people and habitat for a variety of fish and wildlife species and aquatic insects. People raft, fish, swim and hike along streams and rivers. If rivers and streams are contaminated, people can become ill. The City of Portland has posted warning signs along the Columbia Slough to alert those fishing of possible illness from eating contaminated fish.

Except for a few groundwater and run-of-river sources, most of the region's municipal and industrial water supply comes from surface waters outside the Metro area. The Clackamas River is an important source of drinking water and the Clackamas intakes are located within or directly adjacent to the urban growth boundary. If these and other waters are degraded, higher costs are incurred for testing and treating the water prior to consumption. In addition, there are increased costs for finding new sources of drinking water. Communities suffer as businesses move away from polluted waters and tourists avoid the area. Conditions necessary for supporting human needs are similar to those necessary for supporting aquatic life. These include good water quality, adequate flow and water temperature, channel stability and food availability.

4.2 The Importance of Wetlands

Research on the functions of wetlands in the 1970s brought their importance to the fore. Wetlands are now widely considered sensitive habitats protected by federal, state and local laws. The degree to which wetlands perform the following functions is highly variable, but most wetlands provide important water quality and hydrologic functions. Degraded wetlands have the potential to be restored to a higher quality and better functioning ecosystem.

Wetlands contribute to water quality improvement in several major ways:

- Sediment trapping from waters that pass through them. High sediment loads entering surface waterbodies degrades water quality, silts up salmon gravel and spawning beds, fill pools and impact invertebrates inhabiting the stream (fish and wildlife feed on invertebrates). As water enters the wetland, it slows allowing sediment to settle to the bottom. Wetland vegetation also traps sediment and pollutants attached to sediment particles.
- Nutrient attenuation, primarily nitrogen and phosphorus. These nutrients are essential for plant growth. However, soil erosion and excessive application of fertilizers, such as that applied on agricultural fields and urban lawns, can exceed a given wetlands ability to remove and assimilate nutrient loads. This results in high concentrations of nitrogen and phosphorus

entering surface waterbodies. These nutrients that reach aquatic areas cause algal blooms and promote growth of aquatic plants which consume the available dissolved oxygen, raise pH and may result in fish kills and degraded water quality. Wetlands remove nutrients through sedimentation, plant uptake and denitrification.

- Removal of metals and toxic organics. Wetlands allow for the biological, physical and chemical processing of pollutants.

Wetlands provide hydrologic control in many major ways:

- Flood storage. Wetlands store water during periods of high runoff, and release it more slowly to receiving waterways after the flood threat, thus reducing downstream flooding.
- Streamflow maintenance. During the summer when rainfall is low, wetlands release water into streams, which helps maintain lower water temperatures.
- Groundwater recharge.

Wetlands provide fish and wildlife habitat. This wetland function will be addressed in great detail when Metro undertakes the Goal 5 work outlined in Title 3. Briefly, wetlands provide water, cover and food for many species of birds, small mammals, reptiles, and amphibians (Roth et al., 1993). They provide resting, feeding and breeding habitat for a wide diversity of animal species. While many animal species use the wetland itself, surrounding upland is also necessary for the animals to complete their life cycle. Wetland size has been thought to contribute to its overall quality and function. However, recent research has shown that even small wetlands can be quite diverse in plant and animal species (the total number of species present) (Horner et al., 1996). Wetlands that border streams, rivers, lakes or ponds contribute to fish habitat. They can provide shade, cover and food sources, and spawning and rearing opportunities.

4.3 The Importance of Floodplains and Vegetated Corridors

Floodplains and riparian vegetated corridors are transition areas between aquatic and terrestrial habitat. The main difference is often their position in the landscape. Floodplains generally are found along streams and rivers where valley floors occur. Streams in steep-sloped areas rarely have any floodplains mapped by FEMA. The water moves very rapidly through these streams, and there is no valley floor for water to flow out onto. For these, the flood area is the vegetated corridor. By protecting the vegetated corridor, the flooding hazard on small streams is reduced.

Floodplains are lands that are inundated with water when the volume of water exceeds bankfull capacity. These lands are covered by silt and materials deposited by the river when it floods. With their nutrient-rich soil, riparian vegetation, flat land and convenient water supply, floodplain areas are attractive to humans and wildlife. Floodplains often contain wetlands, but rarely does all of the floodplain meet the definition of wetland.

In fact, most of the time, floodplains appear suitable and attractive for development with views of the stream or river. However, when it floods, these areas are human health and safety disasters (floods can be good for other reasons including wildlife). Development in upper portions of floodplains and watersheds increases the cumulative effects on downstream flooding (i.e., there is an increased risk of flooding in the lower part of the watershed). In addition, development in these areas takes away open space and requires people to travel farther from home to find

greenspaces for recreation. Tax dollars are used to subsidize insurance for floodplain development, thus encouraging building in the floodplain (Firehock and Doherty, 1995).

Vegetated corridors are transition areas between streams and terrestrial habitat, and are areas subject to human impacts. Several terms are used synonymously, such as "vegetated filter strip" and "buffer." In this paper, the terms "vegetated corridor" or "WQRA" are used to refer to this area. Vegetated corridors provide many functions similar to those provided by the natural resource itself (such as wetlands). Vegetated corridors are necessary to reduce adverse impacts to the natural resources from surrounding land uses. Vegetated corridors have been found to assist in the following functions:

1. **Maintain temperature.** High water temperatures disrupt aquatic organisms that have finely tuned temperature limits, and thus, affect fish and aquatic invertebrate population diversity and growth, and can increase the virulence of many fish diseases, encourage exotic fish species, and affect the quantity of available food. High water temperature can compound the stress on fish by limiting dissolved oxygen concentrations (Meehan, 1991). Forested vegetated corridors provide shading which helps maintain lower summer temperatures.
2. **Maintain channel stability.** Channel stability is the ability of streams to retain their structure and function. The dimension, pattern and profile of a stable channel is maintained through the dynamic build-up and loss of sediment. The shape of the channel is determined by such inputs as sediment, flow of water and woody debris; relative to the stream's ability to transport or store these inputs (Sullivan et al., 1986). Vegetated corridor widths maintain channel stability and provide large woody debris to the stream.
3. **Remove sediments.** Urban areas often have high rates of sediments entering streams due to the great number of soil disruptions from construction projects. Sediment causes turbidity and siltation problems that decrease fish spawning habitat, decreases oxygen and sunlight availability to aquatic life. Metals and nutrients toxic to aquatic life are often attached to sediment particles. Vegetated corridors can reduce erosion and sedimentation from overland runoff and overflow from channels in numerous ways as described later in this paper.
4. **Reduce excess nutrients, metal contaminants, and fecal coliform.** Excess nutrients, such as phosphorus and nitrogen in fertilizers, can result in major algae blooms. Algae depletes dissolved oxygen and increases pH, resulting in fish kills. Excess metals in water directly impact biota and indirectly impact human health. Vegetated corridors can remove metals and excess nutrients from runoff and overland flows. This helps remove nutrients and pollutants from upstream sources by filtering water, via plant uptake and microbial activity.
5. **Moderate stormwater flows.** As impervious surface (roads and building rooftops) increases in a watershed, excessive amounts of water travel more rapidly into streams and wetlands. Vegetated corridors play a key role in moderating stormwater flows. Vegetation can slow the flow of runoff and allow it to percolate into the ground. The soil then releases this water into streams and wetlands over an extended period of time resulting in seasonal stabilization of water levels.

Vegetated corridors also provide fish and wildlife habitat and help reduce human impact to the aquatic resource and maintain macroinvertebrate communities. Fish and wildlife functions will be

addressed when Metro undertakes Goal 5 work. Vegetated corridors provide large organic debris (LOD) and particulate organic matter (POM) to streams and wetlands. LOD provides important habitat for aquatic species and POM provides food sources for lower trophic level species. LOD plays a role in improving water quality by helping to filter and dissipate energy both from surface water runoff and water which rises from the stream during flood events.

5. EXISTING POLICY AND LEGAL CONSIDERATIONS

This section reviews relevant regional, state and federal policies and court interpretations.

5.1 Relevant Regional policy

Metro is the federally-designated "208" water quality regional planning agency for the Portland metropolitan region. As such, Metro promotes decision-making and practices to protect the beneficial uses of water resources in the region.

5.1.1 Regional Urban Growth Goals and Objectives

Objective 12 of the Metro Regional Urban Growth Goals and Objectives (RUGGOs) (Metro, 1995) is titled "Watershed Management and Regional Water Quality." Under that objective, Metro is to formulate a long-term regional strategy for comprehensive water resources management. Title 3 is part of that regional strategy. Title 3 also advances the following subparts of the objective:

- ... "protect, restore, ... the integrity of streams, wetlands and floodplains
- comply with state and federal water quality requirements
- sustain designated beneficial water uses
- encourage the use of techniques relying on natural processes to address flood control, stormwater management, abnormally high winter and low summer stream flows and nonpoint pollution reduction."

5.1.2 Greenspaces Master Plan

The Greenspaces Master Plan (Metro, 1992) calls for the protection and enhancement of open space and natural areas. It identifies the need to protect and enhance waterways and floodplains as one strategy to protect and manage greenspaces. The plan recognizes the detrimental impact of uncontrolled stormwater runoff on floodplains and associated habitat. Title 3 supports and complements the Greenspaces Program.

5.2 Relevant State Law

This section covers relevant statewide planning goals and Oregon's regulatory program for "waters of the state," including wetlands, with respect to Title 3.

5.2.1 Statewide Planning Goals

Since 1973, the state of Oregon has an adopted statewide program for land use planning. The foundation of that program is a set of 19 statewide planning goals which express the state's policies on land use and related topics. By state law, cities and counties must have comprehensive plans and implementing ordinances consistent with the goals. Goals 6 and 7 are most relevant to Title 3's flood mitigation and water quality resource area requirements. Goal 5 addresses natural resource protection. Title 3's relationship with these three goals is discussed in the following paragraphs.

Goal 6 is "to maintain and improve the quality of the air, water and land resources of the state." This goal's guidelines recommend that local governments amend their comprehensive plans to buffer and separate land uses which create or lead to conflicting requirements and impacts on the air, water and land resources. Title 3's model ordinance requirement of WQRA protection is consistent with Goal 6 by setting standards to protect water quality, specifically requiring erosion

and sediment control, requiring native vegetation retention, and prohibiting new uses of uncontained hazardous materials in the WQRAs.

Goal 7 is “to protect life and property from natural disasters and hazards.” Developments subject to damage or that could result in loss of life shall not be planned nor located in known areas of natural disasters and hazards without appropriate safeguards. Areas of natural disaster and hazards include stream flooding, erosion and deposition, landslides and other hazards. Guidelines recommend locating low density and open space uses, such as recreation, that are least subject to loss of life or property damage in floodplains. Title 3’s requirement of flood area and WQRA protection is consistent with Goal 7 by setting standards to protect against flooding and prevent or reduce risk to human life and properties, specifically prohibiting or limiting development in the flood area, requiring balanced cut and fill, minimum finished floor elevations to be least one foot above the design flood height, and temporary fills be removed. Title 3 also protects against landslides by requiring a 200-foot WQRA from top of bank on either side of the stream for areas greater than 25 percent slope. However, this only applies to areas of greater than 25 percent slope along streams and not to upland areas greater than 25 percent slope.

Goal 5 is “to protect natural resources, and conserve scenic and historic areas and open space.” As required by Title 3, within 18 months from the effective date of the functional plan, Metro will complete an analysis of regionally-significant fish and wildlife habitat. For now, Title 3 regulations include only measures required to maintain and improve water quality implementing Goal 6 and required to protect life and property from floods and landslides implementing Goal 7. Therefore, Goal 5 does not apply to the adoption of these measures (OAR 660-23-240(1)).

The recently amended Goal 5 administrative rule (OAR 660, Division 23) requires local governments to amend comprehensive plans to address Goal 5 requirements prior to or at their next periodic review (comprehensive plans must be reviewed every five years). The rule offers local governments a choice of two processes: 1) the standard process which includes inventorying, determining resource significance, adopting significant resources, and conducting a 4-part process for analyzing economic, social, environmental, and energy (ESEE) consequences that could result from a decision to allow, limit, or prohibit a conflicting use, or 2) a more streamlined process, called “safe harbor”, which essentially eliminates the ESEE requirement.

The rule has specific requirements for taking safe harbor. For protection of riparian corridors as Goal 5 resources, boundaries of standard setback distances from all fish-bearing lakes and streams can be established to comply with Goal 5 as follows: 75 feet along all streams with average annual stream flow greater than 1,000 cubic feet per second (cfs), and 50 feet from top or bank on lakes and fish-bearing streams with average annual stream flow less than 1,000 cfs. These riparian corridor boundaries were determined after much deliberation by a panel of state resource experts.

The rule requires that implementing ordinances, with a few exceptions, prevent permanent alteration of riparian areas by grading or the placement of impervious surfaces and prevent the removal of vegetation. So, vegetation retention for Goal 5 purposes is consistent with Title 3 regulations for purposes of Goals 6 and 7. Grading or placing impervious surfaces in riparian corridors for Goal 5 purposes is more stringent than Title 3.

In summary, Title 3 is not inconsistent with Goal 5 because Goal 5 does not apply to the adoption of regulations to implement Goals 6 and 7 (OAR 660-23-140). Section 5 of Title 3 relates to

future Goal 5 implementation. Compliance with Goal 5 for regulations implementing Section 5 of Title 3 will be demonstrated with any amendments to the functional plan to add regulations that go beyond measures required by Goals 6 and 7.

5.2.2 Oregon Wetland Regulatory Program

Oregon's removal/fill law (ORS 196.800-196.990) is administered by the Oregon Division of State Lands (ODSL). Using similar definitions as the federal government, ODSL determines wetland boundaries and waterbodies that meet the definition of "waters of the state". A permit is required for fill equal to or exceeding 50 cubic yards or more of material in any waters of the state at one location. Likewise, a permit is required for removal of more than 50 cubic yards of material in any waters of the state in any calendar year. Waters of the state means natural waterways including all tidal and nontidal bays, intermittent and constantly flowing streams, lakes, wetlands, and other bodies of navigable and nonnavigable water.

Mitigation for impacts to estuaries is required by ORS 196.830 and for impacts to freshwater wetlands, by ORS 196.692. In addition, Senate Bill 3, passed in 1989, requires a statewide wetland inventory and provides guidelines for preparation of optional Wetland Conservation Plans by local governments (ORS 196.668-196.692). Should a local government develop a Wetland Conservation Plan, vegetated corridors necessary to protect wetland functions and values must be specified (ORS 196.678(2)(j)). Wetland Conservation Plan implementing measures includes the protection of riparian vegetation (ORS 196.681(5)(a)).

The state's role of: 1) defining (along with federal government) wetland boundaries and 2) mapping wetlands, supports Title 3 in that a 50-foot WQRA can only be established when a wetland has been delineated and mapped. While required only of wetland conservation plans, state law does recognize the importance of vegetated corridors for protecting wetland functions and values and the need to protect riparian vegetation.

5.3 Relevant Federal Law

Discussed in this section is federal law related to Title 3 which includes the Clean Water Act and the Flood Control Act.

5.3.1 Clean Water Act

The Clean Water Act (CWA) is the 1977 amendment to the Federal Water Pollution Control Act of 1972. The goal of the CWA is to maintain and restore the physical, chemical and biological integrity of waters of the U.S. The CWA prohibits discharges of pollutants into waters of the United States, unless the discharge is in compliance with a National Discharge Elimination System (NPDES) permit. In Oregon the CWA is implemented by DEQ with review and approval by the EPA.

Refer to the Introduction section for a discussion of Section 303(d).

Section 303(e) requires each state to have a continuing planning process which includes, among other things, effluent limitations, TMDLs for pollutants, and adequate implementation. Section 305(b) requires the state to prepare a Water Quality Status Assessment Report (commonly referred to as the 305(b) report) biennially which describes and analyzes the water quality of all navigable waters.

Section 319 directs the state to develop a management program for the control of nonpoint sources of pollution. The first of the ten program elements would define standards for water quality, erosion, riparian condition, upland vegetation or other watershed parameters (DEQ Water Quality Status Assessment Report, 1994). However, the state has not yet developed all of these standards.

Section 401 (33 U.S.C. 1341) requires applicants for federal licenses or permits to conduct any activity which may result in any discharge into navigable waters to provide certification from the State. Originally, this requirement was applied to Federal Energy Regulatory Commission licenses for dam operation and to Section 404 fill permits for waters of the state. Over time, the requirement has been applied to include federal permits for grazing, timber harvesting and even salting glaciers on national forest lands for recreational skiing. 401 certification is the principal wetlands regulatory activity of DEQ.

Section 404 (33 U.S.C. 1344) establishes the permit process for the discharge of dredged or fill material into waters of the United States, including wetlands. The U.S. Army Corps of Engineers administers the program. In Oregon, a joint permit process is performed with the Oregon Division of State Lands. A permit is required for placing fill material in any waterway or wetland subject to various exceptions or general permits. Vegetated corridors are not specifically required, but are often made a permit condition based on review comments by the U.S. Fish and Wildlife Service, EPA, National Marine Fisheries Service, DEQ or the Oregon Department of Fish and Wildlife. Under Section 404, the DEQ provides Section 401 certification.

Title 3 is consistent with the CWA by protecting and restoring the state-adopted existing and designated uses of water. The CWA addresses non-point and point source pollutants and contains broad state requirements, i.e., adopt water quality standards necessary to protect beneficial uses, identify water quality limited waterbodies and set TMDL allocations for them. Title 3 addresses nonpoint pollutants and is much more specific, i.e., requires erosion control and vegetation retention. Title 3 may also satisfy elements of other CWA sections (e.g. 303(e), 404, 401).

A local jurisdiction's efforts to protect and maintain water quality by meeting Title 3's performance standards may also be used to meet DEQ's TMDL requirements. By complying with Title 3, TMDLs may not have to be developed. Where TMDLs have been established or will be required, a watershed planning process may be initiated (DEQ, 1997). Title 3 is an important tool for watershed planning to meet TMDLs.

5.3.2 The Flood Control Act

With passage of the Flood Control Act of 1936, the federal government has dominated the nation's flood damage reduction efforts. The primary federal tool to address flood hazard management is the National Flood Insurance Program (NFIP). The U.S. Congress initiated the NFIP in 1968 to provide low cost insurance to communities that have adopted approved floodplain management regulations. The program is administered by the Federal Insurance Agency (FIA) which is part of the Federal Emergency Management Agency (FEMA). NFIP requires communities to adopt a local floodplain management ordinance approved by FEMA. The ordinance is based on the Flood Insurance Rate Map (FIRM). Flood risk is determined and insurance rates set for mapped floodplain areas.

The Federal Emergency Management Agency (FEMA) designates and maps the 100-year floodplain. Title 3 applies to the flood area which includes the FEMA 100-year floodplain and lands which have physical or historical evidence of flooding in the historical past.

5.4 Relevant Court Interpretations

The following U.S. Supreme Court cases relate to the issue of "regulatory takings." The U.S. and Oregon Constitutions require compensation for private property that is "taken for public use." Regulatory takings issues arise when the use of land is restricted in furtherance of a legitimate public purpose. A government has the responsibility to demonstrate not only a legitimate public purpose, but that the degree of the relationship of the regulation to the use restriction amounts to a "rough proportionality." Court interpretations relevant to the takings issue are highlighted below.

- Nollan v. California Coastal Commission (483 U.S. 825, 107 S.Ct. 3141) (1987) Dedication of an easement for a pedestrian access to the beach was required as a condition of approval of a development permit for a residence. This degree of use restriction was held to have insufficient relationship or "essential nexus" to the permit approval.
- Lucas v. South Carolina Coastal Commission (505 U.S. 1003, 112 S.Ct. 2886) (1992) The outer limit of a use regulation for a legitimate public purpose is reached when the regulation restricts uses in such a way as to "take" all productive uses of the property. So, generally, a zone change that reduces allowed uses for a legitimate public purpose, like erosion control, becomes a "taking" requiring compensation only if all development or productive use is effectively prohibited.
- Dolan v. City of Tigard (512 U.S. 374, 114 S.Ct. 2309) (1994) Approval of a store expansion was conditioned on dedications of land for (1) a public greenway, and (2) a pedestrian/bicycle path. The court found some "nexus" between (1) the greenway and legitimate flooding protection, and (2) a bike path reducing traffic congestion. The case was remanded for the city to demonstrate the degree of connection "between the exactions and the proposed impact of the proposed development." The new test for the appropriate degree of connection is called the "rough proportionality" test:

"No precise mathematical calculation is required, but the [local government] must make some sort of *individualized* determination that the required dedication is *related both in nature and extent* to the impact of the proposed development" and there must be "some effort to quantify findings." (emphasis added)
- Piculell v. Clackamas County (142 Or. App. 327, 922 P.1227) (1996) The most recent of a handful of Oregon court cases summarizes Dolan's impact: "... its requirements concerning the specificity of the demonstration (of the nexus) is the most significant change from prior takings law ... It is unclear where on the continuum the Court intended to locate the line between precise mathematical calculation and quantification ..." In other words, how much individual project impact data is needed to support permit conditions that further a legitimate government interest is a case-by-case determination.

The longstanding principle that zoning or other land use regulations with legitimate governmental purposes are generally not a "taking" remains after Dolan. Specifically, all productive use must be effectively prohibited for a regulatory taking.

Rather than tacking unrelated governmental policies to permit approvals, Nollan (1987) has long established the principle that permit conditions must have an "essential nexus" to impacts of the

proposed development. Dolan (1994) has extended the specificity needed to demonstrate that nexus. Local government findings on permit conditions now require an individualized determination of the nature and extent of their relationship to the impact of proposed development. Therefore, local codes and practices must assure that permit conditions, particularly dedications of land, are demonstrated to be appropriately related to the purpose for the permit condition.

Title 3 does not require public access, like the Nollan case, or other dedications of use of land to the public, like the Dolan case, nor the effective loss of property rights, like the Lucas case. Title 3, line 402 (Appendix A) recommends that conservation easements, donations or purchases of land be used to protect WQRAs "where feasible." However, permit applications involving pre-existing development are exempt from this policy. Also, at lines 493-496, implementation of Title 3 must include variance procedures "to reduce or remove stream corridor protection for any property demonstrated to be converted to an unbuildable lot . . ." by application of Title 3. Therefore, providing procedures to avoid the Lucas case are part of the requirements of Title 3. So, WQRA's, especially with the use of density transfers and Transfer of Development Rights, operate like any other regulation that locates development on property. The land in the WQRA is not subject to public access or use. The land remains as an amenity to the rest of the parcel.

6. FLOOD AREA MANAGEMENT

"Floodplains" are land areas susceptible to inundation by water from any source. The 100-year floodplain means the total area subject to inundation by the base flood, which is the flood having a one-percent probability of being equaled or exceeded in any given year. In Title 3, the flood area includes the 100-year floodplain and historic floods of record. Refer to Figure 2.

6.1 Problem Identification

Flooding is the most widespread geologic hazard in the United States, accounting for greater annual property loss than any other single hazard (Griggs, 1981). During the decade ending in 1993, average annual flood damages in the United States exceeded \$3 billion (IFMRC, 1994). The Midwest Flood of 1993, however, exceeded these national figures with overall damages estimated between \$12 billion and \$16 billion. This does not include the unquantifiable impacts on the health and well-being of the affected population.

Congress appropriated \$5.7 billion for the 1993 Midwest flood emergency relief and recovery. Flooding two years later cost the Federal Emergency Management Agency (FEMA) \$361 million. The 1996 flooding on the East coast and in the Pacific Northwest cost FEMA \$501 million (Weisman, 1997).

Flooding is a problem in the Portland metropolitan region and is expected to become worse as the region grows. Cost estimates of the February 1996 flood and landslide disaster in the entire tri-county region (which includes Clackamas, Multnomah and Washington counties) were almost \$60 million dollars (Oregon Emergency Management Office, 1997). In the Metro region, there are an estimated total of 8,840 units in or close to the floodplain, and approximately 1080 household units were built in or close to the floodplain between 1992 and 1995 (Metro, 1997). Personal property and public infrastructure damage as well as threats to human health and safety will be continuing problems.

Costs associated with flooding have grown exponentially in recent years, not necessarily because floods are any larger or more frequent. Rather it is because of human development in the floodplain where rivers will always eventually return. Flooding is a natural process that helps restore a river's health, clean its sediments, create critical aquatic and streamside habitat, exchange nutrients between the river and its floodplain and renew its fisheries. Floods clean out silted habitats, scour deep pools, deposit new productive riffles and create complex accumulations of large wood. Floods also bring leaves, needles, wood and dissolved nutrients into the river giving aquatic communities access to new habitats and increased food supplies (Orsinger and Gregory, 1996). This section discusses new strategies for addressing floodplain management.

6.2 Functions and Values of Floodplains

Floodplains have many functions similar to those attributed to vegetated corridors as will be described in detail in the next section. However, floodplains are unique. Floodplains in their natural or relatively undisturbed state provide numerous beneficial natural resource functions and values. These can be divided into several broad categories:

- moderation of floods, flood storage, water quality maintenance and groundwater recharge;
- habitat value for plants and animals; and
- scientific, historic, agricultural, recreational and aesthetic values (FEMA, 1992).

a. Flood Storage and Flood Reduction. Natural floodplain systems can serve to reduce or avoid the environmental and economic costs associated with structural flood control programs. The principal natural flood control values provided by floodplains are:

- flood storage;
- reduction in flood velocities;
- reduction of flood peaks; and
- reduction of wind and wave impacts.

Most river and coastal floodplains are broad open areas which allow flood flows to disperse and be stored over a wide area. This dispersal and storage function can serve to reduce peak flood flows, flood velocities and potential flood damage that can threaten structures, resources, and human safety within the floodplain. The flood storage capacity of floodplains varies based on physical characteristics, size, vegetation and land use within the watershed. Floodplains also reduce wave impacts in coastal and riverine systems, as well as protecting uplands from erosion.

b. Water Quality Maintenance. Floodplains provide important natural functions that protect the physical, biological and chemical integrity of water. These functions include:

- reducing and sorting sediment loads;
- processing chemical and organic wastes; and
- reducing nutrients (FEMA, 1992).

Floodplains buffer rivers, streams, lakes and estuaries from upland sources of pollution. An undisturbed floodplain and its associated vegetation can filter surfacewater runoff and capture sediment loads. They can also filter nutrients, wastes and sediment from flooding water. Undisturbed floodplain vegetation can trap and retain sediments from flood waters. Sediment often contains nutrients, pesticides, heavy metals and other water-polluting toxins. Wetland systems associated with floodplains often have vegetation that is well adapted to removing water pollutants from flood waters.

c. Groundwater Recharge. Undisturbed floodplains allow for the recharge, storage and discharge of groundwater. Runoff and floodwaters are slowed and dispersed in the floodplain. This allows for the filtration of the water entering the groundwater which helps to maintain or enhance groundwater quality and base flow of streams during drier months.

d. Habitat Value. Floodplains provide habitat for diverse populations of plants and animals, as well as providing a source of nutrients for adjacent and downstream ecosystems. In fact, wetlands in floodplains are among the most productive ecosystems in the world. The plant material or biomass produced in floodplains serves as a valuable food source for resident and migrating fish and wildlife species. Riparian ecosystems associated with floodplains represent distinct communities made up of physical parameters, plants and animals. These communities have evolved unique adaptations to periodic flooding and are dependent on the nutrient input provided by periodic inundation. Freshwater fish species are particularly dependent on wetland systems associated with floodplains as a source of food, protective habitat during different life stages, e.g. spawning. In addition, floodplains provide valuable habitat for waterfowl and nesting, feeding and resting areas for migrating birds.

e. Scientific, Historic, Recreational, Agricultural and Aesthetic Values. Floodplains offer unique habitat for scientific research and a wealth of opportunities for educational activities. Floodplains are important locations for significant historical and archeological sites. In addition, numerous recreational opportunities are possible within floodplains.

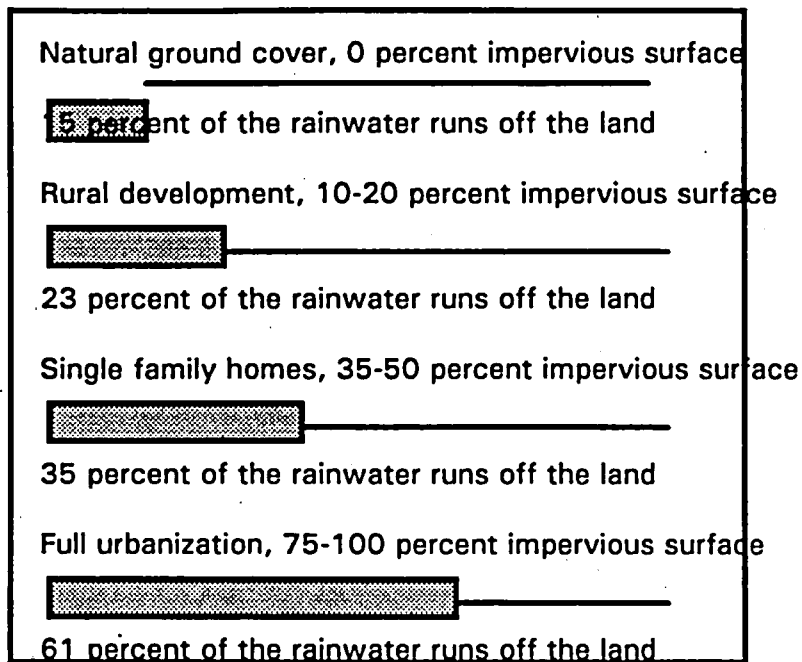
6.3 Impacts of Development and Urbanization in Floodplains

River systems and their associated floodplains are dynamic, ever-changing ecosystems that are sensitive to changes in adjacent upland land use and development within the floodplain. Flooding, erosion, sediment deposition, channel movement and stream braiding are natural processes in rivers and floodplains (DOE, 1991). It is the human-induced changes within a watershed and the floodplain, however, that cause these natural processes to become unbalanced and result in flood damage and threats to human health and safety.

Floodplains can be altered in several ways: 1) development within the floodplain and floodway reduces the flood conveyance and storage capacity of the floodplain; 2) sediment loading from adjacent land uses can fill in the floodway and floodplain, and thereby reduce its capacity to convey and store flood flows; 3) development within the floodplain can reduce floodplain vegetation which reduces the water quality benefits of floodplains; and 4) development in the floodplain can reduce the fish and wildlife habitat value of floodplains. All of these impacts can result in varying degrees of flood hazard.

Floodplains provide an area for flood waters to occupy (called flood storage) until sufficient time has past, and they recede. Development reduces storage capacity within the floodplain especially when fill material is imported into the floodplain to raise structures above flood height. Structures and fill in the floodplain can narrow the area and increase flood water velocity. Structures and fill may force flood waters onto adjacent areas or can back water up causing problems upstream. Property and structures that had not previously been subject to flooding now may be at risk (Schueler, 1987). Seemingly, small individual permitted developments would appear to have little effect. The impacts, however, are cumulatively great.

Development outside the floodplain can also contribute significantly to flood problems. Increased impervious surfaces (roads and building rooftops) within a watershed result in increased flood volume and increased peak run-off rates, which may greatly accelerate downstream flooding (NIPC, 1995).



Data from NIPC.

The following two case studies illustrate how flood management that focuses on structural controls and development within the floodplain can result in extensive damage to property and threaten human safety:

6.3.1 Lower San Lorenzo River, Santa Cruz County, California

The flood management activities in the Lower San Lorenzo River in California illustrate the detrimental impacts of relying on structural controls, such as levees, dams and channelization of the river, to control flooding. The San Lorenzo River is a dynamic river system draining 357 square kilometers (138 square miles) of the central California Coast Range. Flooding has been a common occurrence in the watershed. It receives approximately 150 cm (59 in) of annual rainfall, which together with steep topography and highly erodible soils, results in erosion and heavy sediment loading to the mouth of the river where it enters Monterey Bay.

In 1955, as development spread in the watershed and flooding increased, the U.S. Army Corps of Engineers (USACE) constructed a series of levees 4 km (2.5 mi) in length upstream from the mouth of the river and dug a channel in the river to increase the slope and flood discharge (Griggs, 1981). Downtown Santa Cruz was located in the 100-year floodplain at the mouth of the river. Now that the flood control structures were in place and the threat from flooding seemingly eliminated, the downtown expanded significantly during the 1970s. Studies since the flood control project, however, reveal that the river has silted in, returned to its former gradient and its flood control capacity has been significantly reduced. Because the channel can no longer hold the 100-year event, the entire downtown area of Santa Cruz is no longer covered by the National Flood Insurance Program.

6.3.2 Willamette River, Oregon

During the past 100 years, the Willamette River in Oregon has been modified significantly resulting in loss of channels, floodplain and associated sloughs along the river bank (Benner, 1993). Construction of wing dams, revetments and removal of woody debris were common methods used to protect navigation, control flooding and to establish farmland along the river. These historic practices are similar to structural flood control strategies used throughout the country. These approaches have not eliminated flooding in the Willamette River valley even with several flood control dams along the upper reaches of the Willamette and several of its tributaries.

6.4 Current Floodplain Regulations and Management

Floodplain management activities historically have focused in large part on structural controls. It has become evident over the years, however, that the NFIP regulations do not protect a community from flood hazard as urbanization increases within the watershed and floodplain. There are many reasons why a community would want to enact regulatory floodplain standards that are higher than the minimum NFIP requirements (FEMA, 1996). This is because the minimum NFIP requirements in many cases are not adequate to prevent flood damage and do not assure good flood management planning (DOE, 1991). The NFIP's Community Rating System (CRS) provides insurance premium rate reductions to encourage communities to do this. More restrictive state or local regulatory standards take precedence and are encouraged by the NFIP regulations.

Numerous non-structural and structural strategies are used to reduce susceptibility to flood damage. These include (FEMA, 1992):

- State and Local Floodplain regulations: zoning, subdivision regulations, building codes, housing codes, sanitary and well codes and other regulatory tools;
- Development and redevelopment policies: design and location of services and utilities, land rights, acquisition and open-space use, redevelopment, permanent evacuation;
- Disaster preparedness: disaster assistance, floodproofing, flood forecasting;
- Structural solutions: Dams, reservoirs, dikes, levees, floodwalls, channel alterations, high-flow diversions, land treatment measures and on-site detention measures; and
- Information: education, flood insurance, tax adjustments, flood emergency measures and post-flood recovery.

6.5 Rethinking Past Flood Management Practices

Traditional federal flood management programs are now being re-evaluated as a result of the disastrous 1993 Midwest flooding along the Mississippi River. Today there is a growing understanding that government can neither solve all flooding problems, nor can it financially cover the cost of flood damage. New approaches to flood management and prevention are being proposed by the federal agencies involved in floodplain management and flood disaster relief (IFMRC, 1994).

In a recent publication entitled Flood, Floodplains and Folks (NPS, 1996), the National Park Service profiles communities across the nation that are pioneering new approaches to managing floodplains and addressing the threats of flood damage. These approaches involve communities forming innovative public-private partnerships and implementing multi-objective programs that use a variety of non-structural, regulatory and incentive approaches to address serious flooding

problems. Solutions to these problems vary in each community, but often include one or more of the following: flood loss reduction, flow control, streambank stabilization, restoration, fisheries improvement, recreation, natural hazard mitigation, wetland enhancement, habitat improvement, cultural resource enhancement, economic revitalization and environmental education (NPS, 1996).

Many of these new approaches are currently being put into practice in the Willamette River Valley. The floods of 1996 clearly illustrate how easily and powerfully the river can reclaim its floodplain. To control flooding the U.S. Army Corps of Engineers (USACE) built thirteen dams on various Willamette River tributaries. These dams, however, can only control the 2-to 5-year flood. Larger floods, such as those experienced in early 1996, will continue to exceed the capacity of the dam system.

Water resource managers, scientists and emergency managers are no longer advocating additional dams as the way to prevent future flooding. For example, the USACE has learned through experience in the Charles River Watershed in Massachusetts that protection of wetlands in the upper watershed was the most cost-effective means to protect the highly urbanized lower watershed. Eventually, the agency bought wetland conservation easements for \$8 million, instead of spending an estimated \$100 million to build dams or other structures to provide the same protection (Orsinger and Gregory, 1996). USACE calculated that the loss of wetlands in the Charles River watershed would cause an average annual flood damage cost of \$17 million. In the Willamette River, a non-profit group called River Network is purchasing marginal farmland from willing sellers in the floodplain in an effort to restore floodplain function and flood storage capacity.

The January 1997 flood in the California Sierra Nevada mountains over flowed the dams and broke the levees in 32 places. Nine people died, and more than 120,000 were evacuated. Property damage exceeded \$1.7 billion. The conventional response has been to rebuild devastated communities. But now some USACE officials are advocating no development in the floodplain and to relocate communities after flooding, rather than rebuild (Weisman, 1997).

This approach was implemented, to some degree, after the Midwest flood. There, FEMA identified properties inundated by the flood and initiated a property acquisition program that moved homes and businesses out of danger. Over 10,000 properties were purchased, and the land was returned to open space for recreational use. Quite unexpectedly, savings were realized almost immediately, since severe flooding occurred again in 1995. In Grafton, Illinois, for example, a total of 403 residents and businesses had applied for disaster aid after 1993 flooding. In 1995, floodwaters hit the same areas, but this time only 11 disaster applications were filed (Witt, 1997).

The city of Tulsa, Oklahoma has become a national model for innovative floodplain management that far exceeds the NFIP requirements. After a history of repeated disastrous flooding, Tulsa officials developed a comprehensive watershed program to address timing of flood peaks and the availability of flood storage. The city adopted preventive policies that identify parks and open space as the best use of floodplains, base the 100-year flood on fully urbanized watershed conditions (rather than existing conditions of most NFIP floodplain maps), avoid floodplain alterations and maintain the storage capacity of the floodplain (City of Tulsa, 1992). Refer to Figure 4.

6.6 How Title 3 Addresses Flood Area Management

Flooding is a serious problem in the Portland region, resulting in property damage and threats to public health and safety. Development has occurred and will continue to occur in the floodplain. Federal agencies, such as the USACE, FEMA, and U.S. Geological Survey are rethinking their policies and what should be done to limit the problems. Metro and the region are instituting the following Title 3 standards to address flood area management:

- prohibiting development in the flood area to the maximum extent possible
- requiring balanced cut and fill for all development in the floodplain
- requiring finished floor elevations at least one foot above the design flood height
- requiring temporary fills from construction be removed

These standards should prove effective at slowing the rate of increase of future costs associated with floods. The balanced cut and fill standard and expanding the flood area to include the boundary of historic floods and not just the FEMA 100-year floodplain exceed NFIP standards. The balanced cut and fill standard helps to reduce the loss of flood storage capacity. (Washington County already uses a balanced cut and fill policy.) Using the historic flood boundary helps to insure that the FEMA flood maps are as up-to-date as possible. On the Title 3 maps, the floodplain will include the 1996 area of inundation. Another advantage is that local communities will be eligible for reduced flood insurance rates when they can show compliance with Title 3 provisions.

7. WATER QUALITY PROTECTION

This section discusses the scientific research related to the functions performed by vegetated corridors in light of water quality protection. The breadth and diversity of the scientific research is extensive for forestry and agricultural situations. In addition to reviewing applicable papers from forestry and agricultural research, literature relating to urban areas was cited and emphasized.

Much of the agricultural and forestry research is relevant to the Portland region even though it is predominantly an urban area. The composition of pollutants resulting from urban development is similar to that found in forestry and agricultural operations. All can produce sediments, pesticides, nutrients, and stormwater runoff. In fact, it has been shown that urban runoff exceeds the amount of pollutants present in agriculture and forest operations for some substances including road salts, heavy metals, lead from automobile exhaust and oil residue from trucks and cars (EPA, 1977).

A variety of authors (Table 1) have investigated the functions of vegetated corridors (Castelle et al., 1992; Johnson and Ryba, 1992; Castelle et al., 1994; Cohen et al., 1987; Budd et al., 1987). Since vegetated corridors for wetlands and streams function similarly; this section summarizes their importance without differentiating between the two. The function of vegetated corridors for wetlands is discussed thoroughly by Castelle et al. (1992).

Table 1. Vegetated Corridor Functions and Recommended Widths to Maintain Those Functions²

Function	Reference	Recommended Vegetated Corridor Width
Sediment reduction	Erman et al. 1977	30 m (98 ft)
	Wilson 1967	3 m (10 ft) (sand), 15 m (49 ft) (silt), and 122 m (400 ft) (clay)
	Moring 1982	30 m (98 ft)
	Lynch et al. 1985	30 m (98 ft)
	Karr and Schollosser 1977	75% removal in 30-38 m (98-125 ft)
	Gilliam 1988 ³	50% deposition w/in 88 m (289 ft)
	SCS 1982	8-46 m (26-151 ft) depending on slope
	Ghaffarzadeh et al. 1992	9 m (30 ft) remove 85% of sediment
	Desbonnet et al. 1994	25 m (82 ft)
	Schellinger and Clausen 1992	23 m (75 ft)
	Broderson 1973	15.6 m (51 ft)
	Young et al. 1980	24.4 m (80 ft)
	Budd et al. 1987	15 m (49 ft)
	Young et al. 1980	36 m (188 ft)
	Lynch et al. 1985	31 m (100 ft)
Excess nutrient and metal removal	Jones et al. 1983	30 - 43 m (98-141 ft)
	Jacobs and Gilliam 1985	16 m (53 ft)
	Petersen et al. 1992	minimum 10 m (33 ft)
	Castelle et al. 1992	minimum 15 m (49 ft)
	Doyle et al. 1977 ⁴	13 m (41 ft)
	Lynch et al. 1985	30 m (98 ft)
	Jones et al. 1988	30-43 m (98-141 ft)
Moderation of Water Temperature	Corbett and Lynch 1985	12 m (39 ft)
	Hewlett and Fortson 1982	15-30 m (49-98 ft)
	Brazier and Brown 1973	60-80% shade in 11-24 m (36-79 ft)

² This table is from Johnson and Ryba, 1992, expanded by Metro , 1997

³ cited in Mauermann, 1989

⁴ cited in Bingham et al., 1980

	Steinblums et al. 1984	60-80% shade in 23-38 m (76-125 ft)
Stream/ channel stability	Corbett and Lynch 1985	minimum 20-30 m (67-98 ft)
-recruitment of woody debris	Bottom et al. 1983 ⁵	31 m (102 ft)

7.1 Moderation of Water Temperature

Vegetated corridors help to stabilize temperatures in streams and wetlands. Forested vegetated corridors provide shading which helps maintain lower summer temperatures. Forested vegetated corridors also help to moderate temperature decreases in the winter.

Vegetated corridors also help maintain the hydrologic balance between the hyporheic zone and the stream or river channel (Baumgartner, 1997). In the spring water moves into the hyporheic zone from the river channel until the river flow begins to decrease. In the summer when flow decreases water is discharged from the hyporheic zone into the river or stream. This hydrologic balance helps maintain stream flows and temperature (Stanford and Ward, 1988).

Research suggests that smaller streams have a greater potential for increases in temperature from streamside vegetation removal than do larger streams because a greater proportion of their surface areas will be exposed to the sun. Forest harvesting can cause mean monthly maximum stream temperatures to increase as much as 8°C and mean annual maxima to rise 15°C (Brown and Krygier, 1970).

In urban areas, impervious surfaces reduce groundwater recharge and increase water temperature. Additionally, the reduced groundwater recharge further affects stream temperature since reduced groundwater discharge to the streams represents a reduced source of cool water that would otherwise be released during critical warming periods. Impervious surfaces act as heat collectors, heating runoff as it passes over impervious surfaces.

Thermal loadings disrupt aquatic organisms that have finely tuned temperature limits. Increased water temperatures affect fish and aquatic invertebrate population diversity and growth. High summer water temperatures can increase the virulence of many fish diseases, encourage exotic fish species, affect the quantity of food available, and alter the feeding activity and body metabolism of fish (Lantz, 1971).

Many factors must be considered in defining a vegetated corridor width to adequately maintain water temperature. They include geographic (latitude, longitude, elevation), climatic (air temperature, relative humidity, wind velocity), and stream channel characteristics (stream depth, width, velocity, substrate composition) and riparian or topographic shading (sky view factor, canopy density, topographic angle) (Sullivan, 1990).

7.1.1 Width of Vegetated Corridor

Vegetated corridor widths ranging from 15 to 30 m (50-98 ft) have been cited by seven authors to be effective in controlling stream temperatures (Johnson and Ryba, 1992; Castelle and

⁵ cited in Budd et al., 1987

Johnson, 1997). Lynch et al. (1985) found that a 30 m (98 ft) vegetated corridor for logging operations maintained water temperatures within 1° C of their former average temperature. Barton et al. (1985) found a strong correlation between maximum water temperatures and vegetated corridor length and width for trout streams in southern Ontario, Canada. Most work on effects of riparian shading on temperature has been conducted in forestry applications, and little, if any, has been conducted in urban areas.

7.1.2 Type of Vegetation

A number of researchers have commented on the impact of riparian vegetation on stream temperatures. (Brazier and Brown, 1973; Hewlett and Fortson, 1982; Steinblum et al., 1984; and Beschta et al., 1987). Beschta et al. (1987) reported that the relative degree of shading provided by a vegetated corridor strip depended on factors such as species composition, age of stand, and density of vegetation. They concluded that vegetated corridors with widths of 30 m (98 ft) or more generally provided the same level of shading as that of an old-growth stand.

7.1.3 Urban applications

Urban watersheds have a greater percentage of impervious surfaces than forested or agricultural watersheds. Impervious surfaces' air and ground temperatures can be 10 to 12 degrees warmer than in agricultural and forested areas. In addition, the trees that could be providing shade to offset the effects of solar radiation are often missing in urban areas (Schueler, 1994). Researchers monitored five headwater streams in Piedmont, Maryland over a six-month period in watersheds having different levels of impervious surface. All of the urban streams had mean temperatures that were consistently warmer than a forested reference stream, and the increase in temperature appeared to be a direct function of the increase in impervious surface (Schueler, 1994b).

7.2 Stream/Channel Stability

Channel stability is the ability of streams to retain their structure and function. The dimension, pattern and profile of a stable channel is maintained through the dynamic build-up and loss of sediment. The shape of the channel is determined by such inputs as sediment, flow of water and woody debris; relative to the stream's ability to transport or store these inputs (Sullivan et al., 1986). Vegetated corridor widths to maintain channel stability range between 20 to 30 m (66 to 98 ft) (Johnson and Ryba, 1992).

Stream channels differ according to historical disturbances, structural controls and geologic history. Rosgen (1996) has classified different stream types, "A" to "G", based on the shape of the basin and landforms. According to Rosgen's categories, the Metro area generally consists of "B", "C" and "F" streams. Streams classified as "B" exist on moderately steep and gently sloped terrain, with relatively few channel meanders and numerous rapids. The "C" streams are located in narrow to wide valleys, formed by alluvial deposition. The "C" type channel has a well developed floodplain (slightly entrenched), numerous meanders and its channel is dominated by many riffles and pools. The "F" streams are the classic "entrenched, meandering" channels. "F" streams are deeply incised in valleys of relatively low elevation relief, containing highly weathered rock or erodible materials. "F" streams are characterized by high rates of bank erosion, as well as areas where sediment accumulates (Rosgen, 1996).

Changes in land use practices can lead to different shapes of stream channels due to loss of vegetation and changes in hydrology in the surrounding watershed. This may result in a decrease

in stream bank stability sufficient to initiate a shift in stream type from a "B" or "C" stream to an "F" stream. The response of streams to these changes in the watershed is not uniform. Some streams are more sensitive to erosion and degradation than others. According to Rosgen's channel classification system, in "B" and "C" streams, riparian vegetation is a significant controlling influence in maintaining stream bank stability. In these streams the roots of vegetation stabilize stream banks, retard erosion, and create overhang cover for fish. The vegetation's root matrix holds soil in place and reduces soil moisture content. Low soil moisture may reduce soil pore pressure and thus increase soil stability. The Metro area has numerous "B" and "C" streams where riparian vegetation is critical to maintaining stream bank stability.

Another factor involved in maintaining channel stability includes the recruitment of woody debris. Most woody debris in streams is derived from within 31 m (102 ft) of the bank (Bottom et al., 1983). In the Pacific Northwest, wood and organic debris influences stream bank stability, sediment storage, bank erosion and water quality. The stability and biological functions of some streams are linked to the type, amount and extent of large woody debris. The presence of large woody debris may change the slope of the bank and stream velocity, directly influence sediment storage and increase channel stability (Rosgen, 1996).

Recent research in the Pacific Northwest suggests that a threshold for urban stream stability exists at about 10 percent imperviousness in the watershed (Booth, 1991; Booth and Reinelt, 1993). Watershed development beyond this threshold consistently resulted in unstable and eroding channels.

7.3 Sediment Reduction

Sediment is a natural component of streams. Major disruptions, such as timber harvests, agricultural activities and urbanization, however, result in sediment delivery exceeding natural levels of suspended sediment and bedload movement. Factors such as steep slopes and unstable soils increase the rate of sedimentation. This increase in deposited and suspended sediment lowers water quality, contaminates salmon gravel and spawning beds, fills pools, and changes invertebrate composition (Budd et al., 1987, Vaux, 1962, McNeil, 1964, Cooper, 1965, Koski, 1966). Vegetated corridors are important because they filter the flow of sediment and debris, they stabilize streambanks and wetland edges and promote infiltration (Shisler et al., 1987). During flood flow conditions, water flows from the stream channel into and through the vegetated corridor. This is called "overland flow", providing filtration and storage of flood flows in the vegetated corridor.

The effectiveness of a vegetated corridor in removing sediments will vary according to a number of conditions, such as: filter width, type of vegetation, slope, rate of flow, soil type, depth of water table, pollutant concentration and land use.

The following section discusses how the width of the vegetated corridor, type of vegetation, rate of flow influences, and type of slope storage potential determine the sedimentation rate.

7.3.1 Width of the Vegetated Corridor

Alan Johnson and Diane Ryba (1992) summarized various research efforts and determined that the width of vegetated corridors recommended by various authors ranged from 3 m to 122 m (10-400 ft). A width of 3 m was effective in removing sediments in sandy soil; a larger width of 122 m was found to be necessary in clay soil. The remaining authors suggested 30 m to 38 m (98-

125 ft) (Moring, 1982; Karr and Schlosser, 1977) and one concluded that 50 percent of the deposition occurred in 88 m (289 ft).

Castelle et al. (1994) showed that vegetated corridors vary in their ability to remove sediment. This may be because of site specific conditions including slope and soil types. Ghaffarzadeh et al. (1992) found that a 9-m (30 ft) grass vegetated filter strip removed 85 percent of sediment from agricultural waste waters on 7 and 12 percent slopes. Young et al. (1980) found that a 24-m (80-ft) vegetated corridor was required to reduce suspended sediment in the feedlot runoff by 92 percent. Lynch et al. (1985) concluded that a 30 m (94-ft) vegetated corridor between logging activities and stream was sufficient to remove 75 to 80 percent of the suspended sediment in stormwater. However, Schellinger and Clausen (1992) determined that a 23m (75 ft) filter strip removed only 33 percent from dairy runoff.

Some researchers have determined that a nonlinear relationship exists between vegetated corridor and sediment trapping efficiencies (Desbonnet et al., 1994; Castelle and Johnson, 1997; Wong and McCuen, 1982). A nonlinear relationship is when the capacity of removing sediment does not directly increase with the width of the vegetated corridor. Desbonnet et al. (1994) concluded that a 25-m (82-ft) wide vegetated corridor removed 80 percent of sediment inputs, but only slight increases in sediment removal were expected with widths greater than 25 m (82 ft). Thus, disproportionately larger corridors are required to remove 90 percent of sediments from the runoff

Desbonnet et al. (1994) quantified the relationship between width and removal efficiency and demonstrated that the vegetated corridor width must increase by a factor of 3.5 in order to achieve a 10 percent increase in sediment reduction. This relationship is partly due to the distribution of soil particle size, and the different rates at which different sized particles may drop out of the runoff (i.e., gravel settles before silt) (Castelle and Johnson, 1997). Other factors that influence this sediment control include slope, vegetation type, and water velocity.

7.3.2 Type of Vegetation

Vegetation can stop erosion and sedimentation from overland runoff in numerous ways. For example, exposed tree roots and downed trees may block flow by forming a physical barrier which slows surfacewater and mechanically traps sediment and debris. Darling et al. (1982) assessed an Oregon State University study that examined, among other issues, vegetated corridor stability over time. The study did not directly address corridor widths but concluded that the best-functioning vegetated corridors were enhanced by high vegetative cover and dense stands of trees, rather than by sparse vegetation or individual trees protruding above an understory. This vegetative cover increases soil stability and decreases its susceptibility to erosion.

7.3.3 Type of Flow

In order for vegetated corridors to effectively remove sediments, the surface flow through the vegetation must be slow, shallow and uniform (Broderson, 1973; Dillaha et al., 1986). Surfacewater runoff should progress as shallow "sheet flow" and not become channelized as it moves across the corridor area. Factors that can reduce channelization include high vegetation density and rough surfaces. Rough surfaces result in greater pollutant and sediment removal than smooth surfaces (Flanagan et al., 1986;).

Field tests on the East coast have indicated that stormwater runoff tends to move in discrete channels rather than in a sheet flow (Desbonnet et al., 1994). Channelization of flow through the

vegetated corridor was cited as a major problem and limitation to vegetated corridor effectiveness on agricultural lands in the state of Virginia. Nearly all of the vegetated corridors inspected needed some form of maintenance to reduce channelization.

Broderson (1973) studied the impact of logging activities in three watersheds in western Washington (Green River, North Fork Snoqualmie River, and South Fork Tolt River). He noted that vegetated corridors will have little or no effect on sediment removal if the sediment-laden water flows across the corridor as channelized flow. Vegetated corridors can only be effective if they resist channelization and maintain overland flows as sheet flow. Broderson found that 16-m (51-ft) vegetated corridors were sufficient for controlling sedimentation from logging operations on less than a 50 percent slope, while steeper slopes required wider vegetated corridors. Studies have concluded that a maximum width of 62 m (203 ft) would control sediments under the most extreme conditions (Broderson, 1973; .

Slopes with surface irregularities, such as live and standing and downed dead trees, are capable of storing water which results in an increase in sediment filtration (Megahan and Ketcheson, 1996).

7.3.4 Urban application

A Bear-Evans Creek study in King County, Washington examined reach surveys from sampling sites with different soil, slopes and vegetation types (Budd et al., 1987). They concluded based on visual characteristics, but no experimental data that 15 m (49 ft) vegetated corridors adequately protected streams at most sites. This includes intermittent as well as perennial reaches of the watershed. They recommended that under conditions of poor habitat, extremely steep bank slopes and extensive wetlands the corridor widths should be variable. They recommended additional studies where stream bank slopes exceeded 40 percent.

7.4 Excess Nutrient and Metal Removal

Excess nutrients and metals can severely impact water quality. Excess nutrients, such as phosphorus and nitrogen in fertilizers, can result in major algae blooms. As these blooms die off, algal remnants settle into interstitial gravel space depriving salmon eggs the necessary conditions to complete their life cycle. Also, algae may deplete dissolved oxygen and increase pH, resulting in fish kills (Meehan, 1991).

Metals are naturally present in varying concentrations (referred to as the "background" level) in all surface waters, and many are required by fish in trace quantities for proper physiological functions. Excess metals in water directly impact biota and indirectly impact human health.

Heavy metals are typically found in urban runoff. For example, Klien (1985) reported on a Chesapeake Bay study where urban runoff was the source of 6 percent of the cadmium, 1 percent of the chromium, 1 percent of the copper, 19 percent of the lead, and 2 percent of the zinc. Metals such as cadmium, lead, mercury and zinc among many others may produce toxic effects alone, in combination, or synergistically increase or reduce toxicity of water to fish and other biota. Impacts of metals on fish have been summarized by numerous authors (Meehan, 1991).

Vegetated corridors can remove metals and excess nutrients from runoff and overland flow by filtering water, via plant uptake, and microbial activity. Other factors that influence the efficiency

of vegetated corridors include width of the vegetation, vegetation type, slope of ground, soil type, concentration of the pollutant and pollutant characteristics. This section will discuss the width of the vegetated corridor and type of vegetation and soil required to increase the efficiency of vegetated corridors to remove nutrients and metals.

7.4.1 Width of Vegetated Corridor

The width of vegetated corridors required to remove nutrients ranged from 4 m to 43 m (13-141 ft), with four of the six reviewers recommending widths between 16 m and 30 m (53-98 ft) (Johnson and Ryba, 1992). The percent of reduction of nutrients was not discussed in the above paper. Doyle et al. (1977) found that 13-m (41-ft) forested and 13-m (43-ft) grass vegetated corridors reduced nitrogen, phosphorus, potassium and fecal bacteria. Lynch et al. (1985) found that 31-m (100-ft) vegetated corridors reduced nutrients from logging operations.

Researchers have determined that there is a nonlinear relationship between vegetated corridor width and nutrient uptake (Desbonnet et al., 1994; Castelle and Johnson, 1997). This nonlinear relationship is partly because most pollutants are attached to sediments, and different sized sediments settle differentially. This is true for metals (Zirschky et al., 1989), pesticides (Lake and Morrison, 1977) and phosphorus (Karr and Schollser, 1977). Those pollutants attached to large size sediment particles will tend to settle before those attached to smaller sized particles. Some chemicals, particularly soluble nutrients, are readily taken up by vegetation which removes chemicals from runoff and groundwater.

7.4.2 Type of Vegetation

One of the most important factors affecting pollutant removal is the type of vegetation. Forested and grassy areas remove the soluble components of phosphorus and nitrogen from the soil. Numerous controlled experiments have been conducted that show grass strips have a greater potential of removing nitrogen than forested areas. However, these grass areas were treated with nitrogen fertilizers; thus, providing a greater representation of their overall removal potential. Studies conducted with forested vegetated corridors did not include fertilizer treatments. Woody-stemmed species generally have deeper and more well-developed root systems than grasses. When root systems are greater than 0.6 m (approximately 2 feet), the vegetated corridor may also be effective in removal of pollutants from groundwater (Ehrenfeld, 1987; Groffman et al., 1991).

Forested vegetated corridors, subsurface flows, and processes such as denitrification are important in removing phosphorus and nitrogen from runoff. Peterjohn and Correll (1984) found that forested vegetated corridors absorbed 89 percent nitrogen (N) and 80 percent phosphorus (P). Wooded vegetated corridors in the Maryland coastal region were found to remove as much as 80 percent of excess P and 89 percent of excess N, most of it in the first 19 m (62 ft) (Shisler et al., 1987). Peterjohn and Correll (1984) suggested that the major pathway of N loss in forests was in subsurface flows. Jordan et al. (1993) also noted the importance of shallow groundwater as the hydrologic component in which most N is removed from downslope flows. They suggested that plant uptake and denitrification may be important processes determining N removal.

Grasses are a desirable component of the vegetation comprising the vegetated corridor. Thickly planted, clipped grasses provide a dense barrier to horizontal flow. This increases the roughness of the terrain which reduces flow velocity, promotes sheet flow, and increases removal efficiency of sediment, and adsorbed pollutants. Low cropped grasses may not be adequate in areas that

flood frequently, as they are rendered useless when flooded. Three to four inch grasses tend to be effective in reducing nutrients from overland flow (Desbonnet et al., 1994). Madison et al. (1992) found that 5-m (15-ft) grassy vegetated corridors reduced 90 percent of nutrients such as ammonium, nitrate and phosphorus (equivalent of 1 year and 10 year events). Although grasses are effective vegetated corridors, they lack the versatility required of multiple-use vegetated corridors for preservation of wildlife habitat or maintaining channel stability.

Native grasses are known to assist in metal and nutrient uptake. In a study on the impact of effluent on a natural marsh, Murdock and Capobianco (1979) found that manna grass (*Glyceria grandis*) took up 80 percent of the available P, and also took up significant quantities of Pb, Zn and Cr. Gallagher and Kibbey (1980) found that *Deschampsia cespitosa*, *Distichlis spicata* and *Salicornia virginica* accumulated copper from contaminated soils.

7.4.3 Type of Soil

Soils with high permeability generally provide greater filtration of sediment and attached pollutants (Chescheir et al., 1988; Lee et al., 1989). Once pollutants enter the soil layer, they can become incorporated through the physical, chemical, and biological interactions. Some highly permeable soils, such as sandy soils allow for rapid movement of water into the groundwater system with only minimal removal of pollutants by physical or chemical adsorption. Well-drained soils are only half as effective for the removal of nitrogen as poorly drained soils. Ehrenfeld (1987) found that nitrogen from septic leachate moved through permeable sandy soil of the New Jersey Pinelands into a nearby waterway.

Poorly drained soils (such as clay) generally retain water long enough and often remove pollutants under favorable conditions. Poorly drained soils with higher organic content are more apt to promote the growth and maintenance of denitrifying bacteria and thus accomplish higher nitrogen removal than well drained soils (; Peterjohn and Correll, 1984; Groffman et al., 1991). Clay soils have a high affinity for binding positively charged pollutants, particularly metals, by acting as a cation exchange site. Provided that clay soils are not compacted and runoff is slow, pollutant removal via chemical binding may be significant (Zirschky et al., 1989).

7.4.4 Urban applications

It is widely recognized that some nutrients commonly found in urban areas, such as phosphorus, can be reduced when best management practices (BMPs) are installed, such as storm water detention ponds, wetlands, grassy swales and infiltration ponds. Some performance monitoring indicates that BMPs can reduce phosphorus loads by as much as 40-60 percent, depending on the practice selected (Schueler, 1994a).

7.5 Moderation of Stormwater Runoff

The impact of stormwater runoff is a common problem in urban areas. As impervious surface (roads and building rooftops) increases in a watershed, hydrological patterns change, resulting in excessive amounts of water traveling more rapidly from impervious surfaces into streams and wetlands. Schueler (1994) quantified the relationship between impervious surface and runoff: the total runoff volume from a one-acre parking lot is about 16 times that produced from an undeveloped meadow. As rainfall increases, the water collection network expands along ephemeral channels, perennial channels and linear hillslope depressions resulting in all these channels becoming longer and wider, thus decreasing channel stability.

In nonurban areas, surfacewater and groundwater are connected hydrologically, and the streamflows are maintained throughout the year. In urban areas, impervious surface prevents stormwater from percolating into the soil or groundwater. Impervious surface accelerates this runoff. This results in a lack of groundwater recharge to streams, which results low flows and high water temperatures during the summer. High runoff and peak flow events impact channel conditions and fish habitat. During the summer, low flow and high temperatures reduce fish diversity, macroinvertebrate populations, and fish spawning activity (Scott et al., 1986).

Vegetated corridors play a key role in moderating seasonal water level fluctuations in streams and wetlands. Factors that influence the rate of stormwater flow are vegetation, leaf litter (humus content) and sheet flow of water. Vegetation can slow the flow of runoff and allow it to percolate into the ground. The soil then releases this water into streams and wetlands over an extended period of time resulting in stabilization of water levels during winter and summer. Other factors that increase the absorption and infiltration of water includes litter created by vegetation which increases the humus content in the soil. Bertulli (1981) concluded from his study of a southern Ontario, Canada watershed that adjacent forest vegetation and litter lowered stream flow 40 percent in a 100-year flood event.

7.5.1 Urban applications

Castelle et al. (1992) noted that when a catchment area for a wetland has been urbanized and the natural infiltration system has been disrupted, the role of vegetated corridors in reducing abnormal water level fluctuations is less significant. According to Schueler (1995), ideal vegetated corridor conditions are rarely encountered in urban watersheds because of the greater percentage of impervious surface in the watershed. Impervious surface increases the velocity of water which results in water being channelized. Schueler recommends using BMPs to reduce water quantity prior to reaching the vegetated corridor.

7.6 How Title 3 Addresses Water Quality

The DEQ has identified 34 stream/river segments (over 213 miles) and lakes in the Metro region that do not meet water quality standards (Appendix B). The standards most frequently exceeded is temperature. DEQ suspects other waterbodies in the Metro region have water quality problems, but corroborating data are lacking due to insufficient monitoring stations and limited resources. DEQ has established TMDLs for the Tualatin River and is developing TMDLs and a management strategy for the Columbia Slough (DEQ, 1994). TMDLs for dioxin have been set for the Willamette and Columbia Rivers. Management plans have not been developed for any of the other listed waterbodies.

In the early 1990's, most local jurisdictions started requiring 25-foot vegetated corridors along streams and wetlands. Development prior to that time was not subject to vegetated corridor requirements which means that many stream and wetland corridors are degraded or developed completely. It is important to protect the remaining vegetated corridors and revegetate wherever possible. Currently, most local jurisdictions do not provide added protection for slopes over 25 percent along streams. Current and past land use practices have not left adequate area for streams and wetlands to function properly. Nationally, reducing non-point pollution is focused on controlling pollution at its source. Awareness is growing of the role of vegetated corridors, and a movement to reduce impervious surfaces and conduct watershed planning is mounting. There is still an inherent conflict, however, between achieving regional growth management density goals and natural resource protection. The challenge is to balance and address this conflict.

The Title 3 performance standards addressing water quality are:

- establish 50- or 200-foot vegetated corridors (refer to Title 3 for which applies to a given area)
- retain vegetation in stream corridors and around wetlands
- require erosion prevention and sediment control regionwide
- prohibit hazardous materials in stream corridors

Based on the scientific literature review, Title 3's WQRA is within the recommended range of widths, but it is at the low end because the region is not focusing on fish and wildlife habitat at this time (most studies conclude fish and wildlife habitat requires wider corridors). It is important to emphasize that 50 feet is at the low end of the range, *but it is in the range*.

The functions the 50-foot WQRA provides, in order of their effectiveness: 1) moderating temperature, 2) stabilizing stream channels, and 3) removal of sediment and nutrients (sediment from construction sites is also addressed with erosion control). The degree to which the WQRA provides these functions is dependent on site conditions. In addition, the degree to which the WQRA removes sediment and nutrients is dependent on the water maintaining sheet, rather than channel, flow. Very few studies were found to support a vegetated corridor of less than 50 feet. On the contrary, most studies show that vegetated corridors should be greater than 50 feet with 30m (98 feet) cited most often. The 50-foot corridor requirement is greater than most jurisdictions currently require.

Rather than provide a single vegetated corridor width, most authors gave a range of widths that will protect or provide any particular beneficial function. Science strongly supports the fact that vegetated corridors provide many functions. An optimum vegetated corridor width often depends on the function of most concern to be protected and local site conditions. Table 2 and Figure 5 summarize vegetated corridor sizes to protect the beneficial functions discussed in this paper.

Table 2. Range of Widths to Maintain Beneficial Function

Beneficial Function	Range
Moderation of Water Temperature	15 to 30 m (49.2 to 98.4 ft)
Stream Channel Stability	20 to 30 m (65.6 to 98.4 ft)
Sediment Reduction	3 to 122 m (9.8 to 400.3 ft)
Excess Nutrient and Metal Removal	4 to 43 m (13.1 to 141.1 ft)

Six authors have recognized the importance of increased vegetated corridors on steep slopes. Of these six authors, Broderson (1973) has recommended 200-foot corridors as optimal to control overland flow of sediment under the most extreme conditions. Vanderhom and Dickey (1975) recommend 850 feet on 4 percent slope as being effective in removing 80 percent of nutrients; and Hausman and Pivet (1978) recommended a maximum of 50 feet for slopes greater than 70 percent. Three authors have recommended at least 200 feet or larger vegetated corridors (regardless of slope) to reduce sediment run-off and bacteria. Of these three papers, one author recommended an upper limit of 200 feet for vegetated corridors to adequately remove smaller-size particles found in urban runoff (OWML, 1983).

Many jurisdictions in the Portland metropolitan region have limited or prohibited the clearing and development on slopes greater than 25 percent. The Maryland Chesapeake Bay Critical Areas Program prohibits clearing on slopes greater than 25 percent (Chesapeake Local Government Advisory Committee, 1988). The recommendation for 200 foot vegetated corridor widths is therefore based on the best available scientific findings, best professional judgment of Metro staff and examples of existing development code in the Metro region and elsewhere which prohibits such development on steep slopes to protect water quality, reduce public safety hazards, reduce soil erosion and slope failure.

8. EROSION AND SEDIMENT CONTROL

Erosion is the movement of soil particles caused by man-made or natural disturbances. Erosion produces sediment that moves in suspension from its site of origin by air, water or gravity. Erosion and sediment production in urban areas most frequently occur when stormwater carries soil particles from disturbed areas, usually construction sites. Initial clearing, grading, and vegetation removal prior to construction expose the soils making them vulnerable to erosion. Without proper controls installed and maintained at the site, enormous quantities of sediment are delivered to wetlands and streams causing water quality problems (Pitt, 1985).

8.1 The Problem With Large Amounts of Sediment

Soil loss is measured in two ways: a rate of loss or tons per acre per year (ton/ac/yr) and absolute tons of soil lost per year. Uncontrolled construction site sediment loads have been reported to be at a rate of 35 to 45 tons per acre per year. Loadings from undisturbed woodlands are typically less than 1 ton per year (EPA, 1993). The U.S. Natural Resources Conservation Service found for the Willamette basin an estimated 1.8 million tons of soil are lost per year from water erosion. That number reflects agricultural activities on private land and does not include soil loss from forestland, federal land, urban areas or transportation facilities (NRCS, 1992).

Each year in the United States, an estimated 80 million tons of sediment are washed from construction sites into receiving streams and lakes. The estimated cost to replace this amount of topsoil is about \$41.6 billion per year (Goldman et al., 1986). Table 3 shows comparative rates of sediment loss from construction versus other land use activities (EPA, 1993).

Table 3. Erosion and Sediment Rates Associated With Construction

Location	Rate	Reference
Wisconsin	Erosion rates range from 30-200 ton/ac/year (10 to 20 times those of cropland)	Wisconsin Legislative Council, 1991
Franklin County, FL	Sediment yield (ton/ac/yr): forest <0.5 rangeland <0.5 tilled 1.4 construction site 30 established urban <0.5	Franklin County, FL

8.2 Impacts From Large Amounts of Sediment

Erosion not only causes loss of productive soil, but also damages infrastructure and degrades water quality and aquatic life. When water enters larger slower-moving bodies of water, such as lakes, reservoirs and large rivers, it slows allowing sediment to settle out. Excessive sediment accumulation decreases reservoir storage capacity, interferes with navigation and increases risks of flooding. Dredging costs are incurred to remove sediment from reservoirs, streams and navigable channels (Goldman et al., 1986).

Increased sedimentation exacerbates another water quality problem, excess nutrients. Nutrients, such as nitrogen and phosphorus, and other chemicals are often attached to sediment particles

from past fertilizer and pesticide applications. See Section 8.4 for more information about problems resulting from excess nutrients, heavy metals and other pollutants.

Sediment suspended in water endangers aquatic life by reducing the amount of sunlight available to aquatic plants, covering fish spawning areas and food supplies, and clogging the gills of fish. This reduces fish, shellfish and plant production, and decreases the overall productivity of lakes and streams. Human recreational opportunities are also impacted because of the decreased fish population and unappealing, turbid appearance of the water (Mostaghimi et al., 1994).

It should also be noted that not only is sediment a water quality concern, but the loss of plant nutrients and topsoil are also problems. Soil loss results in an impaired ability to support healthy vegetation and in reduced water infiltration rate of the soil (Woodward-Clyde, 1996).

8.3 Erosion Prevention and Sediment Control Measures

Measures dealing with erosion prevention and sediment control are intended to accomplish the following: 1) decrease or, to the maximum extent possible, prevent erosion from occurring and, 2) for the erosion that does occur, retain sediment onsite during and after construction. Such measures are referred to as "Best Management Practices" or "BMPs." Examples of erosion control measures are: schedule clearing and grading to be done during the dry season and phased construction to avoid areawide clearance of a site. Sediment control measures deal with the sediment produced from inadequate erosion prevention measures and include such things as silt fences and sediment basins.

There are two major categories of BMPs: structural and nonstructural. Structural practices include designed and constructed mechanisms to prevent erosion or remove sediment and include such examples as:

- silt fencing and hay bales
- inlet protection
- gravel construction entrance
- seeding and mulching

Examples of nonstructural practices are:

- mulching and seeding exposed areas
- training programs and materials for contractors and others involved with the design, installation, operation and maintenance of these facilities
- phased construction which minimizes the area of bare soil exposed at one time
- discouraging development of areas susceptible to erosion and sediment loss
- well-staffed enforcement departments to inspect sites and ensure proper installation and maintenance of the facilities
- incorporating existing site drainage into development design

Erosion controls have distinct advantages over sediment controls. Erosion controls reduce the amount of sediment transported off-site, thereby reducing the need for sediment controls. When erosion controls are used, the size of sediment control structures and associated maintenance are usually reduced. For these reasons, Title 3 focuses on erosion prevention. Often, the best solutions are to prevent the problem from even occurring.

The effectiveness of these mechanisms depends on choosing the control appropriate for the site, properly installing the control and properly maintaining it over time (EPA, 1993).

Since the early 1970's, King County, in Washington state, has required the use of BMPs to reduce nonpoint source pollution. In the 1990's a technical advisory committee was formed to evaluate the effectiveness of BMPs in reducing sediment. Its conclusion was that BMPs such as buffers, clearing limits, mulching, seeding/sod, netting, filter fences, berms, check dams, gradient terraces, dispersion structures, and gravel cone and riser outlets were effective 50 percent of the time. Only one method, staged clearing, was effective all the time. Practices such as using chemical stabilizers, plastic sheeting and straw bales were ineffective most of the times (Tiffany, et al., 1990)

A number of states, such as Delaware and Maryland, recommend using phased construction and revegetation to control erosion. Phased construction limits the total area of bare soil exposed at any one time. In Delaware, sediment and stormwater regulations permit no more than 20 acres (8 ha) of land to be cleared at a time. Revegetation is required and its time frame specified. Revegetation timetables are adjusted to reflect seasonal rainfall patterns (Horner et al., 1994).

Incorrect installation and inadequate maintenance are often cited as the major causes for failure of structural BMPs. BMPs must be properly planned, installed and maintained per an Erosion and Sediment Control Plan (Tiffany, et al., 1990). After every significant rain event, construction sites must be visited and erosion control measures visually inspected (Wright, 1997).

Detailed information for all of different types of BMPs and construction specifications are beyond the scope of this paper. For more information, refer to publications by Horner and Schueler and the *Erosion Prevention and Sediment Control Plans -- Technical Guidance Handbook* (City of Portland and Unified Sewerage Agency, 1994) (hereafter referred to as the "Erosion Handbook").

8.4 Regulatory Requirements

Federal regulations for erosion control are part of the Clean Water Act. The USEPA published final regulations (40 CFR 122.26) that establish application requirements for NPDES stormwater permits for specific categories of industries and construction activities of five acres or more. DEQ has written state permitting requirements for industrial and construction activities consistent with the federal rules. In urban areas, DEQ designates a qualified local surfacewater agency to assume permit issuance responsibility.

For industrial permits, detailed Stormwater Pollution Control Plans must be prepared. For construction activities resulting in the disturbance of five or more acres, detailed Erosion and Sediment Control Plans (ESCP) must be prepared and implemented to prevent the discharge of significant amounts of sediment into surface waters. ESCPs must be approved before the start of construction. In the Portland region, ESCPs are prepared using the techniques and methods contained in the Erosion Handbook. This book provides, in detail, a menu of BMP options and engineering specifications for design and construction.

8.5 How Title 3 Addresses Erosion Prevention and Sediment Control

Runoff from construction sites is by far the largest source of sediment in developing urban areas. Erosion rates from natural areas, such as undisturbed forested lands, are typically less than one

ton/acre/year, while erosion from construction sites ranges from 7.2 to over 200 tons/acre/year (EPA, 1993).

Current federal and state regulations fall short of adequately protecting water resources from erosion and sediment produced by construction activities. Their major shortcoming is that they only apply to sites larger than five acres. Construction activities that occur on less than five acres are not required to address erosion. Significant erosion problems have been reported from sites smaller than five acres. Infill development, which is being encouraged in the Portland area to increase density, will increase the number of small sites being developed (Woodward-Clyde, 1996).

Title 3 is consistent with and exceeds federal and state standards. Title 3 emphasizes erosion prevention to reduce the amount of sediment that is detached during construction and to prevent sediment from entering runoff. Title 3 requires a permit and an ESCP which details the BMPs to be used. BMPs must be tailored to specific site conditions and follow the other requirements described in the Erosion Handbook. This handbook will be used as the standard and applied regionwide.

Title 3 exceeds federal and state requirements by requiring erosion and sediment control *for all new development* within the Metro boundary regardless of the size of the development. Expansion of this regulations will be a major improvement over current erosion prevention and sediment control regulations.

9. CONCLUSIONS

This paper has shown how Title 3 addresses three major areas:

Flood Area Management

Title 3 standards will better limit hazards associated with flooding. Title 3 applies not only to the FEMA 100-year floodplain, but all land which has physical or historical evidence of flooding. As many communities have found, minimum federal flood standards are not adequate protection against flooding. Title 3's balanced cut and fill standard exceeds federal requirements. Communities enacting these standards may be eligible for reduced flood insurance rates. Future watershed-wide stormwater management coupled with these floodplain management standards will further reduce future flood hazard.

Water Quality Protection

Title 3 is an important step to more effectively using land use practices to protect water quality by establishing standards for protecting vegetated corridors.

Erosion and Sediment Control

Comprehensive, region-wide erosion and sediment control requirement of Title 3 will significantly reduce the sediment loading to receiving streams. It applies to all new development regardless of size, whereas current regulations only require it on sites five acres or larger.

10. NEXT STEPS

Title 3 addresses certain aspects of flood control and water quality protection. Three additional steps have been identified to more comprehensively address these topics:

Regional Goal 5 Assessment	Title 3 recommends local governments address fish and wildlife habitat protection. Title 3 charges Metro to carry out a regional Goal 5 assessment within 18 months of the adoption of Title 3. This will involve Metro evaluating local government's existing Goal 5 programs and make recommendations to protect regionally-significant Goal 5 resources.
Performance Measures	To monitor the effectiveness of Title 3, performance measures will be developed as part of Title 9's performance measures. One possible measure may be monitoring water quality trends in the region's streams. Existing water quality and quantity data generated by USGS, DEQ and other agencies should be analyzed, data gaps identified and additional data gathered.
Watershed Planning	<p>Throughout urban watersheds, runoff from ever-increasing amounts of impervious surface impacts vegetated corridors. Watershed planning is necessary to develop strategies to more adequately handle stormwater and impervious surface reduction. Best management practices must be identified to detain and moderate stormwater as it enters the vegetated corridors. Watershed planning would include monitoring, analysis and enforcement of plan implementation. Watershed plans have been developed and are being implemented in the region. These plans will be used by Metro in its future watershed planning activities. The goal would be to ensure regional consistency for watershed plans.</p> <p>As required in the Metro Charter, Metro plans to determine tasks and a timeline for watershed planning which will be included in the Regional Framework Plan in December 1997.</p>

GLOSSARY

Beneficial uses - consistent with the Oregon Department of Water Resources' definition which is: an instream public use of water for the benefit of an appropriator for a purpose consistent with the laws and the economic and general welfare of the people of the state and includes, but is not limited to, domestic, fish life, industrial, irrigation, mining, municipal, pollution abatement, power development, recreation, stockwater and wildlife uses.

Denitrification - an act or process of denitrifying, specifically reduction of nitrates or nitrites commonly by bacteria and usually resulting in the escape of nitrogen into the air.

Flood area - includes all land contained in the 100-year floodplain as defined by the Federal Emergency Management Agency in official maps adopted by the local government.

Hyporheic zone - is the area adjacent to the stream or river which can vary from a few centimeters to a few meters in width or depth, and is hydrologically connected to the channel.

Impervious surface - any surface which cannot be effectively penetrated by water. Examples include buildings, parking lots, roads and compacted soils.

Infill development - Developing vacant parcels or redeveloping existing property to achieve higher density in urban areas as an alternative to development in outlying rural areas.

Water Quality Resource Area as defined in Title 3 - 50 feet from top of bank on both sides of streams for areas of less than 25 percent slope, and 200 feet from top of bank on either side of the stream for areas greater than 25 percent slope, and 50 feet from the edge of a mapped wetland. Streams draining 50-100 acres have 30-foot WQRAs.

TITLE 3: WATER QUALITY AND FLOOD MANAGEMENT CONSERVATION

Section 1. Intent

To protect the beneficial uses and functional values of resources within the Water Quality and Flood Management Areas by limiting or mitigating the impact on these areas from development activities.

Section 2. Requirement

Cities and counties shall ensure that their comprehensive plans and implementing regulations protect Water Quality and Flood Management Areas pursuant to Section 4. Exceptions to this requirement will be considered under the provisions of Section 7.

Section 3. Implementation Process for Cities and Counties

Cities and counties are hereby required to amend their plans and implementing ordinances, if necessary, to ensure that they comply with this Title in one of the following ways:

- A. Either adopt the relevant provisions of the Metro Water Quality and Flood Management model ordinance and map entitled Metro Water Quality and Flood Management Conservation Area Map; or
- B. Demonstrate that the plans and implementing ordinances substantially comply with the performance standards, including the map, contained in Section 4. In this case, the purpose of this map is to provide a performance standard for evaluation of substantial compliance for those jurisdictions who choose to develop their own map of water quality and flood management areas ; or
- C. Any combination of A and B above that substantially complies with all performance standards in Section 4.

Section 4. Performance Standards

- A. **Flood Mitigation.** The purpose of these standards is to protect against flooding, and prevent or reduce risk to human life and properties, by allowing for the storage and conveyance of stream flows through these natural systems.

The plans and implementing ordinances of cities and counties shall be in substantial compliance with the following performance standards:

1. Prohibit development within the water quality and flood management area; or
2. Limit development in a manner that requires balanced cut and fill; unless the project is demonstrated, by an engineering study, that there is no rise in flood elevation or that it will have a net beneficial effect on flood mitigation.

3. Require minimum finished floor elevations at least one foot above the design flood height or other applicable flood hazard standard for new habitable structures in the Water Quality and Flood Management Area.

4. Require that temporary fills permitted during construction shall be removed.

B. Water Quality. The purpose of these standards is to protect and allow for enhancement of water quality associated with beneficial uses as defined by the Oregon Water Resources Department and the Oregon Department of Environmental Quality.

The plans and implementing ordinances of cities and counties shall be in substantial compliance with the following performance standards:

1. Require erosion and sediment control for all new development within the Metro boundary as contained in the Metro Water Quality and Flood Management model ordinance.

2. Require to the maximum extent practicable that native vegetation cover is maintained or re-established during development, and that trees and shrubs in the Water Quality and Flood Management Area are maintained. The vegetative cover required pursuant to these provisions shall not allow the use of "Prohibited Plants for Stream Corridors and Wetlands" contained in the Water Quality and Flood Management Model Code adopted by the Metro Council.

3. Prohibit new uses of uncontained areas of hazardous materials as defined by DEQ in the Water Quality and Flood Management Areas; and

C. Protect the long term regional continuity and integrity of Water Quality and Flood Management Areas

Standards: Local jurisdictions shall establish or adopt transfer of density within ownership to mitigate the effects of development in Water Quality and Flood Management Areas, or through Transferable Development Rights (TDRs), which have substantially equivalent effect as the Metro Water Quality and Flood Management Model Ordinance.

Metro encourages local government to require that approvals of applications for partitions, subdivisions and design review actions must be conditioned with protecting Water Quality and Flood Management Areas with a conservation easement, platted as a common open space, or through purchase or donation of fee simple ownership to public agencies or private non-profits for preservation where feasible. Metro and cities and counties shall recognize that applications involving pre-existing development within the Water Quality and Flood Management Areas shall be exempted from the provisions concerning conservation easements and purchase or donation of fee simple ownership to public agencies or private non-profits for preservation.

Section 5. Fish and Wildlife Habitat Conservation Area

A. The purpose of these standards is to conserve, protect, and enhance fish and wildlife habitat within the fish and wildlife habitat conservation areas identified on the water quality and flood management area map by establishing performance standards and promoting coordination by Metro of regional urban water sheds.

B. Fish and Wildlife Habitat Conservation Area Recommendations

These areas shall be shown on the Water Quality and Flood Management Area Map. Fish and Wildlife Habitat Conservation Habitat Areas generally include and/or go beyond the Water Quality and Flood Management Areas. These areas shown on the map are Metro's initial inventory of significant fish and wildlife habitat conservation areas. Metro hereby recommends that local jurisdictions adopt the following temporary standards:

1. Prohibit development in the Fish and Wildlife Conservation Areas that adversely impacts fish and wildlife habitat.

Exceptions: It is recognized that urban development will, at times, necessitate development activities within or adjacent to Fish and Wildlife Habitat Conservation Areas. The following Fish and Wildlife Habitat Conservation Mitigation Policy, except for emergency situations, applies to all the following exceptions:

A project alternatives analysis, where public need for the project has been established, will be required for any of the exceptions listed below. The alternatives analysis must seek to avoid adverse environmental impacts by demonstrating there are no practicable, less environmentally damaging alternatives available. In those cases where there are no practicable, less environmentally damaging alternatives, the project proponent will seek alternatives which reduce or minimize adverse environmental impacts. Where impacts are unavoidable, compensation, by complete replacement of the impacted site's ecological attributes or, where appropriate, substitute resources of equal or greater value will be provided in accordance with the Metro Water Quality and Flood Management model ordinance.

- a. Utility construction within a maximum construction zone width established by cities and counties.
- b. Overhead or underground electric power, telecommunications and cable television lines within a sewer or stormwater right-of-way or within a maximum construction zone width established by cities and counties.
- c. Trails, boardwalks and viewing areas construction.
- d. Transportation crossings and widenings. Transportation crossings and widenings shall be designed to minimize disturbance, allow for fish and

wildlife passage and crossings should be preferably at right angles to the stream channel.

2. Limit the clearing or removal of native vegetation from the Fish and Wildlife Habitat Conservation Area to ensure its long term survival and health. Allow and encourage enhancement and restoration projects for the benefit of fish and wildlife.
3. Require the revegetation of disturbed areas with native plants to 90 percent cover within three years. Disturbed areas should be replanted with native plants on the Metro Plant List or an approved locally adopted plant list. Planting or propagation of plants listed on the Metro Prohibited Plant List within the Conservation Area shall be prohibited.
4. Require compliance with Oregon Department of Fish and Wildlife (ODFW) seasonal restrictions for in-stream work. Limit development activities that would impair fish and wildlife during key life-cycle events according to the guidelines contained in ODFW's "Oregon Guidelines for Timing of In-water Work to Protect Fish and Wildlife Resources."

C. Fish and Wildlife Habitat Protection

Within eighteen (18) months from the effective date of this functional plan, Metro shall complete the following regional coordination program by adoption of functional plan provisions.

1. Metro shall establish criteria to define and identify regionally significant fish and wildlife habitat areas.
2. Metro shall adopt a map of regionally significant fish and wildlife areas after (1) examining existing Goal 5 data, reports and regulation from cities and counties, and (2) holding public hearings.
3. Metro shall identify inadequate or inconsistent data and protection in existing Goal 5 data, reports and regulations on fish and wildlife habitat. City and county comprehensive plan provisions where inventories of significant resources were completed and accepted by a LCDC Periodic Review Order after January 1, 1993, shall not be required to comply until their next periodic review.
4. Metro shall complete Goal 5 economic, social, environmental and energy (ESEE) analyses for mapped regionally significant fish and wildlife habitat areas only for those areas where inadequate or inconsistent data or protection has been identified.

- 482 5. Metro shall establish performance standards for protection of regionally
483 significant fish and wildlife habitat which must be met by the plans implementing
484 ordinances of cities and counties.

485 **Section 6. Metro Model Ordinance Required**

486 Metro shall adopt a Water Quality and Flood Management Model Ordinance and map for use by
487 local jurisdictions to comply with this section. Sections 1-4 of this title shall not become
488 effective until 24 months after Metro Council has adopted a Model Code and map that addresses
489 all of the provisions of this title. Metro may adopt a Model Code and map for protection of
490 regionally significant fish and wildlife habitat. Section 5 of this title shall be implemented by
491 adoption of new functional plan provisions.

492 **Section 7. Variances**

493 City and county comprehensive plans and implementing regulations are hereby required to
494 include procedures to consider claims of map error and hardship variances to reduce or remove
495 stream corridor protection for any property demonstrated to be converted to an unbuildable lot by
496 application of stream corridor protections.

APPENDIX B. DEQ 303(D) LIST FOR THE METRO REGION

DEQ 303(d) Listed Streams and Rivers in the Metro Region, 1996

Stream/River Name	Length (in miles)	Reason(s) for Listing (see legend below)
Ash Creek	3.68	temp DO FC biocrit
Beaverton Creek	1.88	DO FC
Beaverton Creek	7.91	temp DO EC biocrit
Bronson Creek	6.52	temp DO EC chl-a biocrit
Butternut Creek	2.60	temp DO FC biocrit
Cedar Creek	2.38	DO FC chl-a
Cedar Mill Creek	5.84	temp FC biocrit
Chicken Creek	0.64	DO EC
Clackamas River	3.99	temp
Columbia River	18.46	temp pH TDG pest PCBs
Columbia Slough	20.18	temp DO FC pH nut chl-a pest PCBs diox met(Pb)
Council Creek	4.54	DO
Dairy Creek	1.64	temp EC
Fairview Creek	4.70	FC nut
Fanno Creek	13.93	temp DO EC chl-a
Gales Creek	0.99	temp DO EC
Hedges Creek	3.15	temp DO EC biocrit
Johnson Creek	3.96	temp DO EC biocrit
Johnson Creek	24.28	temp FC
McKay Creek	0.58	temp EC
Nyberg Creek	1.32	temp DO FC chl-a
Rock Creek (Wash.Co.)	1.86	biocrit
Rock Creek (Wash.Co.)	8.71	temp DO EC chl-a biocrit
Sandy River	9.10	temp
Spring Brook Creek	2.33	FC
Summer Creek	3.96	temp DO FC biocrit
Tryon Creek	5.05	temp
Tualatin River	13.22	temp EC
Willamette River	31.05	temp FC biocrit
Willow Creek	4.96	temp DO FC
TOTAL MILES	213.41	

303(d) Listed Lakes in the Metro Region

Lake Name	Reason for Listing (see legend below)
Blue Lake	algae weeds pH
Bybee Lake	algae weeds bio flowmod habmod pH
Fairview Lake	phos
Smith Lake	algae weeds bio flowmod habmod pH

Water Quality Parameter Legend

Abbrev.	Parameter	Abbrev.	Parameter
algae	Algae	nut	Nutrients
biocrit	Biological Criteria	nut (phos)	Phosphorus
DO	Dissolved Oxygen	PCBs	PCBs (see Toxics)
chl-a	Chlorophyll a	peri	Periphyton
diox	Dioxin (see Toxics)	pest	pesticides (see Toxics)
EC	E coli	pH	pH
FC	Fecal Coliform	sed	Sedimentation
flowalt	Flow Modification	TDG, TDGas	Total Dissolved Gas
habalt	Habitat Modification	temp	Temperature
met(Hg)	Metals - Mercury (see Toxics)	turb	Turbidity
met(Pb)	Metals - Lead (see Toxics)	tox(TBT)	Toxics - Tributyltin
NH3	Ammonia (see Toxics)		

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Regional Framework Plan



Framework Plan Purpose

- Written to conform with the requirements of Metro's home rule charter approved by the voters in 1992.
- Intended to coordinate all of Metro's growth management, transportation, greenspaces and water planning.
- Documents and integrates all planning work completed to date.

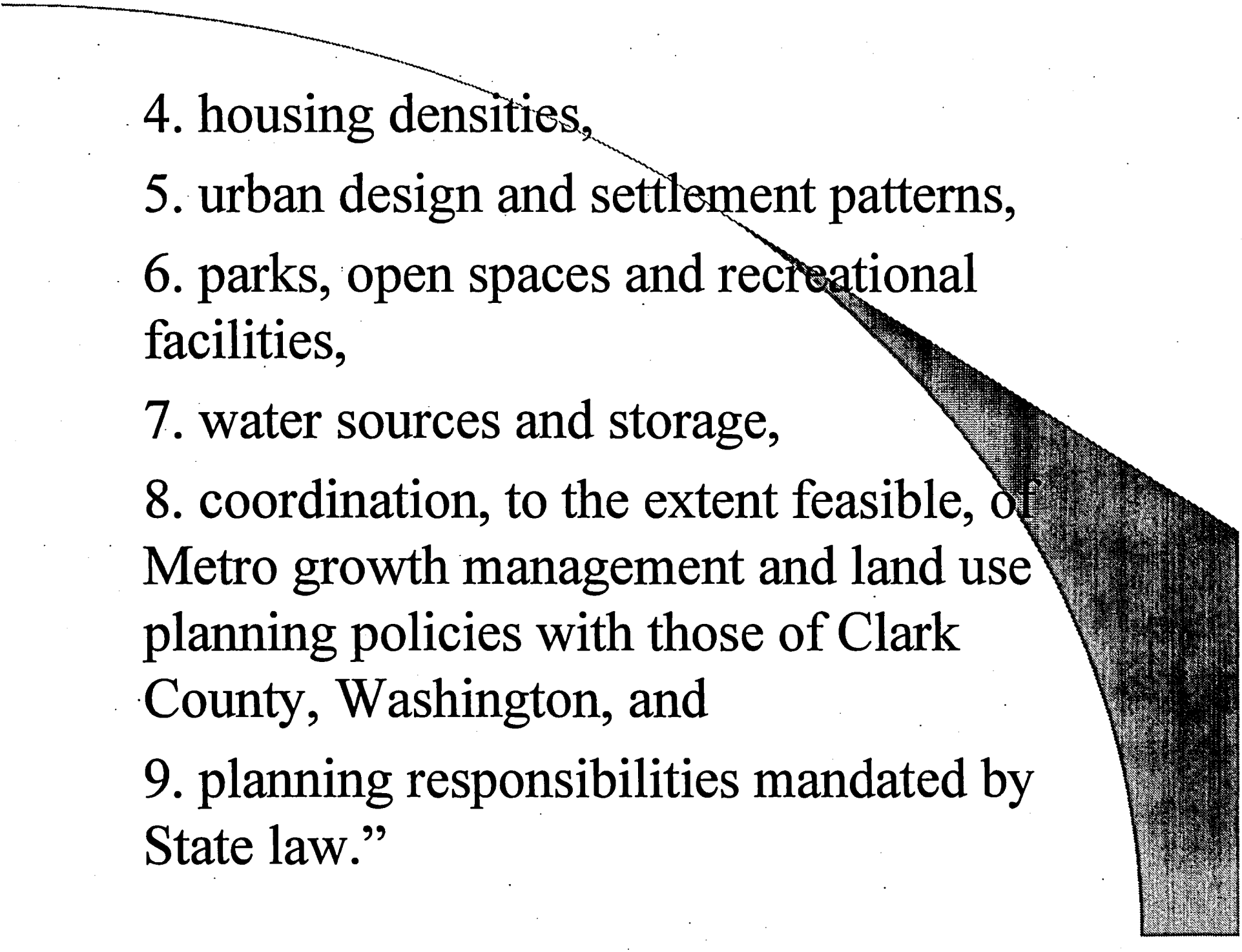
Charter Requirements

- Nine mandated elements.
- Adoption by the Metro Council by December 31, 1997.
- Consultation and advice of the Metro Policy Advisory Committee.
- Relationship of Framework Plan to Future Vision to be described.
- Must comply with State requirements.

Nine Mandated Elements

Framework Plan must address:

- “1. regional transportation and mass transit systems,
2. management and amendment of UGB,
3. protection of lands outside the urban growth boundary for natural resource, future urban or other uses,

- 
4. housing densities,
 5. urban design and settlement patterns,
 6. parks, open spaces and recreational facilities,
 7. water sources and storage,
 8. coordination, to the extent feasible, of Metro growth management and land use planning policies with those of Clark County, Washington, and
 9. planning responsibilities mandated by State law.”

Existing Documents Incorporated

- **Future Vision** (included in appendix)
- **Regional Urban Growth Goals and Objectives** (included as numbered policies throughout document)
- **2040 Growth Concept and map** (included word-for-word in Chapter 1)
- **Urban Growth Management Functional Plan** (in implementation appendix)

Plan Outline

Introduction

Chapter 1. Land Use

Chapter 2. Transportation

Chapter 3. Parks, Open Space & Recreation

Chapter 4. Water

Chapter 5. Regional Natural Hazards

Chapter 6. Clark County

Chapter 7. Environmental Education

Chapter 8. Management

Chapter 9. Implementation

Appendices



Highlights

(Introduction)

Summarizes Future Vision

Documents the Alternative Analysis
(Concepts A, B, C and Basecase)

Describes public response and completion
of the Preferred Alternative

Highlights - Land Use

(Chapter 1)

Future Vision statements about land use cited and correlated with Framework Plan land use element.

Data and preliminary conclusions from Urban Growth Report and Housing Needs Analysis reported, such as UGB capacity and needed housing by price/rent. (new)

Includes all RUGGO policies (word-for-word) that deal with land use and growth management including the adopted 2040 Growth Concept and Map.

Highlights - Transportation

(Chapter 2)

Transportation policies are crafted to implement the 2040 Growth Concept.

The update of the Regional Transportation Plan (RTP) is now underway. Some new transportation policies are being explored. When the RTP is completed, the Framework Plan chapter will be updated to reflect the latest transportation policies. (new)

Highlights - Parks, Open Space

(Chapter 3)

Follows park, open space and recreational lead of Greenspaces Masterplan and Bond Measure 26-26.

Calls for identification and protection of regionally significant resources. (new)

Calls on local governments to provide park or recreation facility within one-half mile of all residents. (new)

Highlights - Water

(Chapter 4)

Includes two sections:

- Urban Water Supply
- Watershed Management/Water Quality

Water Supply incorporates the Regional Water Supply Plan being completed by the Regional Water Providers Consortium.

Watershed Management/Water Quality incorporates existing Title 3 Urban Growth Management Functional Plan as well as calling for analysis of upland watershed management practices.
(new)

Highlights

Regional Natural Hazards

(Chapter 5)

Establishes the need for addressing earthquake hazards, flood hazards and landslide hazards at a regional level. (new)

Recommends mitigation measures for hazards. (new)

Highlights - Clark County

(Chapter 6)

Establishes some of the data characteristics of Clark County and its existing relationship to the Oregon portion of the greater metropolitan area.

Calls for discussion of common interests and concerns, especially transportation and jobs/housing balance with southwest Washington representatives. (new)

Highlights

Environmental Education

(Chapter 7)

Establishes the connection between urban planning and agricultural land conservation with wildlife habitat conservation beyond the urban area. (new)

Lists the Metro Washington Park Zoo as a primary site for environmental education in the region. (new)

Highlights - Management

(Chapter 8)

Includes existing RUGGO policies concerning the place for citizen participation, MPAC, roles of cities/ counties, applicability of policies, functional plans, etc.

- ✧ Includes (current RUGGO) policy that calls for development of performance measures.

Calls for monitoring and updating of the Framework Plan as needed.

Highlights - Implementation

(Chapter 9)

Table showing each numbered policy and the specific way that it will be implemented.
(new)

This Chapter to be further developed.

Appendices

A. Urban Growth Management Functional Plan

B. Metro Code 3.01 UGB/Urban Reserves

C. Future Vision

D, E, F, G Requirements or Recommended actions (to be developed)
(new)

H. Model Codes (new)

Glossary

Ways to Participate

- US Mail: Metro Survey/Flyer
- E-mail (2040@metro.dst.or.us)
- Metro hotline 797-1888
- Open Houses
- Public Hearings

Adoption Schedule

- June/July Technical Review (TPAC, MTAC, WRPAC, STAT)
- August Policy Review (MPAC, JPACT)
- September Revisions to draft
- Sept/Oct Open Houses
- October Metro Council Public Hearings 16th and 23rd.




Regional Framework Plan

Help us develop our regional policies.

Thank you!

MEMORANDUM

DATE: June 9, 1997
TO: Metro Regional Parks and Greenspaces Advisory Committee
FROM: Ron Klein 
RE: Draft Regional Framework Plan
CC: Charles Ciecko, Nancy Chase, Jennifer Budhabhatti

Enclosed is a copy of the Regional Framework Plan Discussion Draft for your review. This represents the beginning of a substantial public involvement process that will lead to the final adoption of the Regional Framework Plan by Metro Council in December. The plan addresses policies related to land use; transportation; parks, open space and recreational facilities; water and more.

Please take some time to become familiar with the document. Representatives from the Growth Management Department will be at the next committee meeting on Tuesday July 1 to discuss the highlights of the discussion draft and explain the process that will lead to final approval by Metro Council. The committee will also discuss their role as a committee body and as individuals.

The July meeting is important and I hope all of you can attend. The committee will also deliberate and make a recommendation on the Oxbow Regional Park Master Plan and consider utility easement policy for Metro parks and greenspaces. An meeting agenda will be mailed to you the week of June 23.

Please call me at 797-1774 or e-mail me at kleinr@metro.dst.or.us if you have questions.

REGIONAL FRAMEWORK PLAN

CALENDAR

Council Approved 6/5/97

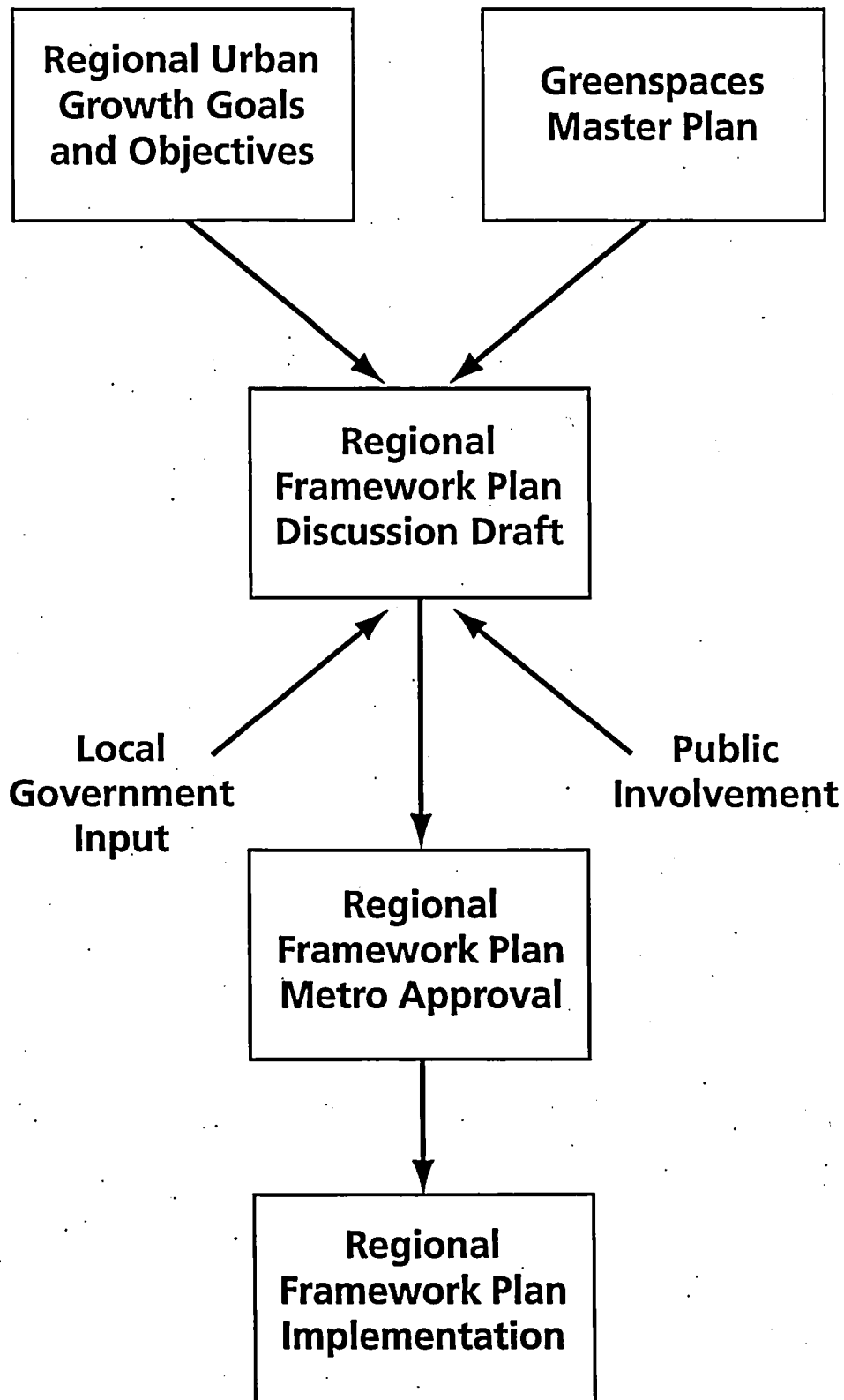
1997	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Executive Officer	22--Present to Council				• Survey results & further recommendations			
MPAC/MTAC		11--Refer to TPAC	17--MTAC Recommendation	13--MPAC Recommendation				
JPACT/MPAC		27--Refer to TPAC		01--TPAC Recommendation 14--JPACT Recommendation				
WRPAC & GTAC			11--Recommendation					
Growth Management Committee				05--Review and give direction to staff				
Growth Management Committee of the Whole and Council		05--Refer to MPAC, JPACT WRPAC & GTAC		07--Review and give direction to staff		16--Public hearing * 23--Public hearing * 31--Deliberations *	06--Deliberations * 13--Final Public Hearing * 20--Final Decision	

ACRONYMS

GTAC Greenspaces Technical Advisory Committee
JPACT Joint Policy Advisory Committee on Transportation
MPAC Metro Policy Advisory Committee

MTAC Metro Technical Advisory Committee
TPAC Transportation Policy Advisory Committee
WRPAC Water Resources Policy Advisory Committee

Regional Framework Plan Process



REGIONAL FRAMEWORK PLAN IMPLEMENTATION



**Policy
3.1**

Inventory and Identification of the Regional Park System

METRO'S ROLE

- ❖ **Periodic inventory of regional natural areas inside and outside the urban growth boundary**
- ❖ **Establish scientific and social criteria to determine regional significance of parks, natural areas, trails and greenways**
- ❖ **Identify corridors that provide connections between sites for fish, wildlife and people**
- ❖ **Identify natural area deficient portions of the region as well as restoration opportunities**

LOCAL GOVT ROLE

- ❖ **Assist in regional inventory using local master plans and comprehensive land use plans**
- ❖ **Assist to establish criteria and determine regional significance of locally-owned parks, natural areas, trails and greenways**
- ❖ **Assist in identifying corridors for the regional system**
- ❖ **Work with Metro to assess govt surplus land and tax-foreclosed property for the regional system**



REGIONAL FRAMEWORK PLAN IMPLEMENTATION

Protection of the Regional Park System

METRO'S ROLE

- ❖ **Adopt functional plan to implement provisions of Regional Framework Plan**
- ❖ **Work cooperatively to acquire components of the regional park system**
- ❖ **Provide private land owners with natural area stewardship assistance**
- ❖ **Build public awareness and involvement in the protection of the regional park system**
- ❖ **Assist local govt in implementing the Willamette River Plan**

LOCAL GOVT ROLE

- ❖ **Amend local comprehensive land use plans to support the Regional Framework Plan and functional plan**
- ❖ **Establish local systems of parks, natural areas, trails and greenways that connect to the regional system**
- ❖ **Participate in acquisition, public awareness and public involvement activities**
- ❖ **Update and implement the Willamette River Plan**

REGIONAL FRAMEWORK PLAN IMPLEMENTATION



**Policy
3.3**

Management of the Publicly-owned Regional Park System

METRO'S ROLE

- ❖ Identify and secure stable, longterm funding
- ❖ Provide local govt opportunity to acquire components of the regional park system
- ❖ Provide local govt oppportunity to transfer ownership or mgmt components of the regional park system
- ❖ Produce master and management plans for the regional park system
- ❖ Provide primarily natural resource-based recreation and education activities

LOCAL GOVT ROLE

- ❖ Determine funding needs of locally-owned components of the regional park system
- ❖ Determine propriety of ownership, management or aquisition of local components of the regional park system
- ❖ Produce master / management plans of locally-owned components of the regional park system
- ❖ Consider partnerships with Metro to improve operations of he regional park system

REGIONAL FRAMEWORK PLAN IMPLEMENTATION



Regional Trails and Greenways

METRO'S ROLE

- ❖ **Include regional trails and greenway component in the Regional Transportation Plan**
- ❖ **Coordinate regional trails and greenway planning with local, state and federal agencies**
- ❖ **Cooperate with citizens and trail providers in the region to effectively operate a regional trails and greenways system**

LOCAL PARTNER ROLE

- ❖ **Work with Metro and other trail and greenway providers to integrate local systems to the regional system**
- ❖ **Work to avoid fragmentation of the regional trails and greenways system**

REGIONAL FRAMEWORK PLAN IMPLEMENTATION



**Policy
3.5**

Providing Community and Neighborhood Parks and Recreation

METRO'S ROLE

- ❖ **Provide park deficiency analysis to local govt**
- ❖ **Provide financial and technical assistance for the acquisition and development of local parks that complement the regional park system**

LOCAL PARTNER ROLE

- ❖ **Operate and manage community and neighborhood parks that meet citizen recreational needs, considers SCORP and links neighborhoods to the regional park system**
- ❖ **Identify and secure stable and adequate funding**
- ❖ **Work cooperatively with school districts, utilities and private landowners to address the park and rec needs of citizens**
- ❖ **Require adequate park and rec facilities in new developments**

REGIONAL FRAMEWORK PLAN IMPLEMENTATION



**Policy
3.6**

Citizen Involvement

METRO'S ROLE

- ❖ **Provide opportunities for citizens to participate in the acquisition, protection and management of the regional park system**
- ❖ **Implement a citizen volunteer services program**
- ❖ **Appoint and staff a regional parks and greenspaces citizens advisory committee**
- ❖ **Provide a variety of activities and programs that build an understanding and enjoyment of regional parks, natural areas, trails and greenways**

LOCAL PARTNER ROLE

- ❖ **Provide opportunities for citizens to participate in the acquisition, protection and management of community and neighborhood parks**
- ❖ **Build public awareness of the benefits of parks and recreation**

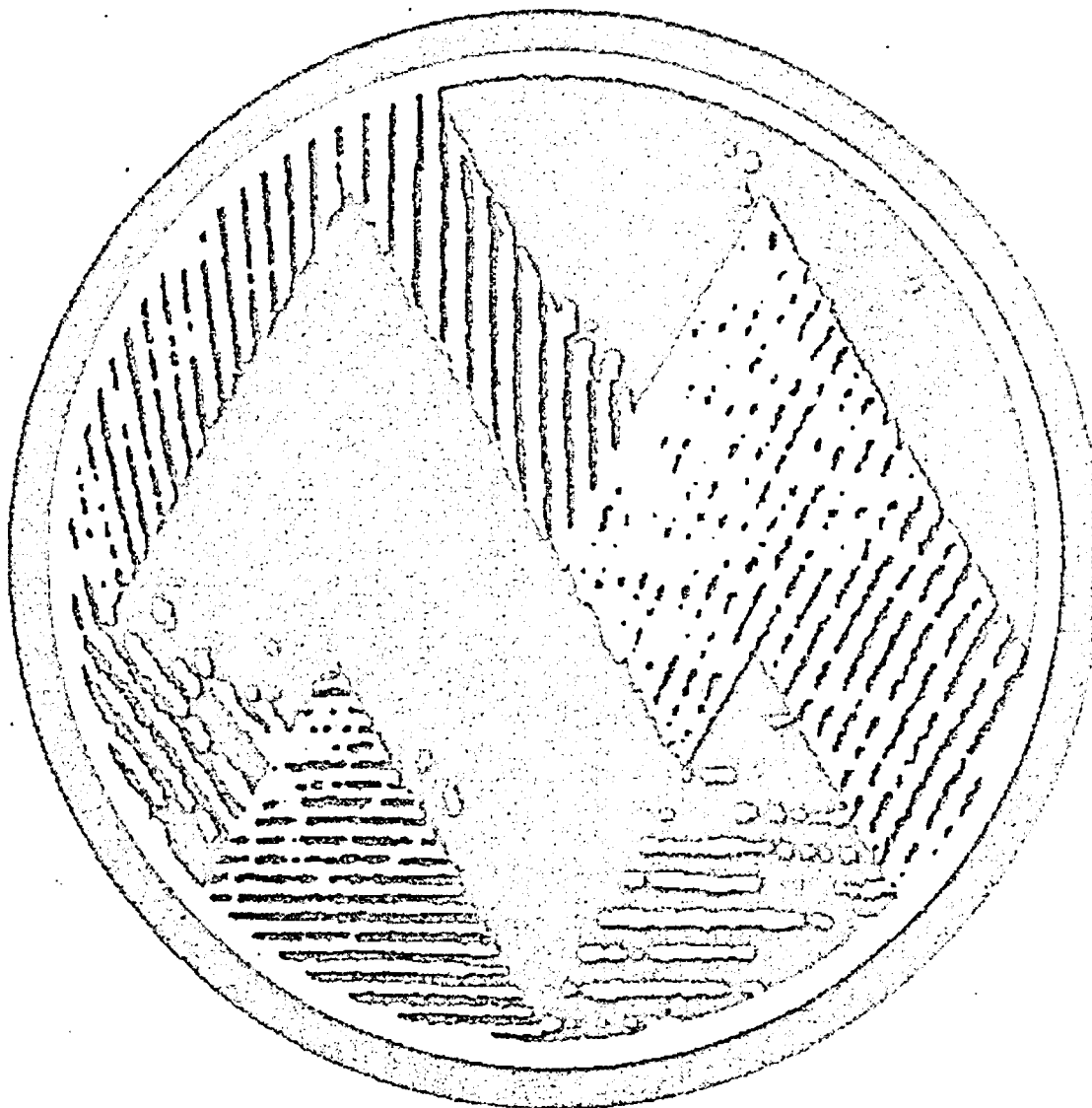
MetroPlan



METRO

Regional Framework Plan Discussion Draft

May 1997



About Metro

Metro is the directly elected regional government that serves more than 1.3 million residents in the urban and suburban portions of Clackamas, Multnomah and Washington counties as well as those in the 24 cities of the region: Beaverton, Cornelius, Durham, Fairview, Forest Grove, Gladstone, Gresham, Happy Valley, Hillsboro, Johnson City, King City, Lake Oswego, Maywood Park, Milwaukie, Oregon City, Portland, Rivergrove, Sherwood, Tigard, Troutdale, Tualatin, West Linn, Wilsonville and Wood Village.

Metro is responsible for the regional aspects of transportation and land-use planning and the Metro urban growth boundary; regional parks and greenspaces programs; solid waste management; operation of the Metro Washington Park Zoo; and technical services to local governments of the region. Through the Metropolitan Exposition-Recreation Commission, Metro manages the Oregon Convention Center, Civic Stadium, the Portland Center for the Performing Arts and the Expo Center.

Metro is governed by an executive officer, elected regionwide, and a seven-member council elected by districts. Metro also has an auditor who is elected regionwide.

For more information

For more information about Metro or to schedule a speaker for a community group, call 797-1510 (public affairs) or 797-1540 (council).

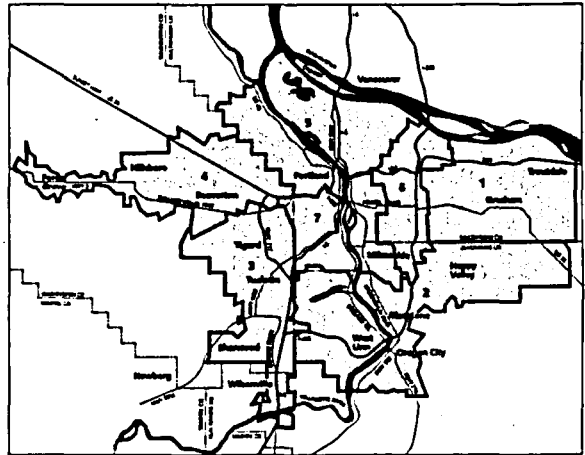
For more information about job opportunities at Metro, call 797-1777.

Metro's web site: www.metro-region.org

Growth Management hotline: 797-1888

Metro Regional Center
600 NE Grand Ave.
Portland, OR 97232

Council Districts



Elected officials

Executive Officer

Mike Burton

Auditor

Alexis Dow, CPA

Council

Presiding Officer, District 3 – Jon Kvistad

Deputy Presiding Officer, District 1 –

Ruth McFarland

District 2 – Don Morissette

District 4 – Susan McLain

District 5 – Ed Washington

District 6 – Lisa Naito

District 7 – Patricia McCaig

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Preface

The Regional Framework Plan contains the policies that will direct our region's future growth. The result of years of work with citizens and governments of this region, the plan provides specific guidelines that city and county governments will use to create and preserve livable communities.

Creating a livable future

If you've lived in the metropolitan area for very long, you know it's a special place. While other urban areas have sprawled, our region has managed urban development and communities near our central city have not suffered from abandonment and decline. In the last decade, we have funded an ambitious program to maintain, restore and acquire public open spaces, and we are witnessing healthy economies in communities all over the region. Redevelopment of existing buildings and new development of underutilized land account for about one-third of new development, and mass transit use is increasing at a faster rate than auto use. Things look different here because of our commitment to statewide and regional planning since the late 1960s. This framework plan is intended to extend that legacy into the next century in constructive and inventive ways.

The challenge is clear: we must continue our cooperative and participatory approach to growth management if we are to preserve our quality of life as additional people move into the urban area. Further, we must approach the issues accompanying growth – traffic congestion, vanishing open space, speculative pressure on rural farm lands, rising housing costs, diminishing environmental quality, demands on infrastructure such as schools, water and sewer treatments plants and vulnerability to natural hazards – within a common framework. Making the connections between these issues will enhance our ability to manage urban growth successfully and ensure a livable future.

A mandate for integrated regional planning

The Metro Charter, approved by two-thirds of the voters in November 1992, establishes growth management as Metro's primary task and requires that a Regional Framework

Plan be adopted by Dec. 31, 1997. The charter mandates that the plan address the following:

- management and amendment of the urban growth boundary
- protection of lands outside the urban growth boundary for natural resource use and conservation, future urban expansion or other uses
- urban design and settlement patterns
- housing densities
- transportation and mass transit systems
- parks, open spaces and recreational facilities
- water sources and storage
- coordination with Clark County, Wash.
- planning responsibilities mandated by state law
- other issues of metropolitan concern

This document brings together these elements and the contents of previous regional policies to create an integrated framework and to ensure a coordinated, consistent approach. While technically a new document, the Regional Framework Plan incorporates goals, objectives and policies established in existing documents, including the Regional Urban Growth Goals and Objectives, the Greenspaces Master Plan, the 2040 Growth Concept and the Regional Transportation Plan.

The plan is divided into the following seven chapters, five of which address the charter-mandated issues. More specifically, the chapters are organized as follows:

The Introduction provides an overview of Metro's origins, relationships with other governments and offers an historical perspective on this plan by reviewing key elements of the documents on which it is based.

Chapter One focuses on land-use concerns inside and outside the urban growth boundary as well as housing densities, urban design and settlement patterns.

Chapter Two analyzes regional transportation issues.

Chapter Three addresses parks, open spaces and recreational facilities.

Chapter Four focuses on urban water supply, watershed management and water quality.

Chapter Five addresses natural hazards.

Chapter Six describes the region's relationship with Clark County, WA.

Chapter Seven includes the role of environmental education.

Chapter Eight outlines plan management policies.

Chapter Nine illustrates how implementation of the plan is expected to occur.

Your part in the plan

This plan is mandated by a vote of the people of the region and is intended to bring together work that Metro has done or is considering in many different subject areas. This discussion draft, completed by Metro's elected Executive Officer Mike Burton, will be discussed and assessed by the elected Metro Council and its advisory committees. After public hearings and deliberations, the Metro Council will determine a schedule for adoption. However, your early response will be critical in ensuring that the final adopted version considers your interests and concerns. If you would like to have the Executive Officer consider your comments in his recommendations to the Metro Council, or simply wish to be placed on our mailing list, you may forward your comments **by June 27, 1997**, (there will be additional opportunities for public testimony and comment) as follows:

US mail: Framework Plan
 Executive Officer, Mike Burton
 Metro
 600 NE Grand Ave.
 Portland, OR 97232

E-mail: 2040@Metro.dst.or.us

Telephone: Metro hotline – 797-1888 (comments are recorded, typed verbatim and forwarded to the Metro Council)

Thank you for helping our region discuss its future!

Introduction: Foundations of the Regional Framework Plan

Metro was created in 1978 when voters in Multnomah, Washington and Clackamas counties approved an elected regional government to oversee issues that transcend traditional city and county boundaries. The state legislation creating Metro, Oregon Revised Statute Chapter 268, describes Metro's responsibilities and procedures. Among these are the responsibilities to adopt and amend the regional urban growth boundary (UGB), and adopt "regional goals and objectives" that are consistent with state goals.

The goals and objectives of Metro's predecessor, the Columbia Region Association of Governments, continued after Metro was formed. The Metro Council, in partnership with local governments, adopted new goals and objectives, called the Regional Urban Growth Goals and Objectives (RUGGOs), in September 1991 after months of public meetings. Through their representatives on Metro advisory committees, the cities and counties indicated that while the directions set in the RUGGOs were appropriate, they were not specific enough. Accordingly, local representatives recommended that additional work be done to further define the goals and objectives.

As a result, the Region 2040 project was begun to develop specific land-use and transportation planning policies. In 1995, the RUGGOs were substantially revised to incorporate the 2040 Growth Concept, which is described later in this section. The Regional Framework Plan incorporates the policy statements from the RUGGOs and, upon adoption, will consolidate all Metro land-use planning goals and objectives.

Regulatory relationships

When voters approved the Metro Charter in 1992, they defined specific requirements for Metro's planning programs, including adoption of the Regional Framework Plan. While the policies defined in this plan are binding on Metro, they do not directly regulate local plans. This approach maintains the policy in Goal I of RUGGOs to regulate local plans only with specific implementing ordinances. Elements of the framework plan that are intended to change local plans, will be included in functional plans that define exact standards and procedures for specific jurisdictions.

State legislation (ORS 268) establishes functional plans as the legal mechanism for Metro to “require” changes in comprehensive plans “as it considers necessary.” It is through these functional plan requirements and urban growth boundary policies that regional policies directly affect city and county comprehensive plans.

The Metro Charter requires that the Regional Framework Plan must be developed with the consultation and advice of the Metro Policy Advisory Committee (MPAC). All regulatory requirements must be consistent with this Framework Plan, including the 2040 Growth Concept.

Relationships with other governments

The planning and growth management activities of many jurisdictions affect and are affected by the actions of other jurisdictions in the region. In this region, as in others throughout the country, coordination of planning and management activities is essential if urban growth management efforts are to succeed.

In the Portland metropolitan area, representatives from many governments and agencies play critical roles in urban growth management. In addition to Metro’s direct partners in the region’s 24 cities, three counties and more than 130 special service districts and school districts, the state of Oregon, Tri-Met, the Port of Portland and the Portland Area Boundary Commission make decisions that affect and respond to regional urban growth. And from a broader regional perspective, the cities of Southwest Washington and Clark County are partners in addressing growth management issues such as air quality, transportation and regional economy. Metro also works with nearby Oregon cities outside the Metro boundary to develop complementary policies.

While the Metro Council will make the final decision about policies, Metro has more than a dozen advisory committees that advise the Executive Officer, Metro Council and staff on matters of Metro’s responsibility. Membership of the committees is varied, based on the purpose of each committee, and is structured to promote interagency communication and coordination at several levels, as well as citizen involvement.

The *Metro Policy Advisory Committee* (MPAC) is a 21-member charter-mandated committee consisting of mayors, county commissioners and other representatives of local governments. Three citizen members are appointed by Metro’s Executive Officer. MPAC provides advice and consultation to the Metro Council on the land-use matters. The committee may authorize Metro to provide or regulate a local government service.

The *Metro Technical Advisory Committee* (MTAC) is a 24-member committee of planning managers, citizens and business representatives that provides technical support to MPAC.

The *Joint Policy Advisory Committee on Transportation* (JPACT) is a 17-member committee that provides a forum for elected officials and representatives of agencies involved in transportation needs in the region to evaluate transportation needs and make recommendations to the Metro Council related to transportation policy. JPACT's discussions usually follow technical assessments by *Transportation Policy Alternatives Committee* (TPAC), whose membership includes technical staff from the same agencies as JPACT, as well as six citizens appointed at-large by the Metro Council.

Future Vision

The spirit of the Regional Framework Plan took root in a charter-mandated document, the Future Vision Report. The first requirement of the Metro Charter, as stated below, was to develop a "Future Vision" that, while not a regulatory document, is:

"...a conceptual statement that indicates population levels and settlement patterns that the region can accommodate within the carrying capacity of the land, water and air resources of the region, and its educational and economic resources, and that achieves a desired quality of life. The Future Vision is a long-term, visionary outlook for at least a 50-year period."

The charter also states:

"The matters addressed by the Future Vision include but are not limited to: (1) use, restoration and preservation of regional land and natural resources for the benefit of present and future generations, (2) how and where to accommodate the population growth of the region while maintaining a desired quality of life for its residents, and (3) how to develop new communities and additions to the existing urban areas in well-planned ways."

The connection between the Future Vision and the Regional Framework Plan, as stated in the charter, is that the Regional Framework Plan must "describe its relationship to the Future Vision." That is the intent of this section. The full text of the Future Vision, as adopted by the Metro Council by Ordinance 95-604A, is included in the appendix. However, the following excerpts are useful to include in this plan.

In the Future Vision report, the Future Vision Commission came to the following conclusion regarding carrying capacity:

"This metropolitan area, like all others, exceeded its ability to meet the physical needs of its people long ago. Our style of life depends on the importation of energy, materials, capital and brain power from all over the world. We have also found that traditional biological models of population carrying capacity are simply too narrowly drawn to be of much use in a metropolitan setting. Determining the sustainability of even current population levels at our existing quality of life is greatly complicated by uncertainties due to future technological and global economic changes. In addition, there are difficult questions of value which must be addressed first, since values can be the basis for an analysis of carrying capacity but cannot be derived from such a study. For these reasons, it may not be possible to choose a single sustainable population level for the region."

Further on, the report states:

"Consequently, we have chosen to approach carrying capacity as an issue requiring ongoing discussion and monitoring. We believe that the relevant question is not when carrying capacity will be exceeded, but how we will collectively restore, maintain and/or enhance the qualities of the region central to sustaining our health, the quality of the natural environment and the ability of future generations to take action to meet the needs of their time.

Sustainable communities will come about through the skillful blending of factual data, our values and new ideas in a public discussion occupying a place of honor in this region, not through blind adherence to numerical thresholds that cannot be specified, much less met. Hence, carrying capacity is not a one-time issue, a single number, a simple answer, but an ongoing question for us all."

With regard to accommodating new growth, the Future Vision report includes the following recommendations:

"This vision does not call specifically for the creation of new communities. We choose instead to focus on the restoration and redevelopment of what already has been committed to non-resource use."

"Direct all regional planning efforts to include equitable economic progress for communities throughout the region as a critical component for modeling and evaluation."

"Address the further diversification of our economy, the creation of family-wage jobs and the development of accessible employment centers throughout the nine-county region in the Regional Framework Plan elements for transportation, rural lands, urban design, housing and water resources."

"Identify needs and solutions to community problems at the neighborhood level, and actively work to enlist all units of government in supporting and acting on these grassroots agenda rather than allowing governmental entities to insulate themselves from participating."

"Continue to encourage a choice of neighborhood types, including new neighborhoods with suburban densities, neighborhoods of traditional

(pre-World War II) densities, and mixed-use neighborhoods of a more urban design.”

The relationship of the Regional Framework Plan to the Future Vision is as follows:

- The Future Vision statement provides a beginning point from which policy debate and analysis can begin.
- The Future Vision brings a broad, inclusive perspective to the Regional Framework Plan.
- The Future Vision establishes the approach that all of the issues and problems addressed in the Regional Framework Plan will require an ongoing process of monitoring, analysis and reform in order to meet the needs and expectations of this and future generations.

RUGGOs and the 2040 Growth Concept

The Regional Urban Growth Goals and Objectives (RUGGOs) were developed beginning in 1989, when concerns were voiced about long-term management of the urban growth boundary for the region. While the urban growth boundary was designed to be moved as growth occurred within its historic bounds, how that growth occurred was of great interest. RUGGOs, developed in cooperation with local governments, provided an articulation of the directions the region wanted to take as it grew. (The Regional Framework Plan has incorporated RUGGOs with some amendments to address policy and consistency issues.) When developed, RUGGOs included such goals as maintaining a compact urban form, creating a balanced transportation system and assuring that market-based preferences are not eliminated by regulation. However, these statements, while laudable, did not provide a blueprint for how to achieve these goals. Local governments in particular were concerned about how these statements would be applied to them. RUGGOs were adopted with the provision that no goal would be directly applicable to a city or county in the region, and that a specific articulation of the goals would be developed to assess the stated directions. From this the Region 2040 project began.

Region 2040

Region 2040 began as a way to define the directions established by the Regional Urban Growth Goals and Objectives. It was also intended to determine how Metro should best manage its urban growth boundary, and, ultimately, provided a major contribution to the Regional Framework Plan.

Public values and tradeoffs

The first step was to gauge people's values and preferences about their region. Through a combination of random sample surveys and an extensive public involvement process, Metro learned that there is strong support for investment in a mixture of transit systems instead of funding roads alone, and a preference for growth in developed areas over new areas. However, the public also indicated a strong preference for maintaining neighborhoods, and expressed concern regarding increases in density. While people held negative views about density increases that change the character of neighborhoods, they were willing to accept limited changes in their neighborhoods and increased development adjacent to transit and existing commercial development.

Opinions about the tradeoffs associated with managing growth covered the spectrum, indicating that a successful growth management policy must include a range of options. There was most agreement on the tradeoff involving building roads for cars versus building additional transit systems, with only 14 percent saying building roads was significantly more important than transit.

Creating and analyzing the alternatives

Based on research and public comment, Metro developed a status quo "Base Case" scenario and three growth concepts, then analyzed them for impacts on land consumption, travel times and distances, the effects increased density would have on air quality, open space, and different types of urban forms.

The Base Case assumed growth would occur if development took place in land-use patterns similar to that experienced in the region from 1985 to 1990. An important component of the Base Case was that it looked at the land supply and demand in five-year increments. When there no longer was a 20-year land supply within the UGB, the boundary was assumed to move outward. In addition, when congestion occurred, roads were widened up to a limit of five lanes for arterials and six for freeways.

BASE CASE

Continue Past Trends
354,000 acres in UGB



What we examined:

Urban Form: Greatest expansion of UGB; continuation of development patterns occurring between 1985 and 1990.

Major Roads: 10,780 lane-miles.

Transit: 9,575 daily service-hours, serving almost 47 percent of households.*

What happened:

Congestion: Slightly less than 9 percent of roadways having significant peak-hour congestion due to greatest amount of road construction.

Transit ridership: 266,920 daily riders.

Trip length: Greatest increase in total vehicle miles traveled (VMT); VMT per capita within the UGB would increase 5% over 1990.

* From Region 2040: Recommended Alternative Technical Appendix "Intra-UGB Selected Performance Measures" table.

Base Case findings

The Base Case, in order to accommodate forecast growth consistent with the development patterns of the 1970's and 1980's, needed the expansion of the urban area by about 121,000 acres – an increase of about 70 percent from the current UGB. Of the total expansion, about 98,000 acres were considered to be vacant, buildable acres, of which about 64,000 acres were zoned exclusive farm use. However, only about 50 percent of the added land would be developed, as the pattern of development within the current UGB in the 1980's had a similar amount of privately owned parcels which were undeveloped. About 70 percent of the housing were assumed to be single family detached (the same as in 1990) and the remaining 30 percent assumed to be multi-family.

This development pattern would mean that the current UGB would expand to North Plains, extend halfway to Sandy, Newberg and expand several miles northwest on Highway 30 towards Scappoose.

Figure 1 Base Case

Assuming that this land would be serviced by adequate roads, sanitary sewer and water, employment was forecast to move outward as well, bringing jobs to those living in outlying areas, but requiring more people to drive and possibly making inner city residents less accessible to jobs. Residential and employment development would be at

low densities with a substantial majority (64 percent) developed in suburban, auto-oriented development patterns. Reductions in the population and vitality of the central city were expected with this pattern as jobs and population moved outward. Comments from law enforcement, fire safety and emergency medical response representatives from the region concluded that because of the substantial increase in service costs and response times, the Base Case development pattern should be avoided.

The Base Case assumed the most amount of roads built and assumed that three new freeways – the Sunrise Corridor, the Westside Bypass and the Mt. Hood Parkway would be built. Forecasted congestion resulting from the land uses and with added roads in the Base Case was about the same as the recommended alternative, but with much fewer roads built in the recommended alternative and much higher transit use in the recommended alternative.

While most areas added to the UGB in the Base Case were assumed to have a somewhat balanced mix of housing, jobs and services, the low development densities made transit service impractical. As a result, auto travel increased and vehicle miles traveled per capita grew by 5 percent over 1990 levels.

The non-auto share of regional travel for the Base Case was about 7 percent of all trips – lower than any of the growth concepts. Bicycle and pedestrian travel in the Base Case dropped to less than 5 percent of all trips, a decrease from the 1990 share, and less than any of the other growth concepts.

The Base Case also had lower transit ridership than any of the other three growth concepts. Radial high-capacity transit routes, such as the Banfield and Westside MAX lines, drew average weekday boardings of only 13,100 to 26,100 riders, which is lower than today's daily ridership. Furthermore, the Base Case had the lowest percentage of households and the lowest percentage of employment served by transit, 47 percent and 79 percent respectively.

The low transit ridership in the Base Case reflects both the dispersed development pattern assumed in the modeling and the absence of pedestrian enhancements and restricted parking that were assumed for the other three concepts. These factors were excluded from the Base Case to more accurately reflect the relative ease of parking that typically accompanies low density development.

Concept A findings

Concept A was based on “growing out” by adding land for residential development to the urban growth boundary. Under Concept A, existing neighborhoods did not experience significant change, and new ones were added both inside and outside the current UGB. In addition, Concept A expanded the transit and highway systems, had the highest congestion, highest air pollution, lowest transit ridership, most dispersed population and highest cost for water service.

Concept A included a more modest expansion of the urban area when compared with the Base Case. It assumed a UGB expansion of about 25 percent, about 55,000 acres, of which about 18,000 acres are zoned for exclusive farm use. Single family lots were assumed to be in the 7,500 - 9,000 square foot range, (about 10 people per acre). Existing vacant single family zoned areas were assumed to have no increase in density from existing zoning. About 74 percent of the housing would be single family with 26 percent multi-family. About sixty-two percent of the residential development was assumed to occur in relatively low density development with little or no transit service because of the cost of service. Along transit corridors, it was assumed that transit service would be frequent and people would have easy access to it. A few main streets and other mixed use developments were assumed, particularly in areas where a high level of transit service was likely. Almost half of the employment growth was forecast to occur in low density areas away from transit and not within city centers. About 4,500 acres of land within the current UGB were assumed to be acquired as new public open spaces.

The road system assumed for Concept A resembled the Base Case in that the three freeways were assumed to be built, but slightly fewer lane miles of other road improvements were included. A radial, high capacity transit system centered on downtown Portland with service to the south, north east, west, southwest and two to the southeast were included. Detailed transportation modeling results from Concept A were similar to the Base Case results. However, compared to the Base Case, the scale of the regional road network was reduced, with a total of 814 additional lane miles added to the existing network. This represents almost a 9 percent increase over 1990, compared to a 16 percent increase in the Base Case. Total transit service hours nearly tripled the 1990 level of 4,983 hours (12,300 daily service-hours).

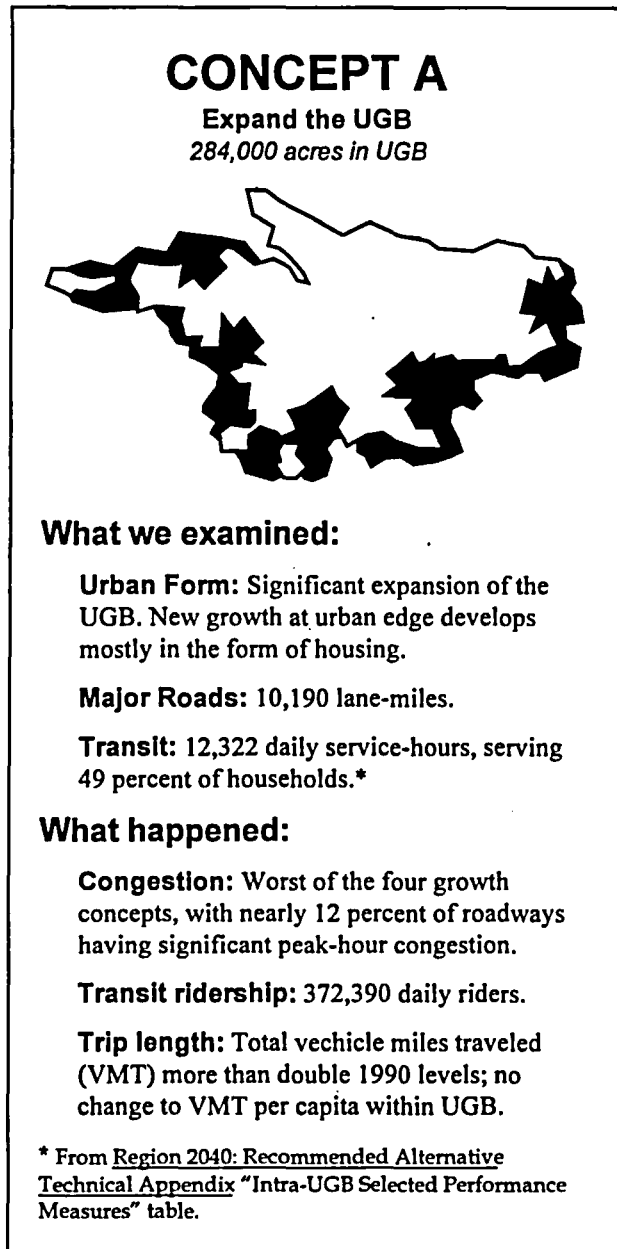


Figure 2: Concept A

than in the other growth concepts. The mostly single-family neighborhoods added along the urban fringe in this concept would be difficult to serve with transit, and the lack of nearby services and jobs discouraged bicycle and pedestrian travel. Of the four growth concepts, Concept A had the second smallest share of bicycle and pedestrian trips as a percentage of total person trips.

Concept A had the second lowest percentage of households (49 percent) and the second highest percentage of employment (83 percent) served by transit. It also had the second

Despite these significant improvements to the regional system, Concept A experienced the worst congestion, second lowest transit ridership and the second highest total vehicle miles traveled. While Concept A shows region-wide arterial street congestion, the worst congestion was along Washington County's widely spaced suburban streets. The more closely spaced and fully integrated network of arterials in East Portland and urban Multnomah County were the least congested.

Much of the increase in congestion and vehicle miles traveled was attributed to the assumed separation of homes and businesses. Most areas added to the UGB in this concept were single-family neighborhoods, with few nearby services or jobs. As a result, the arterial streets linking these new neighborhoods to jobs and services were much more congested for longer time periods

lowest daily transit ridership (372,400) of the four growth concepts. Ridership was highest along transit corridors and main streets and to regional centers. The lowest ridership levels were in low-density residential areas with limited service. Compared to the other concepts, transit coverage was somewhat more limited in Concept A, reflecting the difficulty of serving new low-density neighborhoods along the urban fringe.

The results of the transit ridership analysis showed that restricting the UGB expansion area to include only residential growth created major travel demand into the region for employment and for daily services. These results underscore the importance of balancing jobs and housing in communities and centers as a means to shorten the distance traveled between destinations throughout the day.

Concept B findings

Concept B was oriented to “growing up” by increasing densities within the current boundary. The primary feature of Concept B was that 45 percent of new development was accommodated in centers and corridors with high transit levels. In turn, those center and corridors were designed with higher densities. It would require a shift for more multi-family housing units and smaller single-family lot sizes. Concept B would, by design, conserve the highest number of natural areas, open space (about 7,000 acres) and rural land. It would have the most transit ridership; however, it also would have the most light rail constructed and the most hours of transit service.

In order to accommodate the forecasted growth, while not moving the UGB, Concept B assumed a single family/multi-family split of 60 percent single family, 40 percent multi-family. The average lot size of newly created lots was assumed to be 5,800 square feet (as compared with 7,300 in Concept A). Residential densities would average 12 dwelling units per acre. Residential redevelopment was assumed to occur at rates double those of Concept A (11,300 acres of redeveloped lands compared with about 6,00 acres in Concept A or C). Mixed use areas - the Central City, regional centers, town centers, main streets, were assumed to accommodate much more growth – both housing and jobs – than in other concepts. Concept B also assumed the most transit improvements and no freeway additions.

Concept B had the fewest roadway improvements, with less than a 5 percent increase in lane-miles over the 1990 level. Total transit hours of service for Concept B were expanded to 13,192 hours – almost triple the 1990 level, but only 7 percent more than

Concept A. Concept B accommodated growth through development of existing land and infill rather than through urban growth boundary expansion.

Despite having the highest level of transit, bicycle and pedestrian travel of any growth concept, Concept B had the second highest level of congestion. More than 11 percent of all major urban roadways were severely congested compared to less than three percent in

1990. Freeway congestion in this concept was limited to isolated bottlenecks. Most of the congested freeways were flanked by equally congested arterials. Vehicle miles traveled dropped below 1990 levels by 12 percent, the lowest of any growth concept.

Concept B had the highest percentage of households (61 percent) and the highest percentage of employment (87 percent) served by transit. Increased bus service drew more riders than in the other growth concepts, especially along main streets and transit corridors. As in Concept A, bus ridership was highest east of the Willamette River. However, with the exception of a few transit corridors and main streets, bus service west of the Willamette River was more difficult to provide because of topography and lower household and employment densities.

Radial high-capacity transit corridors into downtown Portland had significantly greater daily ridership than circumferential

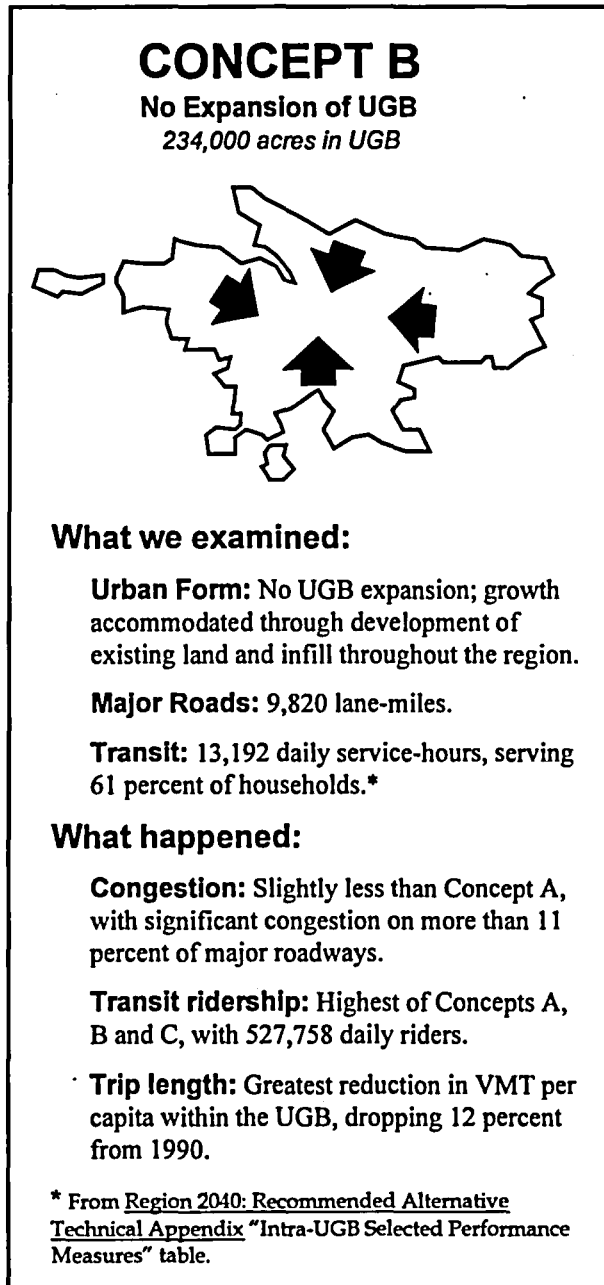


Figure 3: Concept B

routes or extensions to points along the urban edge. The major radial corridors, such as the Banfield and Westside MAX lines, ranged from 25,600 to 81,000 daily boardings. Circumferential routes, such as along Highway 217, ranged from 6,400 to 23,100 daily boardings.

The significant growth in transit, bicycle and pedestrian travel, along with predicted widespread congestion in Concept B, underscores the importance of having land uses easily served by transit and a balance of road and transit improvements.

Concept C findings

Concept C combined aspects of A and B, but accommodated about one-third of the growth in neighboring “satellite” cities. These areas would become relatively self-sufficient communities with an even mix of jobs and housing. About two-thirds of the people who live in the satellite cities would work there also. Concept C assumed that the UGB would increase by about 23,500 acres, about half of these lands currently zoned for exclusive farm use. The split of single family to multi-family was assumed to be 69/31, about that of 1990 with an average new lot size of 8,300 square feet (about that of 1990). Because a substantial amount of the growth was assumed to occur outside the region, accommodating expected growth was relatively easy. Concept C also assumed that sufficient jobs to accommodate the population increases would occur within the satellite cities. Concept C would achieve the lowest congestion and have the second highest transit use. Cost for developing Concept C would be high and implementation difficult.

Unlike the other concepts, Concept C directed a substantial number of jobs and houses to existing neighboring “satellite” cities just outside the current UGB. This growth strategy relied on green corridors to limit access to, and minimize urban development pressure on, resource lands adjacent to transportation corridors that link neighboring towns to regional centers. Green corridors also helped to prevent neighboring cities from expanding toward the Metro UGB, and therefore helped to maintain distinct communities.

In general, Concept C performed well in several categories because of a smaller population increase in the metro area, with a slight reduction in vehicle miles traveled, somewhat reduced trip lengths over current levels and relatively efficient roadway speeds. Congestion levels were the lowest of the four growth concepts, with slightly more than 8 percent of roadways having significant peak-hour congestion. Transferring one-third of development and population growth to neighboring cities outside the UGB

accounted for the relatively lower congestion level. Vehicle miles traveled per capita within the UGB dropped by nearly 4 percent over current levels compared to 12 percent in Concept B. However, Concept C showed the largest increase in VMT per capita outside the urban areas as a result of traffic between the metropolitan area and satellite cities.

Of the four growth concepts, Concept C had the second largest share of bicycle and pedestrian trips as a percentage of total person trips, accounting for more than 5 percent of all trips. It also had the second highest percentage of households (58 percent) and the second lowest percentage of employment (83 percent) served by transit.

The modeling projected more than 437,000 daily transit riders in Concept C, exceeding Concept A, but significantly less than the nearly 530,000 riders projected for Concept B. Radial high-capacity transit corridors within the main urban area of Concept C would have higher ridership than Concept A, but less than Concept B, with daily boardings ranging from 27,000 to 59,000 riders. Circumferential light-rail routes on Highway 217 and I-205 had lower ridership, with about 12,000 daily boardings.

The evaluation of Concept C found that if growth was directed away from the metropolitan area and to neighboring cities, there would be less need for transportation

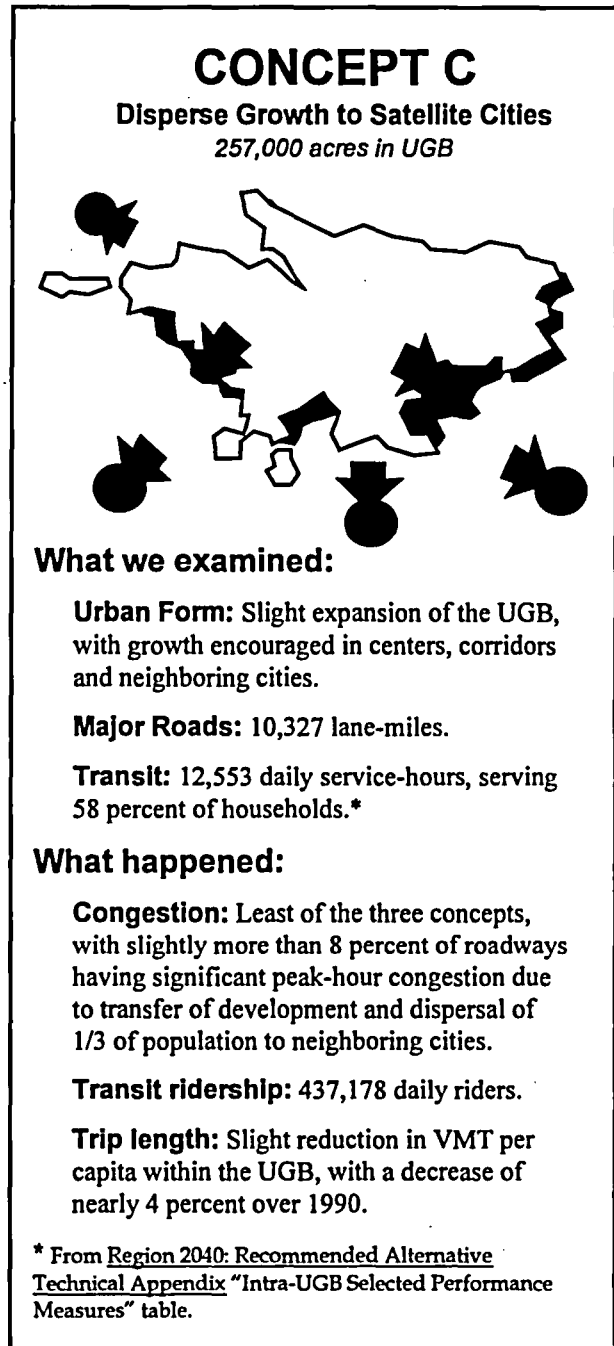


Figure 4: Concept C

improvements in the metropolitan area, but more need for transportation improvements in the tri-county area. Some satellite cities have minimal connections to the main urban area and would require major investments to provide adequate access. Other towns, such as Sandy and North Plains, have major highway connections that have already promoted suburban development. As a result, Concept C raises key policy issues about the mix of urban travel routes and rural land uses. Concept C analysis also points to the need to direct regional growth strategically, such as placing jobs near housing and providing office, retail, other commercial services and housing in higher-density, mixed-use centers that are pedestrian-friendly and served by transit.

Following is a summary table as well as statements describing what technical conclusions were reached concerning the alternatives.

Table 1: Comparison of 1990 Conditions and Growth Alternatives

Category	Measures	1990	BC	A	B	C
Buildable Acres (No estimate of satellite acres)	Central City	39	48	67	100	67
	Regional Centers	134	273	369	507	403
	Sub Regional Centers	36	41	218	323	151
	Commercial Nodes	998	2,285	4,229	5,322	4,338
	Main Streets	7	8	127	791	342
	Transit Corridors	460	4,925	7,462	9,370	5,955
	Other	52,063	49,181	49,353	48,653	49,580
	New UGB	0	98,214	42,500	0	17,738
	Total	53,736	154,974	104,325	65,066	78,574
Distribution of Development	Central City	7%	5%	5%	7%	6%
	Regional Centers	1%	1%	2%	4%	4%
	Sub Regional Centers	1%	1%	1%	2%	1%
	Commercial Nodes	7%	9%	15%	17%	13%
	Main Streets	1%	1%	1%	3%	2%
	Transit Corridors	9%	18%	14%	21%	12%
	Other	71%	52%	46%	42%	44%
	New UGB	0%	8%	13%	0%	2%
	Satellites	3%	5%	5%	5%	16%
Location of Growth	% of growth in UGB	100%	93%	87%	100%	82%
	% of growth accom. by redevelopment	0%	0%	6%	18%	8%
	EFU Conversion (Acres)	0	63,900	17,200	0	11,400
	% of Employment on Industrial land	32%	43%	53%	33%	53%
Zoning	Single Family	59.0%	61.0%	57.0%	46.5%	51.5%
	Multi-Family	11.0%	11.0%	1.0%	5.0%	1.5%
	Commercial	7.0%	8.5%	1.0%	1.0%	1.0%
	Industrial	19.5%	16.0%	12.0%	10.0%	14.0%
	Mixed Use (commercial and residential)	0.0%	0.0%	24.0%	30.5%	27.0%
	Parks/Open Space	1.5%	1.0%	3.0%	5.0%	3.0%
	Public Facilities	2.0%	2.5%	2.0%	2.0%	2.0%
Density	People per Acre	8.9	7.9	9.8	12.4	9.2
	% High Density (centers) + 50 persons/acre	8.9%	7.4%	7.9%	11.2%	13.6%
	% Medium Density (corridors) 20-50 persons/acre	17.6%	29.1%	30.1%	43.0%	32.3%
	% Low Density (other)less than 20 persons/acre	73.7%	63.5%	61.9%	44.0%	54.2%
Housing	Single Family / Multi Family (percent)	70/30	70/30	74/26	60/40	69/31
Transportation (all measures inside Metro UGB)	Average VMT per Capita	12.4	13.04	12.48	10.86	11.92
	Mode Split: Auto/Transit/ Walk-Bike (percent)	92/3/5	92/3/5	91/4/5	88/6/6	89/5/6
	Lane Miles	5,304	6,777	6,377	5,557	6,116
	Transit Service Hours	4,965	9,575	12,322	13,192	12,553
	Congested Roadway Miles (PM peak hour)	150.5	505.6	682.0	642.6	403.9
Air Quality	CO Winter (Kg/day)	835,115	614,451	613,537	579,579	569,091
	CO Summer	574,708	528,601	525,133	496,017	487,188
	HC Summer	177,857	70,700	69,810	66,375	65,745
	NOx Summer	80,452	94,024	90,987	83,817	86,988
Water	Drinking Water Costs			Moderate	Low	Moderate
	Wastewater Costs			Moderate	Moderate	High
	Stormwater Costs			Moderate	Moderate	Moderate

The following summarizes the findings and directions that were concluded after the alternatives analysis. These conclusions form the technical basis for construction of the Growth Concept.

Land use

The land-use pattern inside the urban growth boundary is more important than the size or shape of the urban area. However, a compact urban region was generally less expensive to serve; required less transportation infrastructure; directed reinvestment to under-used areas inside existing urban areas; preserved more open space, farm and forest land; and resulted in better air quality.

Off-street parking is a major user of land in commercial areas.

Single-family homes and lots consume the most land. Small changes in new lot sizes can have substantial effects on the amount of land needed to accommodate growth.

Transportation

Overall vehicle miles traveled would increase in all the growth concepts, although vehicle miles traveled per capita would decrease under the more compact forms.

Land-use policies are essential and effective in reducing vehicle miles traveled, in encouraging non-auto transportation and in reducing congestion.

A greater mix of uses and strong regional centers resulted in less congestion and more transit ridership.

New regional highways should be evaluated on their ability to support planned regional centers.

A radial light-rail transit system functions as the backbone for regional transit and shapes the region's land-use form.

Transit success is linked to the ease of pedestrian travel, and pedestrian travel is made more practical by transit.

Pedestrian trips should be considered a basic element in virtually all urban designs.

Trips made by bicycles are important and should be treated quite differently than trips made by pedestrians.

Arranging transit and higher-density land uses together resulted in better light rail and overall transit ridership using fewer service hours.

Parking limitations, pedestrian amenities and land-use considerations were more effective in reducing vehicle miles traveled and increasing transit ridership in compact, more densely developed urban areas rather than lower-density land uses.

Areas with many small- and medium-sized arterials and closely connected local streets accommodated growth with less congestion than areas with larger, more widely spaced arterials and less connected local streets. Dense, well-connected street networks also benefited transit, pedestrian and bicycle travel.

Green corridors limited access to, and minimized urban development pressure on, rural lands adjacent to transportation corridors that linked neighboring towns to the nearest regional center. Green corridors also helped maintain distinct communities by preventing neighboring cities from expanding toward the Metro UGB.

Identifying urban connectors through rural areas minimized the impact of urban travel on rural land uses.

The density of the regional network should be expanded to accommodate areas of increased population and employment growth.

The assumptions of prior transportation plans should be re-evaluated, such as re-examining congestion and developing an updated plan around currently acceptable congestion levels.

More compact urban forms and land use patterns and increased opportunities for transit, bicycling and walking will contribute to significant reductions in vehicle emissions.

Urban centers worked best when connected by a set of multi-modal corridors that accommodated auto, transit, bicycle and pedestrian travel to varying degrees.

Employment areas and industrial areas worked best with more roadway connections, especially truck routes, and better access to the regional freight network via air, truck, rail and water.

Air quality

Forecasts for transportation-generated air pollution in the Base Case and the growth concepts show significant decreases in tons per day from 1990 levels for hydrocarbons

and carbon monoxide. That type of air pollution is relatively small compared to total emissions.

Air pollution forecasts for the Base Case and the concepts show increased nitrogen oxides compared to 1990, although the Concept B provides a significant reduction from the base case.

In future years, because of vehicle emission improvements, non-transportation sources of hydrocarbons will tend to increase as the population also increases.

Social stability

Strong communities with a sense of place tend to be safer places for residents.

Compact areas can have faster emergency response times.

Effective affordable housing programs should be a component of urban growth management.

Employment

Estimates of supply and demand for employment land suggest that some areas are out of balance.

Suburban employment is likely to increase.

Housing

A balance of jobs and population for many sub-areas of the region does not exist today. The current Metro housing rule requires that one-half of land zoned residential must be for multi-family housing. This is more than would be built in any of the concepts, except for Concept B.

There are areas within the region with too little or too much land for single-family or multi-family housing.

Water, sewer and stormwater

Concept B has the lowest costs for water and sanitary sewer service.

Stormwater costs are indistinguishable among the concepts.

Concentration of development does have limitations. When growth can be accommodated using existing infrastructure, or incorporating replacements of infrastructure that has outlived its useful life, redevelopment and compact development can be substantially less expensive. When redevelopment requires major replacements of infrastructure that is still useful, it can become more expensive than development of vacant land.

Values

People realize this region is unspoiled compared to most other metropolitan areas. Because of this, they are apprehensive about change.

People love the accessibility of the car but think that transit, biking and walking should be made easier and more convenient.

People don't want any more density than is necessary in their neighborhoods.

The nature of growth

Much of the growth will come from in-migration.

The average age of the population will increase substantially and its ethnic diversity will increase.

Slowing growth

Slow-growth policies based on building limits have been unsuccessful elsewhere and appear to be counterproductive.

Current state law prohibits regulations that would stop or slow growth.

A good strategy is to respond to specific problems resulting from growth. This may have the effect of slowing growth compared to policies that simply accommodate all growth regardless of the costs.

Satellite cities

The effect of pushing growth into satellite cities whether existing or new is not likely to be an effective option. Creation of new cities is very difficult and existing cities outside the metro area are likely to be greatly impacted by this approach as are the connecting roads. Accordingly, Metro should work with other cities as neighbor cities in a cooperative approach and drop satellite city policy.

General conclusions

It would be difficult to make substantial expansions to the urban growth boundary. The land consumption patterns of the last generation cannot continue in the future. This means that substantial changes in urban development will occur.

We should seek a jobs and housing balance.

We must conserve connections with the natural landscape.

Equitable financing of public facilities should be a prerequisite for development.

Determining the public's values

Once the growth concepts were analyzed for technical aspects, Metro went back to the public with the results of the analysis and some important questions. Every household in the region (approximately 500,000) received a mailer that included a survey consisting of the following four questions. More than 17,000 households returned completed surveys.

Following are the results of this survey:

Should we reduce the average new residential lot size from the current 8,500 down to 7,000? See Figure 5.

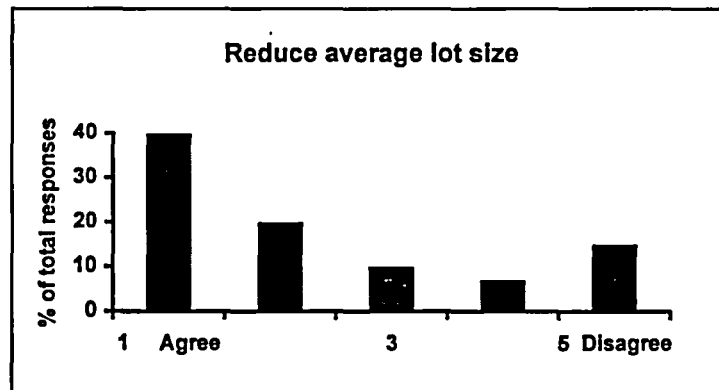


Figure 5: Reduce average lot size graph

Should we decrease the number of parking spaces allowed for retail and commercial development? See Figure 6.

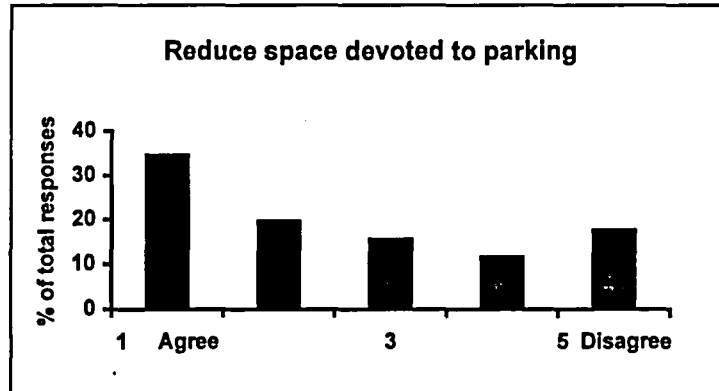


Figure 6: Reduce space devoted to parking graph

Should we increase the amount of residential and retail development along bus lines and light-rail stations? See Figure 7.

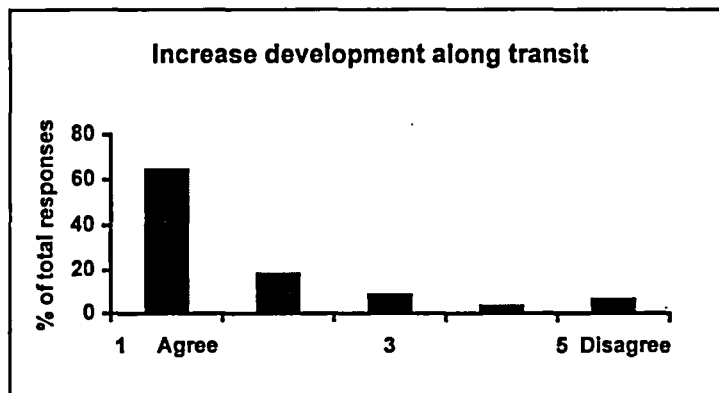


Figure 7: Increase development along transit graph

Should we encourage more growth in city centers and the redevelopment of land for more compact growth? See Figure 8.

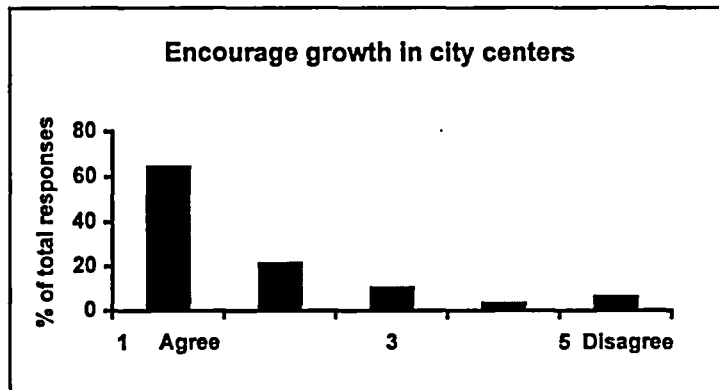


Figure 8: Encourage growth in city centers graph

Metro merged insights from the technical analysis with the survey results to create a recommended alternative, which was a hybrid of the growth concepts.

Assessing the Growth Concepts – Concepts A, B and C – was a learning process. Judging detailed, different land use and transportation alternatives allowed technical analysis and an airing of public views about what was valued and what wasn't.

From the public comments and technical analysis of the alternative growth concepts, a "Recommended Alternative" was crafted.

Recommended Alternative

248,000 to 252,000 acres*



What we examined:

Urban Form: Growth encouraged in centers and corridors with increased emphasis on redevelopment and infill.

Major Roads: 10,483 lane-miles.

Transit: 11,966 daily service-hours, serving 63 percent of households.**

What happened:

Congestion: Slightly more than Concept C, but less than the Base Case and Concepts A and B. Significant congestion on less than 9 percent of major roadways.

Transit ridership: Most ridership with least transit service hours. Higher than Concepts A, B and C, with 570,000 daily riders.

Trip length: The second lowest reduction in VMT per capita within UGB, dropping almost 11 percent from 1990.

* The Metro Council approved 18,579 acres as Urban Reserves in March, 1997 for a total of 251,246 acres.

** From Region 2040: Recommended Alternative Technical Appendix "Intra-UGB Selected Performance Measures" table.

Figure 9: Recommended Alternative

Recommended Alternative achieves this performance inspite of building fewer miles of roads, thus providing better performance for less public dollars. The Recommended

Design of this alternative enabled the development of a growth concept better able to respond to public and technical concerns. For example, the Recommended Alternative assumed that some additional urban growth boundary expansion would need to be coupled with more compact and efficient use of lands within the current urban growth boundary. In addition, some of the more ambitious transit and road improvements were scaled back and industrial designations were refined.

In comparing the Recommended Alternative with Concepts A, B and C, we find that the Recommended Alternative, as a blend (and having learned from A, B and C) is expected to have superior performance. It is more compact than any alternative except B, affecting less farm and forest lands or other rural uses. Analysis also shows that the Recommended Alternative has less vehicle miles traveled than any alternative except C (which exported 1/3 of the growth to neighboring cities), has less congestion than any alternative except C (again which has 1/3 less growth to accommodate). The

Alternative also has the best air quality and the least cost for providing roads, water, sewer and stormwater facilities except Concept B. The Recommended Alternative's compact urban form provides a less costly urban form than all other alternatives except Concept B.

Often it is asked – how does the Recommended Alternative compare with today? While this gives a point of comparison, it must be remembered that the Recommended Alternative is accommodating about 830,000 additional people (about 87% of them within an expanded UGB) and providing about 530,000 additional jobs more than in the region in 1990.

Not surprisingly, there is more congestion in the future than today (from 151 congested road miles in 1990 to 454) and the number of acres of land developed increases. However, there are other important considerations. Surprisingly, air quality is better with over 40 percent decrease in winter carbon monoxide and greater than 50 percent decrease in summer hydrocarbons when compared with 1990 levels. This is in great part due to a combination of cleaner cars replacing older, more polluting ones, but the role of transit and land use patterns are also expected to make a difference.

Another change from current conditions concerns vehicle miles traveled per capita. With the land use and transportation changes, VMT/capita is forecast to decrease slightly from 1990 levels.

While comparison with the other alternatives – A, B and C - or current conditions, is informative, it is important to address a fundamental question concerning the Recommended Alternative and existing policies – that is, what is the difference between continuing on our present course or making substantial course changes. Comparison with the Base Case provides the opportunity for this. The following table highlights important differences:

Table 2: Comparison of the Base Case and the Recommended Alternative		
<i>Factor</i>	<i>Base Case</i>	<i>Recommended Alternative</i>
Acres added to Urban Growth Boundary	98,214	14,500
Acres of Farmland Consumed	63,900	3,545
Single Family/Multi-Family Ratio	70/30	65/35
Congested Road Miles	506	454
Lane Miles Constructed	1,473	734
Vehicle Miles per Capita	13.04	11.76
Average Speed (miles per hour)	28	26
Mode Split (auto/transit/walk & bike)	92/3/5	88/6/6
Transit Service Hours	9,575	11,966
Transit Ridership	338,323	570,007
Transit Riders/Transit Service Hour	35	48

Reviewing these data and public comment, the Metro Council began hearings on the Recommended Alternative.

The preferred alternative was then presented for review and comment through a series of public hearings. Based on suggestions from local governments and citizens, scores of changes were made, and a preliminary growth concept was adopted by resolution in 1994. The 2040 Growth Concept was adopted in December, 1995, as part of RUGGOs. Other amendments to RUGGOs policies were adopted with the 2040 Growth Concept. The amended RUGGOs were submitted to the Land Conservation and Development Commission for review. In December, 1996, amended RUGGOs, including the 2040 Growth Concept text and map, were "acknowledged" to be consistent with all applicable statewide land use laws, goals and rules. The growth concept accommodates approximately 720,000 additional residents and 350,000 additional jobs, a total population of approximately 1.8 million residents within the expanded UGB.

The following chapters describe the region's adopted growth concept and how it is intended to be achieved.

Land Use

Chapter 1 Land Use

Overview

Fundamental to this plan is the assumption that the region should decide its desired urban land-use form and then provide the transportation and other facilities and services necessary to implement that desired form. That is, land-use policies should be the initial target in shaping the region's public policy. This chapter focuses on regional land-use policies and identifies the land-use aspects of the Regional Framework Plan.

One of the principal tools for shaping the region's land-use form is the urban growth boundary. State law requires urban growth boundaries for all urban areas of the state. Metro, in this region, is assigned the responsibility for managing the urban growth boundary and designating areas for future urban development called "urban reserve areas." State law also requires urban growth boundaries to be managed so that adjacent rural resources, primarily farms and forests, are conserved, while ensuring that sufficient capacity is provided to accommodate expected growth and to provide needed housing.

As Metro considered the long-term management of the region's urban growth boundary in the early 1990s, it concluded that development patterns and coordination of planning – particularly for land-use and transportation – inside the UGB were critical concerns. As a result, urban form alternatives including consideration of already developed lands within the current urban growth boundary as well as rural lands adjacent to the UGB were developed and analyzed. Metro, in cooperation with the citizens of the region and its local government partners, concluded that a compact urban form was the preferred urban form alternative.

Concurrent with the urban form decision, the Future Vision Report noted that the region's livability must also be a major part of the region's goals. "Livability values" is a broad term that equally applies to issues addressed in other chapters of this plan, such as parks, open spaces, and water quality. Livability issues such as housing density, urban form and settlement patterns also have a direct effect on urban form. Protecting some of the open spaces within the current urban growth boundary and permitting some

expansion of the current urban area allows accommodation of forecasted growth. It also allows protection of some of the existing natural areas of the region and encourages reinvestment in existing urban areas and ensures that the density of new urban development is not too great.

Given the relationship between compact urban form and the region's livability, this chapter of the Framework Plan addresses regional land-use policies, including those relating to the following charter-mandated regional framework plan components:

- management and amendment of the urban growth boundary
- protection of lands outside the urban growth boundary for natural resource, future urban or other uses
- housing densities
- urban design and settlement patterns.

Hopefully these coordinated policies will result in building livable communities.

Background

Future Vision

As noted above, the Future Vision statement is the broadest set of declarations about our region. The Regional Framework Plan is required to describe its relationship to the Future Vision. With regard to land-use, the Future Vision notes many values including the following:

"We value natural systems for their intrinsic value, and recognize our responsibility to be stewards of the region's natural resources."

"Widespread land restoration and redevelopment must precede any conversion of land to urban uses to meet our present and future needs."

"We value economic development because of the opportunities it affords us all, but recognize that there can be true economic development only with unimpaired and sustainable natural ecosystems, and suitable social mechanisms to ensure dignity and equity for all and compassion for those in need."

"We value our regional identity, sense of place and unique reputation among metropolitan areas, and celebrate the identity and accomplishments of our urban neighborhoods and suburban and rural communities."

"We value a life close to the beauty and inspiration of nature, incorporated into urban development in a manner that remains a model for metropolitan areas into the next century."

"We value vibrant cities that are both an inspiration and a crucial resource for commerce, cultural activities, politics and community building."

"Direct all regional planning efforts to include equitable economic progress for communities throughout the region as a critical component for modeling and evaluation."

"Address the further diversification of our economy, the creation of family-wage jobs and the development of accessible employment centers throughout...the region in the Regional Framework Plan elements for transportation, rural lands, urban design, housing and water resources."

"Focus public policy and investment on the creation of mixed-use communities that include dedicated public space and a broad-range of housing types affordable to all."

"Incorporate specific expectations for a basic standard of living for all citizens in Regional Framework Plan elements concerned with urban design, housing, transportation, and parks and open space."

"Specifically incorporate historic preservation and landscape ecology in Regional Framework Plan elements concerned with transportation, housing, urban design, rural lands and the UGB, parks and open space, and bi-state governance."

Regional Framework Plan relationships to these statements will be described in the discussion following.

Urban growth boundary

State law assigns Metro responsibility for managing the region's urban growth boundary, one tool for managing growth, which separates urbanizable land from rural land. The boundary was established in 1979 and included 24 cities (Beaverton, Cornelius, Durham, Fairview, Forest Grove, Gladstone, Gresham, Happy Valley, Hillsboro, Johnson City, King City, Lake Oswego, Maywood Park, Milwaukie, Oregon City, Portland, Rivergrove, Sherwood, Tigard, Troutdale, Tualatin, West Linn, Wilsonville and Wood Village) and the urban metropolitan portions of Clackamas, Multnomah and Washington counties. The UGB has been reevaluated about every five to seven years to assess whether capacity for the next 20 years is available. Since the UGB's inception, fewer than 3,000 acres of land have been added. As of the first quarter of 1997, the UGB contained 232,667 acres. Expansion of the UGB from 1978-1997 was only a little more than 1.2 percent increase.

Approximately every five years, Metro revisits the region's urban land needs for the next 20 years and estimates the growth capacity within the UGB. A state law now requires Metro to demonstrate that there is a sufficient 20-year future capacity, which, if previous

forecasts were not higher than actual growth, must be remedied by more efficiently using the land within the current UGB or by expanding it.

Urban reserves

The Oregon Land Conservation and Development Commission (LCDC) mandated that Metro designate urban reserves adjacent to the urban growth boundary as a means of managing long-term regional growth. Designating urban reserves allows communities and the region to more cost-effectively plan and phase in public infrastructure (sewer, water, streets, schools, etc.) and enables private interests to plan development with more certainty. Careful development of urban reserves also may allow communities to plan more livable communities and conserve natural resources.

LCDC's Urban Reserve Area Rule (especially Goal 14, Factors 3 – 7) and the requirements of OAR 660-04-010 are the basis for considering urban reserves.

Compiling the state criteria and using data available or created to address state criteria, the region's selection criteria for urban reserves include:

Factor 3: utility feasibility, road network, traffic congestion and schools

Factor 4: efficiency of land and buildable land

Factor 5: environmental constraints, access to centers, jobs/housing balance

Factor 6: agricultural retention

Factor 7: agricultural compatibility

Metro designated urban reserve areas in March, 1997, to meet projected urban land needs to the year 2040. Counties are required by the Urban Reserve Area Rule to adopt rural zoning to preserve designated urban reserves for future urban use.

As the Metro Council considered possible urban reserve areas, they concluded that establishing priorities for bringing in urban reserve lands would be helpful to property owners, service providers and citizens. Accordingly, the Metro Council, with the advice of local jurisdictions, established "First Tier" lands within the urban reserves. These First Tier lands are those thought to be most easily served with urban services and for which adjacent cities or the county have indicated capacity to serve. About 4,100 acres of land are designated as First Tier of the 18,579 total acres designated as Urban Reserves. When these lands would be brought into the boundary remains an outstanding

Metro Council decision. The designation does establish, as a formal Metro policy, which lands would be brought in first.

Housing

The state's Metropolitan Housing Rule (OAR 660, Division 7) requires local jurisdictions to "plan for local residential housing densities that support net residential housing density assumptions underlying the urban growth boundary."

In addition, ORS 197.303 states that cities' and counties' needed housing means "...housing types determined to meet the need shown for housing within an urban growth boundary at particular price ranges and rent levels. " It also "...includes, but is not limited to attached and detached single-family housing and multiple family housing for both owner and renter occupancy; (b) government assisted housing; (c) mobile home or manufactured dwelling parks... (d) manufactured homes on individual lots planned and zoned for single-family residential use that are in addition to lots within designated manufactured dwelling subdivisions."

In addition to these requirements, the state requires that cities and the urban portions of counties in the region must "...provide the opportunity for at least 50 percent of new residential units to be attached single family or multiple family housing..." and provide an "...overall density of six, ...eightor ten or more dwelling units per net buildable acre..." Relatively small cities with some growth potential of less than 8,000 persons for the active planning area were required to provide zoning for at least six dwelling units. This applied to the cities of Cornelius, Durham, Fairview, Happy Valley and Sherwood. The urban portions of Clackamas and Washington counties and the cities of Forest Grove, Gladstone, Milwaukie, Oregon City, Troutdale, Tualatin, West Linn and Wilsonville were to provide at least eight dwelling units per acre. The urban portion of Multnomah county and the cities of Portland, Gresham, Beaverton, Hillsboro, Lake Oswego and Tigard were to provide 10 dwelling units per acre.

Analysis

The urban growth boundary is one of the primary tools available to the region for managing urban form. In turn, the capacity of the boundary to accommodate growth is of critical importance to managing the UGB. Assessment of the current UGB capacity includes analysis of nine variables. These are:

- a forecast of population and jobs for the next 20 year period
- an estimate of the amount of unbuildable land (land over 25 percent slope, etc.);
- reductions to remaining buildable land for streets, parks, etc.
- reductions for the probable difference between zoning maximum densities and actual built densities
- consideration of time to allow local jurisdictions to make zoning changes if higher densities are to be allowed and required
- reductions for buildable parcels with full buildout obstacles (e.g., land with 8-24 percent slopes, etc)
- an estimate of the probable amount of additional redevelopment
- projections of probable infill on built land
- evaluation of the amount of farm tax assessment lands within the current UGB that are likely to be urbanized.

(See the *Urban Growth Report* for a detailed description of these factors).

The Metro Council has tentatively concluded that capacity for the 248,000 additional dwelling units needed to accommodate the year 2017 forecasted need is not totally available within the current urban growth boundary. The following table provides a step-by-step description of the process, assumption and initial conclusions about the current capacity of the region's urban growth boundary.

It is important to note that the variables include several new factors never before measured or considered when the capacity of the UGB was calculated. These include assessing the amount of infill and redevelopment capacity within the current UGB and assuming implementation of the 2040 Growth Concept. Estimating infill and redevelopment potential increased the total estimated potential capacity of the UGB significantly. About 30 percent of the jobs and more 20 percent of the demand for housing is estimated to be accommodated through infill and redevelopment. These forecasts are based on actual rates occurring now in the region. This responds to statements in the Future Vision about land restoration and redevelopment as well as recognizing what is actually happening in the market.

Assuming that the Growth Concept will be implemented in UGB capacity calculations also responds to issues raised in the Future Vision. The Growth Concept includes "mixed-use communities" and a "broad range of housing types" by including regional centers, town centers, main streets, station communities and employment areas. These are all design types which encourage mixed-use development. The Growth Concept also is designed to protect existing neighborhoods by directing the higher density

development to these mixed-use areas where transit service is most frequent. Assuming that this zoning will be applied and that the market will respond remains a supposition based on the requirements of Metro's Urban Growth Management Functional Plan. However, recent data concerning the past few years indicates that job growth is more than 100 percent of the Growth Concept goal and that residential growth is up to 83 percent of goal. Activity in the next few years will provide verification of these trends and will demonstrate the extent that the Growth Concept is achievable.

Table 3: Calculation of Current Urban Growth Boundary Capacity

Calculation of Current Urban Growth Boundary Capacity¹ (Numbers to be Added)				
	Action	Acres of Land	Dwelling Units	Jobs
Step 1	Determine total land area in the UGB	232,667	n/a	n/a
Step 2	Subtract developed land, bodies of water, etc. ²	- 177,630 = 55,040	n/a	n/a
Step 3	Subtract acres of already platted lots	- 1,590 = 53,450	n/a	n/a
Step 4 (variable 2)	Subtract estimate of unbuildable lands such as slopes over 25%, etc.	-15,950 = 37,500	n/a	n/a
Step 5 (variable 3)	Subtract estimate of land for future streets, schools, parks, etc.	-12,710 =24,790	n/a	n/a
Step 6	Convert available buildable land to Metro 2040 Growth Concept as dwellings and jobs	24,790	204,320	318,080
Step 7 (variables 4 & 6) (27%)	Subtract capacity to compensate for difficult sites and not building to maximum densities	n/a	- 52,220 =152,100	-22,330 =295,750
Step 8 (variable 5) (5 years)	Estimate and subtract capacity to allow time for cities and counties to rezone	n/a	-8,020 =144,080	-8,630 =287,120
Step 9 (variable 7)	Add estimate of redevelopment capacity	n/a	+41,410 =185,490	+136,860 =423,980
Step 10 (variable 8)	Add estimate of infill capacity	n/a	+21,110 =206,600	+43,700 =467,680
Step 11 (variable 1)	Add in capacity of already platted lots	n/a	248,000	462,000
Step 12 Capacity Surplus/(Deficit)	Estimate and subtract capacity of farm tax assessed lands not likely to be built on	n/a	(41,400)	5,680

Needed UGB expansion in acres

4,140³

¹ For a more detailed explanation of these data, see the *Urban Growth Report*, Metro, May, 1997.

² Data for developed land and platted, but vacant parcels as of 9/1/95.

³ Assumes average density of 10 dwelling units per buildable acre as stated in Metro Code Chapter 3.01. Total acres needed may be more if not all lands within urban reserves are buildable.

The Metro Council has asked for nine additional data items in order to complete its decision about the capacity of the current urban growth boundary. Once the decision is completed, urban reserves will be used to address any deficits. The first tier urban reserves total about 4,100 acres. Some of the lands within the first tier are not buildable (some contain creeks, already developed small parcels, steep slopes, etc.). If the Metro Council conclusion about the present UGB capacity is similar to its initial conclusion, expansion of the UGB will likely include all first tier lands and consider some additional lands in order to fully accommodate the estimated need.

Housing

Table 3 included estimates of needed urban housing for the region to the year 2017. In order to ensure that housing choice is provided, more detailed data about housing needs of the region are necessary.

Table 4 is from the draft *Housing Needs Analysis* describing the region's housing needs to the year 2017. After consideration of public testimony and any other additional requested data, the Metro Council may revise the table to ensure that Metro has acted consistent with the region's projected housing needs.

Table 4: Regional Housing Need 1995 - 2017, Based on the Metro 2040 Growth Concept (Urban Metro Area Only - Includes Vacancy Rate)

Monthly Rental Cost	Approximate Equivalent Ownership Price	Number of New Housing Units Needed	Housing Type Distribution					
			Detached Homes		Attached Homes			
			Detached Single Family & Manufactured Homes on Individual Lots	Detached Small Lot Single Family & Mobile Homes and Manufactured Housing in Parks	Attached Single Family & Rowhouses	Multiple Family Low Rise	Multiple Family Mid Rise	Multiple Family High Rise
\$0-199 ²	n/a	0	n/a	n/a	n/a	A,R	A,R	A,R
200-299 ²	< 49,999	2,372	n/a	n/a	n/a	A,R	A,R	A,R
300-399 ²	50-59,999	10,303	n/a	n/a	n/a	A,R	A,R	A,R
400-499	60-74,999	25,766	n/a	n/a	A,R	A,R	A,R	A,R
500-599	75-89,999	32,874	O	O ³	A,R	A,O,R	A,O,R	A,O,R
600-749	90-114,999	38,683	O	O	O,R	O,R	O,R	O,R
750-999	115-149,999	51,637	O	O	O,R	O,R	O,R	O,R
1,000-1,165	150-174,999	38,941	O	O	O,R	O,R	O,R	O,R
1,166-1,330	175-199,999	12,647	O	O	O,R	O,R	O,R	O,R
1,331+	200,000 +	35,677	O	O	O,R	O,R	O,R	O,R
Total Units:		248,900	SF Units Range: 104,699 - 137,497 ⁴		Rowhouse Units:20,712-53,539		Multi-Family Units: 86,574 -97,175	
Single Family/Rowhouse/Multi-Family Split ⁵ : 42/19/39 - 55/10/35				Assisted Housing Units ⁷ : 54,883 - 86,242				

1. "n/a" means not available in the cost/price range. Ownership tenancy within the lower range of prices is a rough estimate.

2. Assisted Housing means housing provided through Government Assisted Housing programs, non-profit organizations or households paying more than 30 percent of income for housing. Additional assisted housing for larger households also may be provided on a limited basis in other categories than those listed above.

3. "O" means that the new housing is expected to be owner occupied; "R" means that the housing is expected to be renter occupied. "A" means assisted housing.

4. Of this between 5,750 and 25,062 manufactured homes would be needed.

5. To calculate the total number of housing units needed, you must add the high end of the detached single family range to the low end of the attached home range, or vice-versa. Total demand for housing units is not assumed to change, but actual housing preferences could range within the estimates of the ranges cited.

6. Housing needs projected in this chart are cited to the level of individual units in order to be consistent with model results. However, these are forecasts and should be considered to be accurate to the nearest 1,000 units.

7. Estimate for UGB plus Urban Reserves. Low estimate preserves current % of income spent on housing. High estimate derived from separate analysis where share of household income spent on housing was 30%. Low estimate which is calculated consistently with the other data used in the Table is used to calculate housing needs.

8. Assumes 35 % to 50 % of assisted housing will be multifamily. Conversely, we assume 65% or 50% will be single family of which ½ will be detached and ½ will be attached.

9. Housing demand and supply analysis is based on a "baseline projection" assuming that no new single family dwelling units are produced on the private market below \$110,000 and no new multifamily rental units are produced below \$550 per month rent. \$ estimates are in 1995 \$.

Placeholder – Include Metro Council decision on the Housing Needs Analysis here, when concluded

As can be seen, a wide variety of housing types will be needed to meet expected future demand in the region. Differing construction types, including manufactured housing, stick built and some high-rise structures are included. Ownership and rental options are also included, as are varieties in housing density. No one housing type can supply the varying needs of the region.

It is also important to consider the dynamics of residential development in the region. (for a more detailed description of this analysis see the *Housing Needs Analysis*, May 1997.)

The regional economy is cyclical and the region is likely to continue to have times of high and low growth rates. The importance of these cycles is that there is a correlation between high growth rates and high housing prices/low affordability. In the late 1970s, we had high growth rates and low affordability at rates comparable to current conditions.

Housing prices in the region are high and housing affordability is lower than some times in the region's past. In particular, this causes those who rent or first-time homebuyers to get less housing or pay much more of their household income than recommended. However, housing prices are only slightly higher than those in other metropolitan regions in the nation and are lower than most metropolitan areas in the West.

Interestingly, the region is at historic highs with regard to the number of units being built. Accordingly, an unchanging or slowly increasing supply does not seem to be the primary obstacle to lowering housing prices.

Limitations to increased production include:

- home builders can “ramp-up” production only so quickly
- the increasing cost of land and labor
- lack of urban infrastructure to vacant buildable lands
- local government zoning inflexibility can limit development options and reduce the capacity of the region to accommodate growth. This results in more expensive housing.
- higher standards including those for stormwater management, seismic standards, energy conservation, etc. (However, these costs existed before the regulations, they were simply paid for in a different way – homes were flooded, residents paid more

for heating costs, etc. These "extra" costs may also be thought of as cost shifts rather than increased cost.)

It is estimated that about 2/3 of the forecast growth is from people moving to the region. In addition, the demographic characteristics of the total population is expected to change. The future population is expected to be on average older, have more years of education, have fewer people per household and be more racially diverse. Inherent in these forecasts is that continuing in-migration will be attracted by a continuing robust economy and preeminent livability. Also of note, a smaller average household size means a demand for more housing units even if total population did not change.

Another finding of the technical analysis of housing market dynamics of this region is that the demand for land is much more elastic than previously thought. That is, most people are not willing to pay much more for a larger lot. Therefore, the market is likely to adjust if higher densities are allowed. In fact, the market has already adjusted to 83 percent of Growth Concept residential densities during the 1993 to 1995 period. The biggest obstacle to accommodating this density of development seems to be existing zoning regulations, which may limit change in some area. As building size has much more influence on total housing cost than the cost of raw land, unless average house size built drops dramatically, expanding the urban growth boundary greatly could likely only result in lower densities, not lower housing costs.

Another dynamic of our region can be illustrated by comparison with other metropolitan areas. For example, in most regions in the country, a deteriorating inner urban core is the source of affordable, if less desirable, housing. However, in this region, the value of close-in housing has not depreciated, rather, it has appreciated substantially from values in the early 1980s even adjusting for inflation. In some cases, appreciation in inner urban areas has outstripped the appreciation in more suburban locations. As long as these areas retain a high quality of life, they will remain desirable and not be a source of affordable housing.

It is also important to note that if new lands are added to the urban growth boundary, they will not effectively increase the supply of buildable land until infrastructure (roads, sewer, water, etc.) are available or provided. If the public is not willing to fiscally support these services in a timely manner, either standards must be lowered or new property owners (through the housing price passed on by the developer or builder) must be able to pay for these services. Alternatively, very large tracts of buildable lands must be made available (e.g., 500-1,000 acre pieces of flat farmlands) so that economies of scale can be realized.

Another factor in housing dynamics is that housing expectations have been rising. If the average house built in 1950 were built today, the result would likely be affordable housing. The average house built in 1950 was about 800 square feet (with a much larger average household size than today). In contrast, the average home built today is about 1,900 square feet. Simply put, one way to produce affordable housing is to build small homes on small lots.

A substantial number of today's households (currently about 12 percent) are subsidized or assisted housing. Subject to very major changes to the regional housing market and/or state and federal government policy changes, it is likely that this percentage of assisted housing will be needed in the future.

Housing costs are likely to be high and unaffordable in the future when high rates of growth occur. There is only so much that can be done to address affordability during these times. If the inner core housing remains desirable, high growth rates continue, low public interest in substantial urban expansion on farmlands persists and low public support for substantial public infrastructure extensions remains, then public policy initiatives to encourage affordable housing will be needed if additional affordable housing is to be provided.

Consistent with the analysis above and concerns stated in the Future Vision statement regarding "...a broad range of housing affordable to all," the following table lists recommendations for a "fair share" of the affordable housing that would need to be constructed within each jurisdiction in order to supply the region's affordable housing need.

Table 5: Recommended Needed Additional Affordable Housing If Affordable Housing is to be Achieved Throughout the Region

City/County	Total Housing Units (1995-2015)	Assisted Housing Estimates: No Income Shift	Assisted Housing Estimates: Income Shift*
Beaverton	12,916	3,694	1,534
Cornelius	851	129	77
Durham	n/a	n/a	n/a
Fairview	2,707	479	247
Forest Grove	1,334	305	144
Gladstone	505	38	24
Gresham	12,122	2,948	1,336
Happy Valley	1,888	290	109
Hillsboro	13,230	2,792	1,144
Johnson City	n/a	n/a	n/a
King City	n/a	n/a	n/a
Lake Oswego	2,472	556	284
Maywood Park	n/a	n/a	n/a
Milwaukie	2,890	516	210
Oregon City	3,226	844	358
Portland	55,608	10,427	5,176
Rivergrove	n/a	n/a	n/a
Sherwood	4,713	1,096	425
Tigard	4,994	1,236	532
Troutdale	2,270	365	227
Tualatin	3,067	750	290
West Linn	2,082	492	207
Wilsonville	3,953	601	364
Wood Village	344	55	32
Clackamas County	49,348	7,565	4,642
Multnomah County	10,405	3,608	1,620
Washington County	55,471	9,698	4,859
Total	246,396	48,484	23,841

* Given the limited resources available for subsidized housing, this is the most likely behavioral adjustment to a limited supply of low- and moderate- income housing.

The above recommendations will be used as individual urban reserves adjacent to cities or within counties are analyzed for affordable housing programs.

Placeholder – Include Metro Council decision on the Housing Needs Analysis here, when concluded.

Urban reserves

Urban reserve areas are lands designated for future expansion of the urban growth boundary when needed. Recognizing that accommodation of future growth within the current UGB is only one way to address future growth, more than 23,000 acres of lands adjacent to the current urban growth boundary were analyzed for suitability as urban reserves. These urban reserve study areas were determined by the Metro Council after consideration of public testimony and technical analysis. The technical analysis included consideration of land forms and the landscape ecology of the region. Land forms such as the Boring Lava domes and water features such as streams, floodplains and wetlands were mapped and considered along with avoidance of lands protected as exclusive farm and forest lands all around the current UGB. Avoidance of most of these features was directed by the Metro Council as it determined which areas to study as urban reserves. This direction relates to the Future Vision statement that suggests that "...specifically incorporate...landscape ecology in Regional Framework Plan elements concerned with transportation, housing, urban design, rural lands and the UGB...."

During a period of more than two years, a technical analysis of the study areas was completed, and discussion and public testimony was heard and considered by the Metro Council. On March 6, 1997, the Metro Council designated 18,579 acres of urban reserves. The location of these urban reserves is shown on the Metro 2040 Growth Concept Map, attached and incorporated into this plan as Exhibit A.

The adopted urban reserves provide an estimated 23-year inventory of land beyond the 20-year supply to be maintained within the urban growth boundary. From these reserves, the region can expand as needs are unable to be met within the current urban growth boundary.

In addition, a "first tier" of urban reserves lands – lands to be brought into the urban growth boundary first – has been designated. A set of requirements to be met prior to development also has been added to the Metro Code (see appendix, Metro Code chapter 3.01 for more details) to ensure that the transition from rural to urban within the first tier and other urban reserves addresses critical issues including governance, land-use planning, provision and funding of needed public facilities, conservation of natural resources and affordable housing.

While there are direct connections between the urban growth boundary and urban reserves, it should be noted that one of the fundamental aspects of urban growth boundaries is that they are intended to expand as needed to provide capacity for

projected growth. Urban reserves, whether there is an immediate demand, provide clear policy direction about where the boundary will move over time and allow both private and public sectors to anticipate and act accordingly.

Economic opportunity

The regional economy, like all economies, is subject to cycles – periods of faster growth and slower growth. Currently the region has very low unemployment and relatively high rates of construction. Some of these conditions may be the result of local policies, but, as much of the country as a whole is experiencing similar conditions, other factors, outside the region, clearly also play a role. It seems likely that these conditions will not continue indefinitely, and economic circumstances will change. When change does occur, interest in addressing future unemployment is likely to increase. However, the results of any corrective actions may take time to take hold. Accordingly, actions to address economic conditions must consider that there is a time lag between action and outcome. There may be few short-term regional economic fixes.

The region has effectively used several strategies to maintain economic activity. One strategy has been to maintain the region's livability. This includes conservation of and access to the natural landscape as well as more traditional considerations such as attention to the transportation system, public infrastructure, etc. A second strategy has been to encourage efficient use of land within the region. While housing at prices or rents consistent with jobs could be improved in some areas, the region is relatively compact, making jobs and housing reasonably close. As long as sufficient land for housing and jobs are provided and sufficient natural areas are conserved, these strategies can continue to keep the region attractive and provide a competitive advantage when compared with other metropolitan areas of the country. A third strategy has been to designate large amounts of industrial land such as the sunset corridor, Columbia south shore and in Tualatin.

Analysis of employment growth in the region has found that about 40 percent of new jobs are on lands considered "developed." Second shifts are added, office space per person is reduced or other measures are taken to accommodate more workers within existing buildings. Redevelopment of existing buildings or removal and replacement also constitute means of securing additional density. Another means of adding capacity is that additional building space may be added to lands assumed to be fully developed. While either of these methods are not as noticeable as new buildings built on vacant lands, this job capacity is significant.

Another economic consideration is diversification of the region's economy. The bulk of new jobs come from small businesses. Many small businesses provide a diversified and stable economy when compared to an alternative of reliance on a relatively few large businesses. Having more small businesses also provides more opportunities for people to own their own businesses and likely provides more business interest in community affairs.

The Future Vision states that the Regional Framework Plan should "address the further diversification of our economy, the creation of family-wage jobs and the development of accessible employment centers throughout...the region in the Regional Framework Plan elements for transportation, rural lands, urban design, housing and water resources." In addition, it recommends the Regional Framework Plan "incorporate specific expectations for a basic standard of living for all citizens in Regional Framework Plan elements concerned with urban design, housing, transportation, and parks and open space."

The Growth Concept provides access to most areas of the region via many different modes, especially transit service. This is in contrast to some metropolitan areas which have urban inner cores with difficult transit access to suburban jobs. The region apparently does have some attractiveness to smaller businesses, as the region has been named two years running as the No. 1 large "city" ("Portland, OR/Vancouver, WA") for entrepreneurs ("The Nations Entrepreneurial Hot Spots," October 1995 and October 1996 Entrepreneur Magazine).

Accordingly, policies that encourage smaller businesses to form, expand and prosper would seem to be more effective than other methods of maintaining a stable economy.

Urban/rural transition

The concept of separating urban areas, or rural reserves, emerged during the Region 2040 planning process. Rural reserves would serve to separate and protect rural lands from lands within the urban growth boundary over a 50-year period.

Rural reserves would include land used for farms, forestry, natural preserves and very low-density rural residential development and might receive priority status for new park and open space acquisitions. New commercial or industrial development would be restricted, and highway interchanges, other highway access to the rural road system and extensions of urban services would be prohibited.

Rural reserves might also be used to separate cities and break urban patterns within the urban growth boundary. Rural lands already create separation between Cornelius and Hillsboro, and Tualatin, Sherwood and Wilsonville.

Neighbor cities

The future of the region is closely linked to our neighbor cities. Their growth will affect us, as ours will affect them. By coordinating planning efforts, we can help ensure livability inside and outside our borders.

Based on projections, Sandy, Canby and Newberg will grow the most. And as a result of strong transportation connections, Woodburn, Scappoose and North Plains will also experience growth pressure. Conversely, with poor transportation connections, Estacada will probably experience less growth.

Based on analysis done in *Concepts for Growth*, developing an effective neighbor cities strategy could help contain traffic congestion by keeping 65 percent of work traffic and 90 percent of non-work traffic within neighbor cities. This strategy relies on using rural reserves to separate neighbor cities from urban areas, working cooperatively with neighbor cities to balance jobs and housing within their communities and directing transportation through green corridors.

Protection of agriculture and forest lands

More than 233,000 acres of rural resource lands (zoned exclusive farm and forest) exist within the tri-county area. With the Metro Council decision on Urban Reserves, 3,085 acres of resource lands were designated as urban reserves, leaving more than 230,000 acres of remaining resource lands in the tri-county area. The Future Vision states that “rural lands shape our sense of place by keeping our cities separate from one another, supporting viable farm and forest resource enterprises and keeping our citizens close to nature, farm, forest...” Further, it states that the Regional Framework Plan should “actively reinforce the protection of land currently reserved for farm and forest uses for those purposes.” While not all rural resource lands were protected, less than 2 percent were affected by the urban reserve decision – a decision that is estimated to provide a 23 year supply of buildable land beyond the capacity within the current UGB.

Schools

The Future Vision includes a substantial number of declarations about the need for education in the region. While land-use policies may not directly impact educational opportunity, there are clear relationships between education and land use. One of the most important is that if the objective is to build better communities, schools should be one of the anchors for a community. The urban reserves designated by the Metro Council include language that provides school districts the opportunity to participate in planning urban reserves. This may allow for adequate and suitable school sites, and may also allow neighborhoods to be centered around future needed schools.

Policies

Following are Regional Framework Plan policies for land use and to generally guide urban development in the region:

1.1 Urban form

The quality of life and the urban form of our region are closely linked. The Growth Concept is based on the belief that we can continue to grow and enhance livability by making the right choices for how we grow. The region's growth will be balanced by:

- maintaining a compact urban form, with easy access to nature
- preserving existing stable and distinct neighborhoods by focusing commercial and residential growth in mixed-use centers and corridors at a pedestrian scale
- assuring affordability and maintaining a variety of housing choices with good access to jobs and assuring that market-based preferences are not eliminated by regulation
- targeting public investments to reinforce a compact urban form.

1.2 Built environment

Development in the region should occur in a coordinated and balanced fashion as evidenced by:

- a regional "fair-share" approach to meeting the housing needs of the urban population
- the provision of infrastructure and critical public services concurrent with the pace of urban growth and that supports the 2040 Growth Concept
- the continued growth of regional economic opportunity, balanced so as to provide an equitable distribution of jobs, income, investment and tax capacity throughout the region and to support other regional goals and objectives

- the coordination of public investment with local comprehensive and regional functional plans
- the creation of a balanced transportation system, less dependent on the private automobile, supported by both the use of emerging technology and the location of jobs, housing, commercial activity, parks and open space.

1.3 Housing

The Metro Council shall adopt a “fair share” strategy for meeting the housing needs of the urban population in cities and counties based on a subregional analysis that provides for:

- a diverse range of housing types available within cities and counties inside the UGB;
- specific goals for low- and moderate-income and market rate housing to ensure that sufficient and affordable housing is available to households of all income levels that live or have a member working in each jurisdiction;
- housing densities and costs supportive of adopted public policy for the development of the regional transportation system and designated centers and corridors;
- a balance of jobs and housing within the region and subregions.

1.4 Economic opportunity

Metro should support public policy that maintains a strong economic climate through encouraging the development of a diverse and sufficient supply of jobs, especially family wage jobs, in appropriate locations throughout the region.

In weighing and balancing various values, goals and objectives, the values, needs, choices and desires of consumers should also be taken into account. The values, needs and desires of consumers include:

- low costs for goods and services
- convenience, including nearby and easily accessible stores; quick, safe, and readily available transportation to all modes
- a wide and deep selection of goods and services
- quality service
- safety and security
- comfort, enjoyment and entertainment.

Expansions of the UGB for industrial or commercial purposes shall occur in locations consistent with this plan and where an assessment of the type, mix and wages of existing and anticipated jobs within subregions justifies such expansion. The number and wage

level of jobs within each subregion should be balanced with housing cost and availability within that subregion. Strategies should be developed to coordinate the planning and implementation activities of this element with Policy 1.3: Housing and Policy 1.8, Developed Urban Land.

1.5 Urban Vitality

Special attention shall be paid to promoting mixed-use development in existing city and neighborhood centers that have experienced disinvestment and/or are currently underutilized and/or populated by a disproportionately high percentage of people living at or below 80 percent of the area median income. In creating these designations, Metro shall consider new and existing community plans developed by community residents.

1.6 Growth Management

The management of the urban land supply shall occur in a manner that:

- encourages the evolution of an efficient urban growth form
- provides a clear distinction between urban and rural lands
- supports interconnected but distinct communities in the urban region
- recognizes the inter-relationship between development of vacant land and redevelopment objectives in all parts of the urban region
- is consistent with the 2040 Growth Concept and helps attain the region's objectives.

1.7 Urban/Rural Transition

There should be a clear transition between urban and rural land that makes best use of natural and built landscape features and that recognizes the likely long-term prospects for regional urban growth.

- **Boundary Features** – The Metro UGB should be located using natural and built features, including roads, rivers, creeks, streams, drainage basin boundaries, floodplains, power lines, major topographic features and historic patterns of land use or settlement.
- **Sense of Place** – Historic, cultural, topographic and biological features of the regional landscape that contribute significantly to this region's identity and "sense of place" shall be identified. Management of the total urban land supply should occur in a manner that supports the preservation of those features, when designated, as growth occurs.
- **Urban Reserves** – "Urban reserve areas," designated pursuant to LCDC's urban reserve rule for purposes of coordinating planning and estimating areas for future

urban expansion, shall be consistent with these goals and objectives, and reviewed by Metro at least every 15 years.

- Inclusion of land within an urban reserve area shall generally be based upon the locational factors of Goal 14. Lands adjacent to the UGB shall be studied for suitability for inclusion within urban reserves as measured by factors 3 through 7 of Goal 14 and by the requirements of OAR 660-04-010.
- Lands of lower priority in the LCDC rule priorities may be included in urban reserves if specific types of land needs cannot be reasonably accommodated on higher priority lands, after options inside the UGB have been considered, such as land needed to bring jobs and housing into close proximity to each other.
- Lands of lower priority in the LCDC rule priorities may be included in urban reserves if needed for physical separation of communities inside or outside the UGB to preserve separate community identities.
- Expansion of the UGB shall occur consistent with the urban/rural transition, developed urban land, UGB and neighbor city objectives. Where urban land is adjacent to rural lands outside of an urban reserve, Metro will work with affected cities and counties to ensure that urban uses do not significantly affect the use or condition of the rural land. Where urban land is adjacent to lands within an urban reserve that may someday be included within the UGB, Metro will work with affected cities and counties to ensure that rural development does not create obstacles to efficient urbanization in the future.

1.8 Developed Urban Land

Opportunities for and obstacles to the continued development and redevelopment of existing urban land shall be identified and actively addressed. A combination of regulations and incentives shall be employed to ensure that the prospect of living, working and doing business in those locations remains attractive to a wide range of households and employers. In coordination with affected agencies, encourage the redevelopment and reuse of lands used in the past or already used for commercial or industrial purposes wherever economically viable and environmentally sound.

Redevelopment and Infill – When Metro examines whether additional urban land is needed within the UGB, it shall assess redevelopment and infill potential in the region. The potential for redevelopment and infill on existing urban land will be included as an element when calculating the buildable land supply in the region, where it can be demonstrated that the infill and redevelopment can be reasonably expected to occur during the next 20 years.

Metro will work with jurisdictions in the region to determine the extent to which redevelopment and infill can be relied on to meet the identified need for additional urban land. After this analysis and review, Metro will initiate an amendment of the UGB to

meet that portion of the identified need for land not met through commitments for redevelopment and infill.

1.9 Urban Growth Boundary

The regional UGB, a long-term planning tool, shall separate urbanizable from rural land, be based in aggregate on the region's 20-year projected need for urban land and be located consistent with statewide planning goals and these RUGGOs and adopted Metro Council procedures for UGB amendment. In the location, amendment and management of the regional UGB, Metro shall seek to improve the functional value of the boundary.

Expansion into Urban Reserves – Upon demonstrating a need for additional urban land, major and legislative UGB amendments shall only occur within urban reserves once adopted, unless urban reserves are found to be inadequate to accommodate the amount of land needed for one or more of the following reasons:

- Specific types of identified land needs cannot be reasonably accommodated on urban reserve lands
- Future urban services could not reasonably be provided to urban reserves due to topographical or other physical constraints
- Maximum efficiency of land uses within a proposed UGB requires inclusion of lower priority lands other than urban reserves in order to include or provide services to urban reserves.

Urban Growth Boundary Amendment Process – Criteria for amending the UGB shall be derived from statewide planning goals 2 and 14, other applicable state planning goals and relevant portions of the RUGGOs:

- Major Amendments. Proposals for major amendment of the UGB shall be made through a legislative process in conjunction with the development and adoption of regional forecasts for population and employment growth. The amendment process will be initiated by a Metro finding of need, and involve local governments, special districts, citizens and other interests.
- Locational Adjustments. Locational adjustments of the UGB shall be brought to Metro by cities, counties and/or property owners based on public facility plans in adopted and acknowledged comprehensive plans.

1.10 Urban Design

The identity and functioning of communities in the region shall be supported through:

- the recognition and protection of critical open space features in the region

- public policies that encourage diversity and excellence in the design and development of settlement patterns, landscapes and structures
- ensuring that incentives and regulations guiding the development and redevelopment of the urban area promote a settlement pattern that:
 - link any public incentives to a commensurate public benefit received or expected and evidence of private needs
 - is pedestrian “friendly,” encourages transit use and reduces auto dependence
 - provides access to neighborhood and community parks, trails and walkways, and other recreation and cultural areas and public facilities
 - reinforces nodal, mixed-use, neighborhood-oriented design
 - includes concentrated, high-density, mixed-use urban centers developed in relation to the region’s transit system
 - is responsive to needs for privacy, community, sense of place and personal safety in an urban setting
 - facilitates the development and preservation of affordable mixed-income neighborhoods.

Pedestrian- and transit-supportive building patterns will be encouraged in order to minimize the need for auto trips and to create a development pattern conducive to face-to-face community interaction.

1.11 Neighbor Cities

Growth in cities outside the Metro UGB, occurring in conjunction with the overall population and employment growth in the region, should be coordinated with Metro’s growth management activities through cooperative agreements which provide for:

Separation – The communities within the Metro UGB, in neighbor cities and in the rural areas in between will all benefit from maintaining the separation between these places as growth occurs. Coordination between neighboring cities, counties and Metro about the location of rural reserves and policies to maintain separation should be pursued.

Jobs Housing Balance – To minimize the generation of new automobile trips, a balance of sufficient number of jobs at wages consistent with housing prices in communities both within the Metro UGB and in neighboring cities should be pursued.

Green Corridors – The “green corridor” is a transportation facility through a rural reserve that serves as a link between the metropolitan area and a neighbor city which also limits access to the farms and forests of the rural reserve. The intent is to keep urban

to urban accessibility high to encourage a balance of jobs and housing, but limit any adverse effect on the surrounding rural areas.

1.12 Protection of Agriculture and Forest Resource Lands

Agricultural and forest resource land outside the UGB shall be protected from urbanization, and accounted for in regional economic and development plans, consistent with these RUGGOs.

Rural Resource Lands – Rural resource lands outside the UGB that have significant resource value should actively be protected from urbanization.

Urban Expansion – Expansion of the UGB shall occur in urban reserves, established consistent with the urban rural transition objective.

Farm and Forest Practices – Protect and support the ability for farm and forest practices to continue. The designation and management of rural reserves by the Metro Council may help establish this support, consistent with the Growth Concept.

1.13 Growth Concept

The Growth Concept states the preferred form of regional growth and development and includes the Growth Concept map. This concept is adopted for the long-term growth management of the region including a general approach to approximately where and how much the UGB should be ultimately expanded, what ranges of density are estimated to accommodate projected growth within the boundary, and which areas should be protected as open space.

The Growth Concept is designed to accommodate approximately 720,000 additional residents and 350,000 additional jobs. The total population served within this concept is approximately 1.8 million residents within the Metro boundary.

The basic philosophy of the Growth Concept is to preserve our access to nature and build better communities for the people who live here today and who will live here in the future. The Growth Concept applies the above policies with the technical analysis to guide growth for a period up to the next 50 years. The Growth Concept is an integrated set of objectives subject to all Regional Framework Plan policies.

The Growth Concept sets the direction for development of implementing policies in Metro's existing functional plans and the charter-required regional framework plan. This

direction will be refined, as well as implemented, in subsequent functional plan amendments and framework plan components. Additional planning will be done to test the Growth Concept and to determine implementation actions. Amendments to the Growth Concept and some Regional Framework Plan policies may be needed to reflect the results of additional planning to maintain the consistency of implementation actions with the stated policies.

Fundamental to the Growth Concept is a multi-modal transportation system that assures mobility of people and goods throughout the region, consistent with transportation policies. By coordinating land uses and this transportation system, the region embraces its existing locational advantage as a relatively uncongested hub for trade.

The basic principles of the Growth Concept directly apply to the Regional Framework Plan policies, especially those of this chapter. An urban to rural transition to reduce sprawl, keeping a clear distinction between urban and rural lands and balancing re-development, is needed. Separation of urbanizable land from rural land shall be accomplished by the UGB for the region's 20-year projected need for urban land. That boundary will be expanded into designated urban reserves areas when a need for additional urban land is demonstrated. About 18,600 acres of lands shown on the Growth Concept map have been designated by the Metro Council as urban reserves. The Growth Concept also assumes cooperative agreements with neighboring cities to coordinate planning for the proportion of projected growth in the Metro region expected to locate within their urban growth boundaries and urban reserve areas.

The Metro UGB would only expand into urban reserves when need for additional urban land is demonstrated. Rural reserves are intended to assure that Metro and neighboring cities remain separate. The result is intended to be a compact urban form for the region coordinated with nearby cities to retain the region's sense of place.

Mixed-use urban centers inside the UGB are one key to the Growth Concept. Creating higher density centers of employment and housing and transit service with compact development, retail, cultural and recreational activities in a walkable environment is intended to provide efficient access to goods and services, enhance multi-modal transportation and create vital, attractive neighborhoods and communities. The Growth Concept uses interrelated types of centers. The central city is the largest market area, the region's employment and cultural hub. Regional centers serve large market areas outside the central city, connected to it by high-capacity transit and highways. Connected to each regional center, by road and transit, are smaller town centers with local shopping and

employment opportunities within a local market area. Planning for all of these centers will seek a balance between jobs, housing and unique blends of urban amenities so that more transportation trips are likely to remain local and become more multi-modal.

In keeping with the jobs-housing balance in centers, a jobs-housing balance by regional sub-areas can and should also be a goal. This would account for the housing and employment outside centers, and direct policy to adjust for better jobs-housing ratios around the region.

Recognition and protection of open spaces both inside the UGB and in rural reserves outside urban reserves are reflected in the Growth Concept. Open spaces, including important natural features and parks, are important to the capacity of the UGB and the ability of the region to accommodate housing and employment. Green areas on the Growth Concept map may be designated as regional open space. That would remove these lands from the inventory of urban land available for development. Rural reserves, already designated for farms, forestry, natural areas or rural-residential use, would remain and be further protected from development pressures.

The Concept map shows some transportation facilities to illustrate new concepts, such as "green corridors," and how land-use areas, such as centers, may be served. Neither the current regional system nor final alignment choices for future facilities are intended to be represented on the Concept map.

The percentages and density targets used in the Growth Concept to describe the relationship between centers and areas are estimates based on modeling analysis of one possible configuration of the Growth Concept. Implementation actions that vary from these estimates may indicate a need to balance other parts of the Growth Concept to retain the compact urban form contained in the Growth Concept. Each jurisdiction will certainly adopt a unique mix of characteristics consistent with each locality and the overall Growth Concept.

Neighbor Cities

The Growth Concept recognizes that neighboring cities surrounding the region's metropolitan area are likely to grow rapidly. There are several cities proximate to the Metro region. The Metro Council shall pursue discussion of cooperative efforts with neighboring cities. Full neighbor city recognition could be achieved with the completion of intergovernmental agreements concerning the following key concepts cited. Communities such as Sandy, Canby and Newberg will be affected by the Metro

Council's decisions about managing the region's growth. A significant number of people would be accommodated in these neighboring cities, and cooperation between Metro and these communities is necessary to address common transportation and land-use issues.

There are four key concepts for cooperative agreements with neighbor cities:

1. There shall be a separation of rural land between each neighboring city and the metropolitan area. If the region grows together, the transportation system would suffer and the cities would lose their sense of community identity.
2. There should be a strong balance between jobs and housing in the neighbor cities. The more a city retains a balance of jobs and households, the more trips will remain local.
3. Each neighboring city should have its own identity through its unique mix of commercial, retail, cultural and recreational opportunities which support the concentration of jobs and housing.
4. There should be consideration of a "green corridor," transportation facility through a rural reserve that serves as a link between the metropolitan area and a neighbor city with limited access to the farms and forests of the rural reserve. This would keep accessibility high, which encourages employment growth but limits the adverse affect on the surrounding rural areas. Metro will seek limitations in access to these facilities and will seek intergovernmental agreements with ODOT, the appropriate counties and neighbor cities to establish mutually acceptable growth management strategies. Metro will link transportation improvements to neighbor cities to successful implementation of these intergovernmental agreements.

Cooperative planning between a city outside the region and Metro could also be initiated on a more limited basis. These cooperative efforts could be completed to minimize the impact of growth on surrounding agriculture and natural resource lands, maintain a separation between a city and the Metro UGB, minimize the impact on state transportation facilities, match population growth to rural resource job and local urban job growth and coordinate land-use policies. Communities such as North Plains and other communities adjacent to the region such as Estacada and Scappoose may find this more limited approach suitable to their local situation.

Rural Reserves

Some rural lands adjacent to and nearby the regional UGB and not designated as urban reserves may be designated as rural reserves. This designation is intended as a policy statement by Metro to not extend its UGB into these areas and to support neighboring cities' efforts not to expand their urban growth boundaries into these areas. The objectives for rural land planning in the region will be to maintain the rural character of the landscape to support and maintain our agricultural economy, and to avoid or

eliminate conflicts with farm and forest practices, help meet regional needs for open space and wildlife habitat, and help to clearly separate urban from rural land. This will be pursued by not expanding the UGB into these areas and supporting rural zoning designations. These rural reserves keep adjacent urban areas separate. These rural lands are not needed or planned for development but are more likely to experience development pressures than are areas farther away.

These lands will not be developed in urban uses in the foreseeable future, an idea that requires agreement among local, regional and state agencies. They are areas outside the present UGB and along highways that connect the region to neighboring cities.

New rural commercial or industrial development would be restricted. Some areas would receive priority status as potential areas for park and open space acquisition. Zoning would be for resource protection on farm and forestry land, and very low-density residential (no greater average density than one unit for five acres) for exception land.

These rural reserves would support and protect farm and forestry operations. The reserves also would include some purchase of natural areas adjacent to rivers, streams and lakes to make sure the water quality is protected and wildlife habitat enhanced. Large natural features, such as hills and buttes, also would be included as rural reserves because they buffer developed areas and are poor candidates for compact urban development.

Rural reserves are designated in areas that are most threatened by new development, that separate communities, or exist as special resource areas.

Rural reserves also would be retained to separate cities within the Metro boundary. Cornelius, Hillsboro, Tualatin, Sherwood and Wilsonville all have existing areas of rural land that provide a break in urban patterns. Urban reserve study areas that are indicated on the Concept Map are also separated by rural reserves, such as the Damascus-Pleasant Valley areas from Happy Valley.

The primary means of achieving rural reserves would be through the regional framework plan for areas within the Metro boundary, and voluntary agreements among Metro, the counties, neighboring cities and the state for those areas outside the Metro boundary. These agreements would prohibit extending urban growth into the rural reserves and require that state agency actions are consistent with the rural reserve designation.

Open Spaces and Trail Corridors

The areas designated open space on the Concept map are parks, stream and trail corridors, wetlands and floodplains, largely undeveloped upland areas and areas of compatible very low-density residential development. Many of these natural features already have significant land set aside as open space. The Tualatin Mountains, for example, contain major parks such as Forest Park and Tryon Creek State Park and numerous smaller parks such as Gabriel Park in Portland and Wilderness Park in West Linn. Other areas are oriented toward wetlands and streams, with Fanno Creek in Washington County having one of the best systems of parks and open space in the region.

Local jurisdictions are encouraged to establish acres of open space per capita goals based on rates at least as great as current rates, in order to keep up with current conditions.

Designating these areas as open spaces would have several effects. First, it would remove these land from the category of urban land that is available for development. The capacity of the UGB would have to be calculated without these, and plans to accommodate housing and employment would have to be made without them. Second, these natural areas, along with key rural reserve areas, would receive a high priority for purchase as parks and open space, such as Metro's Greenspaces program. Finally, regulations could be developed to protect these critical natural areas that would not conflict with housing and economic goals, thereby having the benefit of regulatory protection of critical creek areas, compatible low-density development and transfer of development rights to other lands better suited for development.

About 35,000 acres of land and water inside today's UGB are included as open spaces in the Growth Concept map. Preservation of these open spaces could be achieved by a combination of ways. Some areas could be purchased by public entities, such as Metro's Greenspaces program or local park departments. Others may be donated by private citizens or by developers of adjacent properties to reduce the impact of development. Some could be protected by environmental zoning that allows very low-density residential development through the clustering of housing on portions of the land while leaving important features as common open space.

Centers

Creating higher density centers of employment and housing is advantageous for several reasons. These centers provide access to a variety of goods and services in a relatively

small geographic area, creating an intense business climate. Having centers also makes sense from a transportation perspective, since most centers have an accessibility level that is conducive to transit, bicycling and walking. Centers also act as social gathering places and community centers, where people would find the cultural and recreational activities and “small-town atmosphere” they cherish.

The major benefits of centers in the marketplace are accessibility and the ability to concentrate goods and services in a relatively small area. The problem in developing centers, however, is that most of the existing centers are already developed and any increase in the density must be made through redeveloping existing land and buildings. Emphasizing redevelopment in centers over development of new areas of undeveloped land is a key strategy in the Growth Concept. Areas of high unemployment and low property values should be specially considered to encourage reinvestment and redevelopment. Incentives and tools to facilitate redevelopment in centers should be identified.

There are three types of centers, distinguished by size and accessibility. The central city is downtown Portland and is accessible to millions of people. Regional centers are accessible to hundreds of thousands of people and town centers are accessible to tens of thousands.

The Central City

Downtown Portland serves as our major regional center and functions quite well as an employment and cultural hub for the metropolitan area. It provides accessibility to the many businesses that require access to a large market area and also serves as the location for cultural and social functions that draw the region together. It is the center for local, regional, state and federal governments, financial institutions, commerce, the center for arts and culture, and for visitors to the region.

In addition, downtown Portland has a high percentage of travel other than by car – three times higher than the next most successful area. Jobs and housing are readily available there, without the need for a car. Maintaining and improving upon the strengths of our regional downtown shall remain a high priority.

Today, about 20 percent of all employment in the region is in downtown Portland. Under the Growth Concept, downtown Portland would grow at about the same rate as the rest of the region and would remain the location of about 20 percent of regional employment. To do this, downtown Portland’s 1990 density of 150 people per acre would increase to

about 250 people per acre. Improvements to the transit system network, development of a multi-modal street system and maintenance of regional through routes (the highway system) would provide additional mobility to and from the city center.

Regional Centers

There are nine regional centers, serving four market areas (outside of the central city market area). Hillsboro serves that western portion of the region and Gresham the eastern. The central city and Gateway serve most of the Portland area as a regional center. Downtown Beaverton and Washington Square serve the east Washington County area, and downtown Oregon City, Clackamas Town Center and Milwaukie together serve Clackamas County and portions of outer south east Portland.

These regional centers would become the focus of compact development, redevelopment and high-quality transit service, multi-modal street networks and act as major nodes along regional through routes. The Growth Concept estimates that about 3 percent of new household growth and 11 percent of new employment growth would be accommodated in these regional centers. From the current 24 people per acre, the Growth Concept would allow for about 60 people per acre.

Transit improvements would include light-rail connecting all regional centers to the central city. A dense network of multi-modal arterial and collector streets would tie regional centers to surrounding neighborhoods and other centers. Regional through-routes would be designed to connect regional centers and ensure that these centers are attractive places to conduct business. The relatively small number of centers reflects not only the limited market for new development at this density but also the limited transportation funding for the high-quality transit and roadway improvements envisioned in these areas. As such, the nine regional centers should be considered candidates and ultimately the number should be reduced or policies established to phase in certain regional centers earlier than others.

Town Centers

Smaller than regional centers and serving populations of tens of thousands of people, town centers are the third type of center with compact development and transit service. Town centers would accommodate about 3 percent of new households and more than 7 percent of new employment. The 1990 density of an average of 23 people per acre would nearly double – to about 40 persons per acre, the current densities of development along Hawthorne Boulevard and in downtown Hillsboro.

Town centers would provide local shopping, employment and cultural and recreational opportunities within a local market area. They are designed to provide local retail and services, at a minimum. They also would vary greatly in character. Some would become traditional town centers, such as Lake Oswego, Oregon City and Forest Grove, while others would change from an auto-oriented development into a more complete community, such as Hillsdale. Many would also have regional specialties, such as office centers envisioned for the Cedar Mill town center. Several new town centers are designated, such as in Happy Valley and Damascus, to accommodate the retail and service needs of a growing population while reducing auto travel. Others would combine a town center within a regional center, offering the amenities and advantages of each type of center.

Corridors

Corridors are not as dense as centers, but also are located along good quality transit lines. They provide a place for densities that are somewhat higher than today and feature a high-quality pedestrian environment and convenient access to transit. Typical new developments would include rowhouses, duplexes and one- to three-story office and retail buildings, and average about 25 persons per acre. While some corridors may be continuous, narrow bands of higher intensity development along arterial roads, others may be more nodal, that is, a series of smaller centers at major intersections or other locations along the arterial that have high quality pedestrian environments, good connections to adjacent neighborhoods and good transit service. As long as the average target densities and uses are allowed and encouraged along the corridor, many different development patterns – nodal or linear – may meet the corridor objective.

Station Communities

Station communities are nodes of development centered around a light-rail or high-capacity transit station that feature a high-quality pedestrian environment. They provide for the highest density outside centers. Station communities would encompass an area approximately one-half mile from a station stop. The densities of new development would average about 45 persons per acre. Zoning ordinances now set minimum densities for most Eastside and Westside MAX station communities. An extensive station community planning program is now under way for each of the Westside station communities; similar work is envisioned for the proposed South/North line. It is expected that the station community planning process will result in specific strategies and plan changes to implement the station communities concept.

Because the Growth Concept calls for many corridors and station communities throughout the region, together they are estimated to accommodate 27 percent of the new households of the region and nearly 15 percent of new employment.

Main Streets and Neighborhood Centers

During the early decades of this century, main streets served by transit and characterized by a strong business and civic community were a major land-use pattern throughout the region. Examples remain in Hillsboro, Milwaukie, Oregon City and Gresham as well as the Westmoreland neighborhood and Hawthorne Boulevard. Today, these areas are undergoing a revival and provide an efficient and effective land-use and transportation alternative. The Growth Concept calls for main streets to grow from 1990 levels of 36 people per acre to about 39 per acre. Main streets would accommodate nearly 2 percent of housing growth.

Main streets typically will serve neighborhoods and may develop a regional specialization – such as antiques, fine dining, entertainment or specialty clothing – that draws people from other parts of the region. Main streets form neighborhood centers as areas that provide the retail and service development at other intersections at the focus of neighborhood areas and around MAX light-rail stations. When several main streets occur within a few blocks of one another, they may also serve as a dispersed town center, such as the main street areas of Belmont, Hawthorne and Division that form a town center for inner Southeast Portland.

Neighborhoods

Residential neighborhoods would remain a key component of the Growth Concept and would fall into two basic categories. Inner neighborhoods include areas such as Portland, Beaverton, Milwaukie and Lake Oswego, and would include primarily residential areas that are accessible to employment. Lot sizes would be smaller to accommodate densities increasing from 1990 levels of about 11 people per acre to about 14 per acre. Inner neighborhoods would trade smaller lot sizes for better access to jobs and shopping. They would accommodate about 28 percent of new households and 15 percent of new employment (some of the employment would be home occupations and the balance would be neighborhood-based employment such as schools, daycare and some neighborhood businesses).

Outer neighborhoods would be farther away from large employment centers and would have larger lot sizes and lower densities. Examples include cities such as Forest Grove,

Sherwood and Oregon City, and any additions to the UGB. From 1990 levels of nearly 10 people per acre, outer neighborhoods would increase to about 13 per acre. These areas would accommodate about 28 percent of new households and 10 percent of new employment.

One of the most significant problems in some newer neighborhoods is the lack of street connections, a recent phenomenon that has occurred in the last 25 years. It is one of the primary causes of increased congestion in new communities. Traditional neighborhoods contained a grid pattern with up to 20 through streets per mile. But in new areas, one to two through streets per mile is the norm. Combined with large-scale single-use zoning and low densities, it is the major cause of increasing auto dependency in neighborhoods. To improve local connectivity throughout the region, all areas shall develop master street plans intended to improve access for all modes of travel. These plans shall include eight to 20 local street connections per mile, except in cases where fewer connections are necessitated by constraints such as natural or constructed features (for example streams, wetlands, steep slopes, freeways, airports, etc.)

Industrial Areas and Employment Areas

The Portland metropolitan area economy is heavily dependent upon wholesale trade and the flow of commodities to national and international markets. The high quality of our freight transportation system and, in particular, our intermodal freight facilities are essential to continued growth in trade. The intermodal facilities (air and marine terminals, freight rail yards and common carrier truck terminals) are an area of regional concern, and the regional framework plan will identify and protect lands needed to meet their current and projected space requirements.

Industrial areas would be set aside primarily for industrial activities. Other supporting uses, including some retail uses, may be allowed if limited to sizes and locations intended to serve the primary industrial uses. They include land-intensive employers, such as those around the Portland International Airport, the Hillsboro Airport and some areas along Highway 212/224. Areas of high agglomerative economic potential, such as the Sunset Corridor for electronics products and the Northwest industrial sanctuary for metal products, shall be supported with transportation planning and infrastructure development designed to meet their needs. Industrial areas are expected to accommodate 10 percent of regional employment and no households. Retail uses whose market area is substantially larger than the employment area shall not be considered supporting uses.

Other employment centers would be designated as employment areas, mixing various types of employment and including some residential development as well. These employment areas would provide for about 5 percent of new households and 14 percent of new employment within the region. Densities would rise substantially from 1990 levels of about 11 people per acre to about 20 people per acre. Employment areas would be expected to include some limited retail commercial uses primarily to serve the needs of people working or living in the immediate employment areas, not larger market areas outside the employment area. Exceptions to this general policy can be made only for certain areas, indicated in a functional plan.

The siting and development of new industrial areas would consider the proximity of housing for all income ranges provided by employment in the projected industrial center, as well as accessibility to convenient and inexpensive non-auto transportation. The continued development of existing industrial areas would include attention to these two issues as well.

Urban Reserves

One important feature of the Growth Concept is that it would accommodate all 50 years of forecasted growth through a relatively small amount of urban reserves. Urban reserves consist of land set aside outside the present UGB for future growth. The Growth Concept contains approximately 22,000 acres of urban reserve study areas shown on the Concept map. Less than the full study area may be needed for urban reserve area designation if the other density goals of the Growth Concept are met. More than 75 percent of these lands are currently zoned for rural housing and the remainder are zoned for farm or forestry uses. These areas shall be refined for designation of urban reserves required by the Growth Concept.

Transportation Facilities

In undertaking the Region 2040 process, the region has shown a strong commitment to developing a regional plan that is based on greater land-use efficiencies and a truly multi-modal transportation system. However, the transportation system defined in the Growth Concept analysis serves as a theoretical definition (construct) of the transportation system needed to serve the land uses in the Growth Concept (recommended alternative urban form). The modeled system reflects only one of many possible configurations that might be used to serve future needs, consistent with the policy direction called for in the Growth Concept (amendment to RUGGOs).

As such, the Growth Concept (recommended alternative) transportation map provides only general direction for development of an updated Regional Transportation Plan (RTP) and does not prescribe or limit what the RTP will ultimately include in the regional system. Instead, the RTP will build upon the broader land-use and transportation directions that are defined in the Growth Concept (recommended alternative).

The transportation elements needed to create a successful growth management policy are those that support the Growth Concept. Traditionally, streets have been defined by their traffic-carrying potential, and transit service according to its ability to draw commuters. Other travel modes have not been viewed as important elements of the transportation system. The Growth Concept establishes a new framework for planning in the region by linking urban form to transportation. In this new relationship, transportation is viewed as a range of travel modes and options that reinforce the region's growth management goals.

Within the framework of the Growth Concept is a network of multi-modal corridors and regional through-routes that connect major urban centers and destinations.

Through-routes provide for high-volume auto and transit travel at a regional scale, and ensure efficient movement of freight. Within multi-modal corridors, the transportation system will provide a broader range of travel mode options, including auto, transit, bicycle and pedestrian networks, that allow choices of how to travel in the region. These travel options will encourage the use of alternative modes to the auto, a shift that has clear benefits for the environment and the quality of neighborhoods and urban centers and address the needs of those without access to automobiles.

In addition to the traditional emphasis on road and transit facilities, the development of networks for freight travel and intermodal facilities, for bicycle and pedestrian travel and the efficient use of capacity on all streets through access management and congestion management and/or pricing will be part of a successful transportation system.

While the Concept map shows only major transit facilities and corridors, all areas within the UGB have transit access. Transit service in the Growth Concept included both fixed-route and demand responsive systems. The RTP shall further define the type and extent of transit service available throughout the region.

Intermodal Facilities

The region's continued strength as a national and international distribution center is dependent upon adequate intermodal facilities and access to them. Intermodal facilities include marine terminals, railroad intermodal points, such as the Union Pacific's Albina Yard, the airports and the Union Station/inter-city bus station area. The RTP will identify these areas and their transportation requirements and will identify programs to provide adequate freight capacity.

Truck Routes

Truck routes will be identified and freight movement will be given priority in terms of roadway design and operation between areas with freight dependent uses within the region and major facilities serving areas locations outside the region.

Regional Through-Routes

These are the routes that move people and goods through and around the region, connect regional centers to each other and to the Central City, and connect the region to the statewide and interstate transportation system. They include freeways, limited access highways and heavily traveled arterials, and usually function as through-routes. As such, they are important not only because of the movement of people, but as one of the region's major freight systems. Since much of our regional economy depends on the movement of goods and services, it is essential to keep congestion on these roads at manageable levels. These major routes frequently serve as transit corridors but are seldom conducive to bicycles or pedestrians because of the volume of auto and freight traffic that they carry.

With their heavy traffic and high visibility, these routes are attractive to business. However, when they serve as a location for auto-oriented businesses, the primary function of these routes, to move regional and statewide traffic, can be eroded. While they serve as an appropriate location for auto-oriented businesses, they are poor locations for businesses that are designed to serve neighborhoods or sub-regions. These are better located on multi-modal arterials. They need the highest levels of access control. In addition, it is important that they not become barriers to movements across them by other forms of travel, auto, pedestrian, transit or bicycle. They shall focus on providing access to centers and neighbor cities, rather than access to the lands that front them.

Multi-Modal Arterials

These represent most of the region's arterials. They include a variety of design styles and speeds, and are the backbone for a system of multi-modal travel options. Older sections of the region are better designed for multi-modal travel than new areas. Although these streets are often smaller than suburban arterials, they carry a great deal of traffic (up to 30,000 vehicles a day), experience heavy bus ridership along their routes and are constructed in dense networks that encourage bicycle and pedestrian travel. The RTP shall identify these multi-modal streets and develop a plan to further encourage alternative travel modes within these corridors.

Many new streets, however, are designed to accommodate heavy auto and freight traffic at the expense of other travel modes. Multiple, wide lanes, dedicated turning lanes, narrow sidewalks exposed to moving traffic, and widely spaced intersections and street crossings create an environment that is difficult and dangerous to negotiate without a car. The RTP shall identify these potential multi-modal corridors and establish design standards that encourage other modes of travel along these routes.

Some multi-modal arterials also carry significant volumes of freight. The RTP will ensure that freight mobility on these routes is adequately protected by considering freight needs when identifying multi-modal routes, and in establishing design standards intended to encourage alternative modes of passenger travel.

Collectors and Local Streets

These streets become a regional priority when a lack of adequate connections forces neighborhood traffic onto arterials. New suburban development increasingly depends on arterial streets to carry trips to local destinations, since most new local streets systems are specifically designed with curves and cul-de-sacs to discourage local through travel by any mode. The RTP should consider a standard of 8 to 20 through streets per mile, applied to both developed and developing areas to reduce local travel on arterials. There should also be established standard bicycle and pedestrian through-routes (via easements, greenways, fire lanes, etc.) in existing neighborhoods where changes to the street system are not a reasonable alternative.

Light-Rail

Light-rail transit (LRT) daily travel capacity measures in tens of thousands of riders and provides a critical travel option to major destinations. The primary function of light rail in the Growth Concept is to link regional centers and the central city, where

concentrations of housing and employment reach a level that can justify the cost of developing a fixed transit system. In addition to their role in developing regional centers, LRT lines can also support significant concentrations of housing and employment at individual station areas along their routes.

In addition, neighbor cities of sufficient size should also include a transit connection to the metropolitan area to provide a full-range of transportation alternatives.

“Planned and existing light-rail lines” on the Concept map represent some locations shown on the current RTP that were selected for initial analysis. “Proposed light-rail alignments” show some appropriate new light rail locations consistent with serving the Growth Concept. “Potential High-Capacity Transit (HCT) lines” highlight locations for some concentrated form of transit, possibly including light rail. These facilities demonstrate the general direction for development of an updated RTP which will be based on further study. The Concept map transportation facilities do not prescribe or limit the existing or updated RTP.

Bicycle and Pedestrian Networks

Bicycling and walking should play an important part in the regional transportation system especially within neighborhoods and centers and for other shorter trips. They are also essential to the success of an effective transit system. In addition to the arrangement of land uses and site design, route continuity and the design of rights-of-way in a manner friendly to bicyclists and pedestrians are necessary. The RTP will establish targets that substantially increase the share of these modes.

Demand Management/Pricing

The land uses and facilities in the Growth Concept cannot, by themselves, meet the region’s transportation objectives. Demand management (carpooling, parking management and pricing strategies) and system management will be necessary to achieve the transportation system operation described in the Growth Concept. Additional actions will be needed to resolve the significant remaining areas of congestion and the high VMT/capita that it causes. The RTP will identify explicit targets for these programs in various areas of the region.

Transportation

Chapter 2 Transportation

Overview

In 1992, the region's voters approved a charter for Metro that formally gave responsibility for regional land use planning to the agency, and requires adoption of a Regional Framework Plan that integrates land use, transportation and other regional planning mandates. The combined policies of this framework plan establish a new framework for planning in the region by linking land use and transportation plans. Fundamental to this plan is a transportation system that integrates goods and people movement with the surrounding land uses.

This chapter of the Regional Framework Plan presents the overall policy framework for the specific transportation goals, objectives and actions contained in the Regional Transportation Plan (RTP). It also sets a direction for future transportation planning and decision-making by the Metro Council and the implementing agencies, counties and cities.

Policy highlights of this chapter include:

- Ensuring efficient access to jobs, housing, cultural and recreational opportunities, shopping in and through the region and providing transportation facilities that support a balance of jobs and housing.
- Reducing reliance on any single mode of travel and increasing the use of alternative modes, such as transit, bicycling and walking.
- Integrating land use, automobile, bicycle, pedestrian, freight and public transportation needs in regional and local street designs.
- Providing efficient transportation systems that accommodate motor vehicles, public transportation, pedestrian transportation, bicycle transportation and freight movement.
- Reducing automobile trips per person and related parking spaces.
- Providing transportation demand management and system management strategies.
- Minimizing impact of urban travel on rural land through use of green corridors.
- Protecting water and air quality and reducing energy consumption.

Background

A number of federal, state and regional mandates form the basis for the policies contained in this chapter of the Regional Framework Plan.

Federal mandates

At the federal level, the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) emphasizes expanding public participation in the transportation planning process and increasing cooperation among the jurisdictions that own and operate the regional transportation system. These partners include the region's cities and counties, Metro, Oregon Department of Transportation (ODOT), Oregon Department of Environmental Quality (DEQ), Port of Portland, Tri-Met, Washington Regional Transportation Council (RTC), Washington Department of Transportation (Wash-DOT), Southwest Washington Air Pollution Control Authority (SWWAPCA) and other Clark County governments.

As the federally designated Metropolitan Planning Organization (MPO) for the region, Metro must coordinate metropolitan transportation planning efforts in partnership with these multiple jurisdictions and citizens to help develop statewide and regional transportation plans. These plans must forecast future growth, identify needed transportation investments to meet this growth and ensure the maintenance and efficient operation of existing transportation systems over a 20-year period. The Oregon Transportation Plan guides the transportation system statewide, and the Regional Transportation Plan (a Metro functional plan) is the transportation plan for this region.

In addition to the Federal requirements of ISTEA, Federal 1990 Clean Air Act Amendments (CAAA) establish air quality standards for key air pollutants, including carbon monoxide, ozone and particulate matter. Areas that do not meet the standards are designated in varying degrees of nonattainment, from "marginal" to "extreme." States must submit implementation plans (SIP) showing how these areas will meet the standards and maintain compliance over a ten-year period. Areas that do not meet SIP requirements may face sanctions, including potential loss of highway funds and limits on industrial expansion.

The Portland-Vancouver Interstate Air Quality Maintenance Area (AQMA) was designated as a marginal nonattainment area for ozone and moderate nonattainment area for carbon monoxide. As a result, the Oregon SIP required the region to implement specific transportation control measures (TCMs) to reduce auto emissions in the region. These measures include projects to provide facilities for alternative modes, demand

management programs to encourage use of alternative modes and implementation of the 2040 land use framework to produce more transportation efficient land use patterns. The goal of these measures is to manage travel demand and improve traffic flow in order to reduce the number of vehicle trips made and the number of vehicle miles traveled. The SIP recognizes that land use patterns that shorten trips and increase opportunities for transit, bicycling and walking also help reduce emissions.

Currently, the status of the Portland-Vancouver AQMA is under review for attainment of federal air quality standards. The AQMA is anticipated to be found in compliance with requirements to meet and maintain federal air quality standards for carbon monoxide and ozone for a ten-year time period. However, it is likely that because of expected future growth, air quality regulations may stipulate certain measures remain in place or be enhanced in order for the region to remain in attainment as additional growth occurs. In 1996, the AQMA area exceeded the summer ozone standard twice at one monitoring location. A third exceedance over a three-year period would violate federal air quality standards and trigger the region's transportation control measures as defined in the SIP.

Additional federal requirements include the 1990 Americans with Disabilities Act (ADA) which mandates that transportation plans address equal access and opportunity for disabled people. An ADA transportation plan has been developed by Tri-Met. In addition, state and local jurisdictions must design and construct pedestrian facilities in compliance with ADA requirements.

State mandates

The Oregon Transportation Planning Rule (TPR) focuses on the link between land use and transportation and intends to ensure that planned transportation systems support land use and travel patterns that achieve the state goal of compact, highly livable urban areas. The TPR contains requirements designed to reduce reliance on the automobile and requires consideration of land-use policies when developing transportation plans. Local jurisdictions are required to revise development standards to promote public transportation, pedestrian and bicycle travel, orient new buildings toward major transit stops and design local streets that require less right-of-way width and improve pedestrian circulation. The TPR also requires that local transportation plans include policies that promote completion of local street networks. The rule also requires that local and regional transportation system plans target the following goals:

- a 10 percent reduction in vehicle miles of travel per capita during the next 20 years and 20 percent during the next 30 years
- less reliance on the automobile and a reduction in the number of people driving alone
- a 10 percent reduction in the number of parking spaces per capita during the next 20 years
- a stronger connection between land use and transportation planning

Local and regional transportation system plans must also examine possible land-use solutions to transportation problems and identify multi-modal, system management and demand management strategies to address transportation needs.

Regional Mandates

With adoption of the Metro Charter by voters in the region, Metro was directed to complete a Future Vision. The Future Vision statement that resulted from this mandate included many references as to the importance of transportation. These references include:

“Address the further diversification of our economy, the creation of family-wage jobs and the development of accessible employment centers throughout...the region in the Regional Framework Plan elements for transportation, rural lands, urban design, housing and water resources.”

“Incorporate specific expectations for a basic standard of living for all citizens in Regional Framework Plan elements concerned with urban design, housing, transportation, and parks and open space.”

“Identify and address public and personal safety issue in the Regional Framework Plan elements dealing with transportation, urban design and bi-state coordination.”

Other regional statements of existing transportation policy are included in the Regional Urban Growth Goals and Objectives (RUGGOs) and the Regional Transportation Plan (RTP). The Regional Urban Growth Goals and Objectives (RUGGOs) were adopted in 1991 in response to direction by the Oregon Legislature to develop regional land use goals and objectives. The RUGGOs establish a process for coordinating planning in the metropolitan area in an effort to preserve regional livability. The RUGGOs also provide a policy framework for guiding Metro’s regional planning program, including development of functional plans and management of the region’s urban growth boundary.

Existing RUGGOs policies related to transportation include Objective 14 (Air Quality) and Objective 19 (Transportation). Transportation policies contained in this chapter of

the Regional Framework Plan integrate these RUGGOs policies with new policies developed as part of the current Regional Transportation Plan update. The Regional Transportation Plan update is driven by requirements contained in ISTEA, ADA, CAAA, the Oregon Transportation Planning Rule and the need to support the Region 2040 Growth Concept. New RTP policies were approved by the Metro Council in July 1996 and reflect extensive public comment. These new policies will be used to define a 20-year plan of specific improvements to the regional transportation system, and will result in an updated Regional Transportation Plan that will serve as the transportation element of the Regional Framework Plan. The plan update is expected to be completed in December 1997. The analyses from this update may result in revisions to this chapter.

Analysis

Metro and its regional partners initiated the Region 2040 planning process to better evaluate how different growth management strategies could accommodate expected growth in this region and to analyze the possible consequences of such policies (see Chapter 1). In undertaking the Region 2040 process, the region has shown a strong commitment to developing a regional plan that is based on more efficient use of land and a balanced, multi-modal transportation system. The adopted 2040 Growth Concept resulted from this process and integrates transportation, land use, water and open space elements to reinforce the region's growth management goals. While the 2040 Growth Concept is primarily a land use framework, the success of the concept, in large part, hinges on regional transportation policy. The following section includes general descriptions of the 2040 Growth Concept land-use components and associated transportation elements as defined during the Region 2040 process. In general, each of the land use components will be served with a multi-modal transportation system tailored to its specific needs. The land use components are ordered according to their relative significance in the region.

The central city, regional centers, industrial areas and intermodal facilities are key design types of the 2040 Growth Concept. Implementation of the overall growth concept is largely dependent on the success of these primary components. For this reason, these components are the primary focus of transportation implementation policies and infrastructure investments defined in the 1996 Regional Transportation Plan.

Central city and regional centers

Portland's central city already forms the hub of the regional economy. Regional centers in suburban locations such as Gresham, Beaverton and Hillsboro are envisioned in the 2040 Growth Concept as complementary centers of regional economic activity. These areas have the region's highest development densities, the most diverse mix of land uses and the greatest concentration of commerce, offices and cultural amenities. They are the most accessible areas in the region by both auto and public transportation, and have very pedestrian-oriented streets.

In the 2040 Growth Concept, the central city is highly accessible by a high-quality public transportation system, multi-modal street network and a regional freeway system of through-routes. Light-rail lines radiate from the central city, connecting to each regional center. The street system within the central city is designed to encourage public transportation, bicycle and pedestrian travel, but also accommodate auto and freight movement. Of special importance are the bridges that connect the east and west sides of the central city and serve as critical links in the regional system.

Regional centers also feature a high-quality radial transit system serving their individual trade areas and connecting to other centers, as well as light-rail connections to the central city. In addition, a fully improved network of multi-modal streets tie regional centers to surrounding neighborhoods and nearby town centers, while regional through-routes will be designed to connect regional centers with one another and points outside the region. The street design within regional centers encourages public transportation, bicycle and pedestrian travel while also accommodating auto and freight movement.

Industrial areas and intermodal facilities

Industrial areas serve as "sanctuaries" for long-term industrial activity. These areas are primarily served by a network of major street connections to both the regional freeway system and intermodal facilities. Many industrial areas are also served by freight rail, and have good access to intermodal facilities. Freight intermodal facilities, including air and marine terminals, freight rail yards and common carrier truck terminals, are an area of regional concern. Access to these areas is centered on rail, the regional freeway system, public transportation, bikeways and key roadway connections. While industrial activities often benefit from roadway improvements largely aimed at auto travel, there are roadway needs unique to freight movement that are critical to the continued vitality of industrial areas and intermodal facilities.

Town centers, station communities, main streets and corridors

While more locally oriented than the primary components of the 2040 Growth Concept, town centers, station communities, main streets and corridors are significant centers of urban activity. Because of their density and pedestrian-oriented design, they play a key role in promoting public transportation, bicycling and walking as viable alternatives to the automobile as well as conveniently close services for surrounding neighborhoods. As such, these secondary components are an important part of the region's strategy for reducing per-capita automobile travel.

Station communities are located along light-rail corridors. They should feature a high-quality pedestrian and bicycle environment. These communities are designed around the transportation system to best benefit from the public infrastructure. While they include some local services and employment, they are mostly residential developments that are oriented toward the central city, regional centers and other areas that can be accessed by rail for most services and employment.

Town centers function as local activity areas that provide close access to a full range of local retail and service offerings within a few miles of most residents. While town centers will not compete with regional centers in scale or economic diversity, they will offer some specialty attractions of regional interest. Though the character of these centers varies greatly, each will function as strong business and civic communities excellent multi-modal arterial street access and high-quality public transportation with strong connections to regional centers and other major destinations. Main streets feature mixed-use, storefront style development that serve the same urban function as town centers, but are located in a linear pattern along a limited number of bus corridors. Main streets feature street designs that emphasize pedestrian, public transportation and bicycle travel.

Corridors will not be as intensively planned as station communities, but similarly emphasize a high-quality bicycle and pedestrian environment and convenient access to public transportation. Transportation improvements in corridors will focus on nodes of activity - often at major street intersections - where transit and pedestrian improvements are especially important. Corridors can include auto-oriented land uses between nodes of activity, but such uses are carefully planned to preserve the pedestrian orientation and scale of the overall corridor design.

Employment centers and neighborhoods

Some components of the 2040 Growth Concept are primarily of local significance, including employment centers and neighborhoods. Urban activities in these areas often impact the regional transportation system, but are best addressed through the local planning process.

Employment centers allow mixed commercial and industrial uses, including some residential development. These areas are primarily served by a network of arterial connections to both the regional freeway system and intermodal facilities. Some employment centers are also served by freight rail. Employment centers are often located near industrial areas, and thus may benefit from freight improvements primarily directed toward industrial areas and intermodal facilities.

In recent decades, the newest neighborhoods have become the most congested largely due to a lack of street connections. A lack of street connections discourages walking and bicycling for local trips in these areas, and forces local auto trips onto the regional multi-modal arterial network. The 2040 Growth Concept envisions master street plans in all areas to increase the number of local street connections to the regional roadway network. However, new connections must be designed to discourage through-travel on local neighborhood streets.

Urban reserves

Urban reserves, which are currently located outside the urban growth boundary (UGB), are relatively undeveloped with limited transportation facilities. Urban reserves are intended to accommodate future growth and will eventually require multi-modal access to the rest of the region. Because they may be added to the urban area during the 20-year Regional Transportation Plan (RTP) planning period, they are included in the RTP functional classification scheme. General street and public transportation planning is completed prior to urbanization, as part of the RTP process, and based on specific 2040 Growth Concept land use policies for these areas. Once urban reserves are brought within the UGB, more detailed transportation system planning at the regional and local level occurs in conjunction with detailed land use planning.

Areas outside the region's urban areas

Rural reserves are undeveloped areas located outside the UGB and have very limited transportation facilities. Roadways in these areas are intended to serve rural industry and

needs, and urban travel on these routes is accommodated with designs that are sensitive to their basic rural function. Rural reserves will be protected from urbanization for the foreseeable future through state statutes and administrative rules, county land use ordinances, intergovernmental agreements and by limiting rural access to urban through-routes whenever possible. Urban-to-urban travel is generally discouraged on most rural routes, with the exception of a limited number of designated urban connector roads identified in the RTP. All other rural roads should serve rural purposes.

Neighboring cities are separated from the main urban area by rural reserves, but are connected to regional centers within the metropolitan area by limited-access green corridor transportation routes. In addition to highway access, green corridor routes will include bicycle and public transportation service to neighboring cities. Neighboring cities will be encouraged, through intergovernmental agreements, to balance jobs and households in order to limit travel demand on these connectors. The region also has an interest in maintaining reasonable levels of through-travel on major routes that pass through neighbor cities and function as freight corridors. Growth of neighboring cities will ultimately affect through-travel and could create a need for bypass routes. Such impacts will also be addressed through coordination with county and state agencies, as well as individual neighboring cities.

The 2040 Commodity Flow Study

As part of the Region 2040 process, the region also conducted a Commodity Flow Study. The study was designed to determine how freight moves through the region, understand the linkage between the regional economy and the transportation system and assess the implications of future freight volumes on the regional transportation system. The study concluded with these key findings:

- Goods movement has historically sparked the region's economic growth. Our region's freight market can be segmented into three distinct but complementary components: goods movement that supports local consumption, goods movement that is generated by local industries and goods movement throughout the region that is tied to a successful distribution system. Each of these depends on access to an efficient transportation network.
- The existing transportation system is adequate to support current goods movement requirements, although there are specific points of congestion, particularly within rail facilities and at some highway crossings.
- Employment in the construction, manufacturing, transportation and utilities and trade sectors of the economy account for approximately one-half of the region's jobs. Traditionally well-paid, these jobs depend on the successful movement of

goods on the region's transportation system. In addition, the transportation system affects the ability of the region to maintain its competitive advantage as a warehousing and distribution center. Portland outranks similarly sized cities in its role in wholesale trade.

- Truck is the predominant mode for goods movement in the region. One out of ten vehicles on roadways in the region is a truck involved in moving freight. In 1991, 60 percent of all freight tonnage moved on trucks, and an additional portion of the rail and air traffic relied on truck for pickup and delivery.
- By the year 2040, freight volume is expected to grow by two to three times to approximately 19 million twenty-foot equivalent container units, which is faster than population growth. Of this, 80 percent is expected to be due to the region's market economy or goods that simply move through the Portland area to other destinations.
- Continued emphasis on maintaining and enhancing the transportation system is necessary to continue Portland's strong freight economy. Quick transfer between ship, rail, truck and air service is increasingly a competitive strength of any freight economy.

In conclusion, the projected growth in the flow of goods in this region is an important consideration in the region's land-use and transportation planning efforts. This significant growth points to the need to make available adequate land for expansion of intermodal facilities, manufacturing, wholesale and distribution activities and to continue maintaining and enhancing the freight transportation network. To this end, the 2040 Growth Concept identifies industrial sanctuaries for distribution and manufacturing activities as critical in terms of their significance to the regional economy. Policies contained in this element of the framework plan recognize the importance of protecting freight movement and the road, rail, air, shipping and pipeline facilities needed to facilitate this movement.

Conclusions

Assessment of federal, state and regional mandates and analysis of data from the Region 2040 process produced the following conclusions:

Transportation implications

- The transportation system must serve the urban form established in the Growth Concept.
- In addition to supporting implementation of the 2040 Growth Concept, policy implementation must give top priority to projects or programs that maintain or preserve existing transportation infrastructure and address safety-related deficiencies.
- Transportation investment should be a priority in key target areas, particularly the central city, regional centers, industrial areas, transit corridors and station areas.

- The density of the regional street network must be expanded to accommodate planned population and employment growth, particularly in areas where significant increases in density are planned, such as regional centers. Portions of the existing street network also warrant expansion to meet new demands. These new or expanded streets must be designed as multi-modal facilities, reflecting the variety of travel demands that accompany each land-use component.
- Higher-density, mixed-use locations should be tied to the highest quality transit and should include improved pedestrian environments.
- Improved transit, pedestrian and bicycle travel, parking limits and other transportation demand management actions should complement higher-density destinations if a 10 percent reduction in VMT per capita in the UGB by 2015 and a 20 percent reduction by 2025 is sought.
- Local governments should be encouraged to implement code changes that address building orientation and pedestrian access to transit, particularly in higher-density centers and corridors.
- Access to highway corridors that connect the region to neighboring towns must be limited if urban development pressure on adjacent rural lands is sought.
- Urban connector routes through rural areas outside the Metro UGB should be designated to urban standards if this type of traffic is to be accommodated. Other rural routes should be limited to serve only rural needs if urban development pressure is not sought.
- Parking limitations, pedestrian amenities and compact, more densely developed urban areas should be employed if reductions in vehicle miles traveled and increases in transit ridership are sought.
- Local street connectivity must be improved for more direct local access, if reductions in excess demand on regional routes and promotion of alternative modes is sought.
- A balance between jobs and housing within the market areas of regional centers can minimize travel needs for both shorter commutes and closer access to retail and other commercial services.
- The projected growth in the flow of goods in this region is an important consideration in the region's land-use and transportation planning efforts. This significant growth points to the need to make available adequate land for expansion of intermodal facilities, manufacturing, wholesale and distribution activities and to continue maintaining and enhancing the freight transportation network.

Air quality implications

- Metro must establish minimum and maximum parking ratios consistent with air quality maintenance plans. In areas where transit is provided or other non-auto modes are convenient, less parking should be provided while allowing accessibility and mobility for all modes, including autos.
- Regional transportation investment should maintain compliance with air quality standards. Investment should support regional transit service hours increases averaging 1.5 percent annually, completion of the west-side light rail transit facility

and completion of the light rail transit facility in the South/North corridor by the year 2007.

- If greater reduction of transportation-related pollutant emissions becomes necessary to assure maintenance of the ozone standard, federal transportation funding may increasingly be diverted to trip reduction programs and transit, bike and pedestrian capital projects. Accordingly, all major roadway expansion or reconstruction projects on arterials or major collectors should include pedestrian and bicycle improvements where such facilities do not currently exist.

Policies¹

The following section contains the policies for regional transportation. It should be noted that implementation of these policies is through the Regional Transportation Plan, a Metro functional plan that includes both recommendations and requirements for cities and counties of the region. The RTP is now being revised and as the Metro Council considers potential changes to the existing RTP, the Regional Framework Plan may be revised.

2.1 Intergovernmental coordination

2.1.1. Coordinate among the local, regional and state jurisdictions that own and operate the region's transportation system to better provide for state and regional transportation needs. These partners include the cities and counties of the region, Metro, the Oregon Department of Transportation (ODOT), the Oregon Department of Environmental Quality, the Port of Portland and Tri-Met. Metro also coordinates with RTC, C-Tran, the Washington Department of Transportation (Wash-DOT), the Southwest Washington Air Pollution Control Authority (SWWAPCA) and other Clark County Governments on bi-state issues.

¹ The following policies result from integration of the air quality and transportation objectives in the adopted Regional Urban Growth Goals and Objectives (RUGGO) and policies approved by resolution by the Metro Council in July 1996 as part of the Regional Transportation Plan (RTP) update. These policies comply with and replace the air quality and transportation objectives adopted in the RUGGOs. They also comply with the 2040 Growth Concept, the federal Intermodal Surface Transportation Efficiency Act (ISTEA), Clean Air Act Amendments (CAAA) and Americans with Disabilities Act (ADA), the Oregon Transportation Planning Rule (TPR) and the Oregon Transportation Plan (OTP). These mandates are described in the Background section of this chapter. The RTP, which will be updated in late 1997, will continue to provide specific transportation information, including project identification and funding criteria

2.2 Consistency between land use and transportation planning

2.2.1. Provide an adequate regional transportation system to support planned land uses and land uses which are consistent with the function and capacity of planned transportation systems.

2.3 Public involvement

2.3.1. Provide complete information, timely public notice, full public access to key decisions and support broad-based, early and continuing involvement of the public in all aspects of the transportation planning process that is consistent with Metro's adopted Local Public Involvement Policy for transportation planning. This includes involving those traditionally under-served by the existing system, those traditionally under-represented in the transportation planning process, the general public and local, regional and state jurisdictions that own and operate the region's transportation system in all aspects of the transportation planning process.

2.4 System priorities

In developing new transportation system infrastructure, the highest priority should be meeting the mobility needs of the central city and regional centers, and their suburban arterials when designated. Such needs, associated with ensuring access to jobs, housing, cultural and recreational opportunities and shopping within and among those centers, should be assessed and met through a combination of intensifying land uses and increasing transportation system capacity so as to mitigate negative impacts on environmental quality and where and how people live, work and play. The region's system-wide policies are:

2.4.1. Implement a transportation system that serves the region's current and future travel needs and implements the 2040 Growth Concept.

2.4.2. Provide a cost-effective transportation system.

2.4.3. Protect the region's livability.

2.4.4. Protect the region's natural environment.

2.4.5. Improve the safety of the transportation system.

2.4.6. Provide for statewide, national and international connections to and from the region, consistent with the Oregon Transportation Plan.

2.5 Transportation finance

2.5.1. Implement a regional transportation system that supports the 2040 Growth Concept through the selection of complementary transportation projects and programs.

2.5.2. Emphasize the maintenance, preservation and effective use of transportation infrastructure in the selection of the RTP projects and programs.

2.5.3. Anticipate and address system deficiencies that threaten the safety of the traveling public in the implementation of the RTP.

2.5.4. Recognize financial constraints and provide public investment guidance for achieving the desired urban form.

2.6 Urban form

2.6.1. Support and maintain a compact urban form with specific strategies that address mobility and accessibility needs and use transportation investments to leverage desired land use patterns.

2.6.2. New development should be served by interconnected public streets which provide safe and convenient pedestrian, bicycle and motor vehicle access.

2.6.3. Street, bicycle and pedestrian connections should be provided to transit routes within and between new and existing residential, commercial and employment areas and other activity centers.

2.6.4. Encourage development that supports increased mobility and accessibility, particularly by transit, walking and bicycling.

2.7 Jobs/housing balance

2.7.1. Provide transportation facilities that support a balance of jobs and housing as well as the community identity of neighboring cities.

2.8 Transportation education

2.8.1. Encourage bicyclists, motorists and pedestrians to share the road safely. Expand the amount of information available about alternative modes of travel to encourage their use.

2.9 Barrier-free transportation

2.9.1. Provide transportation facilities that comply with the Americans with Disabilities Act of 1990 (ADA).

2.9.2. Identify and assess structural barriers to mobility for transportation disadvantaged populations in current and planned regional transportation system and address through a comprehensive program of transportation and other actions.

2.9.3. Continue to work with local jurisdictions to make public transportation stops and walkway approaches accessible.

2.10 Transportation balance

2.10.1. Provide a multi-modal regional transportation system that reduces reliance on any single mode of travel and increases the use of alternative modes of travel.

2.11 Street design

Regional street design policies address federal, state and regional transportation planning mandates with street design concepts intended to mix land use and transportation planning in a manner that supports individual 2040 Growth Concept land use components, reduces reliance on any single mode of travel and increases the use of alternative modes of travel. These design concepts reflect the fact that streets perform many, often conflicting functions, and the need to reconcile conflicts among travel modes. The regional street design map (see Figure 3.1) will work in tandem with the modal system maps shown at the end of this chapter. The region's street design policies are:

2.11.1. Provide regional street design concepts to guide local implementation of the 2040 Growth Concept.

2.11.2. Support local implementation of regional street design concepts in local transportation system plans (TSPs).

2.11.3. Manage the regional street system to achieve the access and mobility needs of the 2040 land use components.

2.11.4. Although focused on motor vehicle travel, the system is multi-modal, with street design criteria intended to limit the impact of motor vehicles on bicyclists, pedestrians, public transportation and pedestrian and transit-oriented districts.

2.12 Motor vehicle transportation

The motor vehicle system provides access to the central city, regional centers, industrial areas and intermodal facilities, with an emphasis on mobility between these destinations. The regional motor vehicle system is shown in Figure 3.2 at the end of this chapter. This plan recognizes the need to accommodate a variety of trip types on the regional motor vehicle system that include personal errands, commuting to work or school, commerce, freight movement and public transportation. Although focused on motor vehicle travel, the system described in this section is multi-modal, with design criteria intended to serve motor vehicle mobility needs, while reinforcing the urban form of the 2040 Growth Concept. While the motor vehicle system usually serves bicycle and pedestrian travel, the system is designed to limit impacts of motor vehicles on pedestrian and transit-oriented districts. The region's motor vehicle system policies are:

- 2.12.1. Provide a regional motor vehicle system of arterials and collectors that connect the central city, regional centers, industrial areas and intermodal facilities, and other regional destinations, and provide regional mobility.
- 2.12.2. Implement a congestion management system to identify and evaluate low cost strategies to mitigate and manage congestion in the metropolitan region.

2.13 Public transportation

The regional public transportation system is a key component in providing access to the region's most important activity centers, and for 25 years has been the centerpiece to the region's strategies for improving air quality and reducing reliance on the automobile as a mode of travel. Public transportation service is also prominent in Metro's 2040 Growth Concept, such that key elements of the concept, including regional centers, town centers, corridors, main streets and station communities, are strongly oriented toward existing and planned public transportation. The regional public transportation system map is shown in Figure 3.3 at the end of this chapter. The overarching goal of the public transportation system within the context of the 2040 Growth Concept is to provide an appropriate level of access to regional activities for everyone residing within the Urban Growth Boundary (UGB). The region's public transportation policies are:

- 2.13.1. Develop a public transportation system that provides regional access to 2040 Growth Concept primary land use components (central city, regional centers, industrial areas, intermodal facilities) and special regional destinations (such as major colleges or

entertainment facilities) with an appropriate level, quality and range of public transportation.

2.13.2. Develop a public transportation system that provides community access to the 2040 Growth Concept secondary land use components (station communities, town centers, main streets, corridors) and special community destinations (such as local colleges or entertainment facilities) with high quality service.

2.13.3. Develop a reliable, convenient and accessible system of secondary public transportation that provides access to the 2040 Growth Concept "other urban components" (e.g., employment areas, outer neighborhoods and inner- neighborhoods).

2.13.4. Continue to develop fixed-route service and complementary paratransit services which comply with the Americans with Disabilities Act of 1990 (ADA).

2.13.5. Continue efforts to maintain transit as the safest forms of motorized transportation in the region.

2.13.6. Expand the amount of information available about public transportation to allow more people to use the system.

2.13.7. Continue efforts to make public transportation an environmentally friendly form of motorized transportation.

2.13.8. Increase use of transit through both expanding public transportation service and addressing a broad range of requirements for making public transportation competitive with the private automobile.

2.14 Pedestrian transportation

By providing dedicated space for those on foot or using mobility devices, pedestrian facilities are recognized as an important incentive that promotes walking as a mode of travel. Walking for short distances is an attractive option for most people when safe and convenient pedestrian facilities are available. Combined with adequate sidewalks and curb ramps, amenities such as benches, curb extensions, marked street crossings, landscaping and wide planting strips make walking an attractive and convenient mode of travel. The focus of the regional pedestrian system is identifying areas of high, or potentially high, pedestrian activity in order to target infrastructure improvements that can be made with regional funds. The region's pedestrian system policies are:

2.14.1. Increase walking for short trips and improve access to the region's public transportation system through pedestrian improvements and changes in land use patterns, designs and densities.

2.14.2. Make the pedestrian environment safe, convenient, attractive and accessible for all users.

2.14.3. Provide for pedestrian access, appropriate to existing and planned land uses, street classification and public transportation, as a part of all transportation projects.

2.14.4. Encourage motorists, bicyclists and pedestrians to share the roadway safely.

2.15 Bicycle transportation

The bicycle is an important component in the region's strategy to provide a multi-modal transportation system. The regional bicycle system map is shown in Figure 3.5 at the end of this chapter. The 2040 growth concept focuses growth in the central city and regional centers, station communities, town centers and main streets. One way to meet the region's travel needs is to provide greater opportunity to use bicycles for shorter trips.

The region's bicycle system policies are:

2.15.1. Provide a continuous regional network of safe and convenient bikeways integrated with other transportation modes and local bikeway systems.

2.15.2. Increase the modal share of bicycle trips.

2.15.3. Ensure that all transportation projects include bicycle facilities using established design standards appropriate to regional land use and street classifications.

2.15.4. Encourage bicyclists and motorists to share the road safely.

2.16 Freight movement

Developing and adopting the Regional Freight Network and associated system goals acknowledges that the movement of goods and services makes a significant contribution to the region's economy and wealth, and that it contributes to our quality of life. The region's relative number of jobs in transportation and wholesale trade exceeds the national average. The regional economy has historically, and continues to be closely tied to the transportation and distribution sectors. This trend is projected to increase. Freight volume is projected (by the 2040 Commodity Flow Analysis) to grow two to three times by 2040 - a rate faster than population growth. The significant growth in freight

projected by the 2040 Commodity Flow Analysis indicates the need to make available adequate land for expansion of intermodal facilities, manufacturing, wholesale and distribution activities, and to continue maintaining and enhancing the freight transportation network. The 2040 Recommended Alternative identifies industrial sanctuaries for distribution and manufacturing activities; the RTP freight network identifies the transportation infrastructure and intermodal facilities that serve these land uses and commodities flowing through the region to national and international markets. The regional freight system map is shown in Figure 3.6 at the end of this chapter. The region's freight system policies are:

- 2.16.1. Provide efficient, cost-effective and safe movement of freight in and through the region.
- 2.16.2. Maintain and enhance the region's competitive advantage in freight distribution through efficient use of a flexible, continuous, multi-modal transportation network that offers competitive choices for freight movement.
- 2.16.3. Protect and enhance public and private investments in the freight network.
- 2.16.4. Promote the safe operation of the freight system.

2.17 Parking management

The Oregon Transportation Planning Rule requires that the *Regional Transportation Plan* include methods to reduce non-residential parking spaces per capita by 10 percent over the next 20 years (by 2015). The requirement is one aspect of the rule's overall objective to reduce per-capita vehicle miles traveled (VMT), promote alternative modes and encourage pedestrian and bicycle friendly development.

The mode of travel is directly influenced by the convenience and cost of parking. As auto parking in densely developed areas becomes less convenient and more costly, alternative modes of travel (e.g., public transportation, bicycle, walk and telecommute) become relatively more attractive. In addition, as alternative modes of travel are used more for work and non-work trips, the demand for scarce parking decreases. The reduction in demand will allow the region to develop more compactly and provide the opportunity for redevelopment of existing parking into other important and higher end uses. The region's parking management policies are:

2.17.1. Reduce the demand for parking by increasing the use of alternative modes for accessing the central city, regional centers, town centers, main streets and employment areas.

2.17.2. Reduce the number of off-street parking spaces per capita.

2.17.3. Provide regional support for implementation of the voluntary parking provisions of the Portland region's Ozone Maintenance Plan.

2.17.4. Manage and optimize the efficient use of public and commercial parking in the central city, regional centers, town centers, main streets and employment centers to support the 2040 Growth Concept and related RTP goals and objectives.

2.18 Transportation demand management

Transportation demand management (TDM) is not one action, but rather a series of actions to promote shared ride and the use of alternative modes, especially during the most congested times of the day. The term TDM encompasses the strategies, techniques and supporting actions that encourage non-single occupant vehicle travel (i.e., transit, walk, bike, carpool and telecommute), as well as measures to reduce per-capita vehicle miles traveled (VMT).

The primary benefit of managing travel demand is to minimize the need to expand the capacity of the region's transportation system (i.e., building new highways or adding lanes to existing highways) and make more efficient use of non-SOV modes (transit, walk, bike, carpool and telecommute) of travel. Managing travel demand will also help the region reduce overall per-capita vehicle travel, reduce air pollution and maximize energy conservation in a relatively low-cost manner. Regional TDM policies are also intended to complement local jurisdiction efforts to assist employers in implementing measures to meet the Department of Environmental Quality Employee Commute Options (ECO) rule and help the region achieve its 2040 Growth Concept land use accessibility goals. The region's transportation demand management policies are:

2.18.1. Enhance mobility and support the use of alternative transportation modes by improving regional accessibility to public transportation, carpooling, telecommuting, bicycling and walking options.

2.18.2. Promote policies and strategies that reduce travel by single occupant vehicles (SOV) in order to help the region achieve the 10 percent reduction in vehicle miles traveled (VMT) per capita and 10 percent reduction in parking spaces per capita as

required by the Transportation Planning Rule (TPR) over the planning period, and that improve air quality.

2.18.3. Provide incentives for employers and developers to build/locate in the 2040 Growth Concept central city, regional centers, town centers, station communities and transit corridors to promote more compact land use.

2.18.4. Continue to coordinate efforts to promote TDM at the regional and local level.

2.18.5. Implement TDM support programs to reduce the need to travel, and to make it more convenient for people to use alternative modes for all trips throughout the region.

2.18.6. Increase public knowledge and understanding about TDM as a tool to reduce congestion, reduce air pollution, implement the 2040 Growth Concept and to help the region meet the TPR VMT per capita and parking per capita reduction targets.

2.19 Transportation system management

2.19.1. Use transportation system management techniques (e.g., signal improvements, intersection channelization, access management, HOV lanes, ramp metering, incident response, programs that smooth transit operations) to optimize performance of the region's transportation systems. Mobility will be emphasized on corridor segments between high priority land use designations. Access and livability will be emphasized within such designations. Selection of appropriate TSM techniques will be according to the functional classification of corridor segments.

2.20 Right-of-way opportunities

2.20.1. Preserve existing and abandoned rights-of-way for future transportation improvements.

2.21 Adequacy of transportation facilities

2.21.1. Ensure land use patterns are consistent with the identified function, capacity and level of service of the facility.

2.22 Urban to urban travel on rural routes

2.22.1. Minimize the impact of urban travel on rural land uses. Limit access to and minimize urban development pressure on resource lands adjacent to transportation

corridors that link neighboring towns to the nearest regional center by designating urban connectors between these destinations as “green corridors.”

2.23 Recreational travel and tourism

2.23.1 Provide reasonable and convenient access to regional cultural, historic or natural area sites for passive and active recreational or tourism purposes.

2.24 Natural environment

2.24.1 Place a priority on protecting the region’s natural environment in all aspects of the transportation planning process.

2.24.2. Minimize the environmental impacts of system development, operations and maintenance.

2.24.3. Reduce negative impacts on parks, public open space, natural areas, wetlands and rural reserves arising from noise, visual impacts and physical segmentation.

2.25 Water quality

2.25.1. Place a priority on protecting the region’s water quality in all aspects of the transportation planning process.

2.26 Clean air

2.26.1. Protect and enhance air quality so that as growth occurs, human health and visibility of the Cascades and the Coast Range from within the region is maintained.

2.26.2. Encourage use of all modes of travel (e.g., transit, telecommuting, zero-emissions vehicles, ridesharing, bicycles and walking) that contribute to clean air.

2.26.3. Include strategies for planning and managing air quality in the regional airshed in the State Implementation Plan for the Portland-Vancouver air quality maintenance areas as required by the federal Clean Air Act Amendments.

2.26.4. Develop new regional strategies to comply with federal Clean Air Act Amendments requirements and provide capacity for future growth.

2.26.5. Work with the state to pursue close collaboration of the Oregon and Clark County Air Quality Management Areas.

2.27 Energy efficiency

2.27.1. Reduce the region's transportation-related energy consumption through increased use of transit, telecommuting, zero-emissions vehicles, ridesharing, bicycles and walking and through increasing efficiency of transportation network to diminish delay and corresponding fuel consumption.

Parks & Openspaces

Chapter 3 Parks, Open Spaces And Recreational Facilities

Overview

Parks, natural areas, open space, trails, greenways and associated recreational services provide important benefits to the visitors and citizens of the Portland metropolitan region including:

- Personal health benefits from leisure and fitness activities in local parks and open spaces (e.g. hiking, biking, field sports, playgrounds, swimming, picnicking, fishing, wildlife viewing). Recreational pursuits are vital to the social development of youth and the mental and emotional health of adults.
- Community benefits such as park access close to home, environmental education opportunities and community involvement in the planning and management of facilities. Parks and natural areas also provide unique landscape characteristics in the community.
- Economic benefits related to tourism and recreation industries and enhanced property values.
- Environmental benefits helping to maintain air and water resources, providing flood control and protecting fish and wildlife habitat.

Citizens throughout the region have demonstrated the importance of parks, natural areas and recreation services through their support in elections, opinion surveys, recreational activities and volunteer community service. Today, over 700 publicly-owned parks exist within and adjacent to the metropolitan region ranging from Mill End Park (18-inches in diameter) to Forest Park (4,683 acres). These facilities are managed by over 25 public park and recreation service providers. Metro currently manages approximately 6,100 acres of land at more than 40 locations.

With increasing growth in the region, the demand for park facilities and recreational services also has increased. But the supply of facilities and services has not kept pace. The ability of parks providers to maintain existing parks is increasingly strained and resources to acquire and develop new parks are becoming scarce. This is due to a variety of factors including an exclusive dedication of gas tax revenues to highway needs, significant reductions in federal appropriations for federal, state and local parks programs (e.g. Land and Water Conservation Fund), reductions in federal timber harvest

receipts to counties, and property tax reduction measures (e.g. Oregon's Measure 5 in 1990; Measure 47 in 1996).

Metro recognizes the desire of citizens to have quality natural areas and parks close to home. Metro is working with federal, state, and local governments to address and meet the park and recreation needs of the Portland metropolitan area. The Metro Charter, approved by voters of the region in 1992, authorizes Metro to acquire, develop, maintain, and operate a system of parks, open space, and recreational facilities. The Charter also designates these facilities as one of the mandatory components to be addressed in the Regional Framework Plan.

The policies and implementation of the parks, open spaces and recreation component of the Regional Framework Plan is based upon the *Metropolitan Greenspaces Master Plan*, adopted by Metro Council in 1992. The *Metropolitan Greenspaces Master Plan* describes goals and policies related to establishing an interconnected system of natural areas, open space, trails, and greenways for wildlife and people throughout the metropolitan area. The master plan relates to a number of Regional Urban Goals and Objectives (RUGGOs), particularly Objective 15 which calls for protection of natural areas, parks and fish and wildlife habitat.

This chapter of the Regional Framework Plan outlines the policies that guide Metro and local governments in providing services related to the provision of parks, open spaces, and recreational services. It includes policies intended to clarify roles and responsibilities to assure continued access to parks and natural areas and to protect significant natural resources for current and future generations. The policies reflect the importance of parks, natural areas and recreational facilities in the urban fabric of communities throughout the region, and offer measures to ensure that — as the landscape is affected by human settlement, natural resources are protected and citizens are provided appropriate recreational opportunities and facilities, close to where they live.

Background

For decades, parks have played a vital role in the quality of life in the metropolitan region. In 1903, visiting landscape architects Frederick Law Olmsted and John Charles Olmsted discussed a newly-emerging American notion of making nature urbane and, thus, naturalizing the city. In their report to the Portland Parks Board, the Olmsted's noted, "While there are many things, both small and great, which may contribute to the

beauty of a great city, unquestionably one of the greatest is a comprehensive system of parks and parkways.”

From the time of the Olmsted’s report through the 1960s, the city of Portland was the primary population center and primary parks provider in the region. With continuing urban growth through the 1970s, suburban communities outside the central city established new and expanded parks and recreation programs. A primary emphasis of these programs was, and continues to be, the provision of active recreation opportunities including sports fields, swimming pools, playgrounds and associated recreation programs.

In 1974, the State of Oregon issued the Willamette River Greenway Plan outlining protection and acquisition proposals for the Willamette River from Cottage Grove to its confluence at the Columbia River. The Plan directs development away from the river, establishes a greenway setback line, requires inventories be completed and requires protection of significant fish and wildlife habitats, vegetative fringe, scenic qualities and viewpoints.

The State of Oregon requires all cities and counties to develop comprehensive plans. These comprehensive plans must address State Land Use Planning Goals including: Goal 5, Open Spaces, Scenic and Historic Areas and Natural Resources; Goal 6, Air, Water and Land Resources Quality; Goal 8, Recreational needs and Goal 15, the Willamette River Greenway. Metro, as well as the cities and counties of the state, must show that their plans are consistent with these goals.

In 1989, Metro published the *Metro Recreation Resource Study*, a work in cooperation with other local park providers in the region. The purpose of the study was to:

- identify existing public parks, natural areas and other recreational resources in the region
- describe the general issues, problems, and opportunities relating to these resources
- identify needed actions to provide adequate park facilities and services in the Portland metropolitan region

The study identified the need to increase the inventory of park facilities and services and address the need for additional natural area park facilities in the metropolitan region, in response to the growing demand for natural resource-based recreational opportunities (e.g. hiking, biking, fishing, boating, camping, wildlife watching) close to home. Publicly-owned and managed natural areas were found to be limited, primarily Forest

Park, Oxbow Park and Tryon Creek State Park. A regional, cooperative planning approach was recommended to address this issue.

In 1990, Metro Council established two advisory committees to coordinate development of a regional natural areas master plan to guide protection and management of regionally significant natural areas in the region. The Greenspaces Technical Advisory Committee is composed of parks and natural resource professionals in local jurisdictions, state and federal agencies and representatives of nonprofit advocacy groups for parks, natural areas, open spaces, trails and greenways.

A Greenspaces Policy Advisory Committee consisting of elected officials from local jurisdictions in the region, including Clark County, oversaw development of the *Metropolitan Greenspaces Master Plan*, which the Metro Council adopted in 1992. The Policy Advisory Committee was replaced by a citizen-based Regional Parks and Greenspaces Advisory Committee in 1995 to advise Metro Council, Metro Executive Officer and the Metro Regional Parks and Greenspaces Department on a variety of issues affecting regional parks and natural area facilities and services.

In 1993, Multnomah County approached Metro concerning the possible consolidation of its Parks Services Division with Metro's Greenspaces Program. The consolidation was consistent with each agency's desire to support its own mission (e.g. growth management for Metro; social services for Multnomah County) and was expected to further the regional vision embodied in the *Metropolitan Greenspaces Master Plan*. In December 1993, Metro Council approved the merger of the Multnomah County Parks Division with Metro's greenspaces program, creating the Metro Regional Parks and Greenspaces Department.

The new department began operations in January 1994. Combining Metro's planning experience with park management experience greatly enhanced Metro's ability to acquire, develop, maintain, and operate a system of parks, natural areas, and recreational facilities of regional significance. It also put Metro in a position to better support local parks providers in coordination and planning activities. The parks merger allowed Metro to better address and coordinate issues common to all local park providers. For example, Metro coordinated the identification of 90 local park acquisition and improvement projects which were included in the 1995 open space, parks, and streams bond measure.

In 1995, Metro referred a \$135.6 million bond measure to voters of the region that identified 14 regional target acquisition areas, 6 regional greenway and trail projects and

90 local natural area acquisition and development projects that supported the goals of the *Metropolitan Greenspaces Master Plan*. Voters of the Portland metropolitan region approved Measure 26-26 in May 1995. Metro's goal is to acquire about 6,000 acres within the 14 regional target acquisition areas and corridors.

The *Future Vision Report* (1995) required by the Metro Charter also identifies parks and natural areas as valuable components of a livable community. The report states that:

- “We value a life close to nature incorporated in the urban landscape.”
- “We value nature for its own sake, and recognize our responsibility as stewards of the region's natural resources.”
- “...this region is recognized as a unique ecosystem...which seeks to:
 - improve air and water quality, and increase biodiversity;
 - protect views of Mt. Hood, Mt. St. Helens, Mt. Rainier, Mt. Adams, Mt. Jefferson, and other Cascade and coastal peaks;
 - provide greenspaces and parks within walking distance of every household;
 - assure a close and supportive relationship among natural resources, landscape, the built environment, and the economy of the region; and
 - restore ecosystems, complemented by planning and development initiatives that preserve the fruits of those labors.”

In addition, the RUGGOs state under Objective 15 that:

“Sufficient open space in the urban region shall be acquired, or otherwise protected, and managed to provide reasonable and convenient access to sites for passive and active recreation.”

The policies in this chapter capture the intent of the RUGGOs, *Future Vision* and *Metropolitan Greenspaces Master Plan* related to providing an adequate and viable system of parks, natural areas, trails, greenways and recreational programs and services in the Portland metropolitan region.

Analysis

A key element of the 2040 Growth Concept for accommodating future urban growth in the region includes encouraging a compact urban design. That is, more households are expected to be accommodated by higher densities. This means smaller lots in much of the new development and where transit service is at high levels, such as in regional and town centers, mainstreets and station communities, residential development types including rowhouses and multi-family development.

New neighborhoods and communities must include adequate parks and open spaces. Land set aside for parks and open spaces must be included in planning for future urbanization inside and outside the Urban Growth Boundary. A crucial issue related to parks, natural areas and recreation in the region is how communities will work together to plan for the provision of these important public facilities and services.

Identification and Inventory of the Regional System

The development of the *Metropolitan Greenspaces Master Plan* required the systematic, scientific identification, inventory and assessment of natural area features in the metropolitan region. A consultant team was assembled by Metro in 1989 to conduct the inventory and analysis of the Portland metropolitan region to identify regionally significant natural areas and corridors for fish, wildlife and natural resource dependant recreation.

The natural areas inventory was based on aerial photography of the total study area (372,682 acres) with biological field checks of seven percent of the natural areas mapped. Periodic updates of the inventory will be necessary to assess the status of regionally significant natural areas, monitor trends and to support future planning and management efforts. Future work will be based on systematic and scientific methods.

Inventories are needed in order to accomplish the following:

- Reevaluate protection priorities established in the *Metropolitan Greenspaces Master Plan*. Some sites identified may no longer be considered regionally significant. New sites may be added to the regionally significant inventory once current and more complete data are available.
- Delineate regionally significant natural areas, research and document the critical natural resources values for which protection should be justified and supported.
- Delineate and conduct field assessments of biological corridors that interconnect regionally significant sites.
- Assure that the regional system of parks, natural areas, open spaces, trails and greenways contributes to the maximum extent, based on scientific data, to the protection of water quality, fish, wildlife and botanic diversity within the region.
- Inventory existing park facilities, recreational capacity and analysis of park service needs

Protection of the Regional System

Ecological principles are important in establishing protection priorities including:

- Maintaining biological diversity by protecting and enhancing a variety of habitats such as wetlands, riparian corridors, forests, and agricultural lands distributed throughout the metropolitan area.
- Consolidating natural areas to create or maintain relatively large contiguous acreages connected to natural habitats outside the urban environment to avoid habitat fragmentation and species isolation.
- Protecting, restoring, and recreating stream corridor vegetation by replacing riparian vegetation where it is lacking or dominated by exotic species and removing barriers, where possible, to maintain connections with adjacent upland habitats.
- Protecting or restoring naturally vegetated connections between watersheds at headwaters or other appropriate locations.
- Planning for capital improvements to provide appropriate access and use of parks and natural areas

A variety of strategies will be used to protect and manage the regional system of parks, natural areas, trails and greenways to support fish and wildlife populations as well as provide a variety of recreational opportunities. These include:

1. Acquisition
2. Environmental education, stewardship and landowner incentives
3. Land use and environmental regulations

Acquisition

One of the most effective means of natural resource protection is public acquisition from willing sellers. The *Open Spaces Parks and Streams Bond Measure 26-26*, approved by voters in 1995 provided funds for the acquisition of open space in 14 regional areas, 6 regional greenway and trail corridors. The measure also provided funds for up to 90 local greenspace projects which support or compliment the *Metropolitan Greenspaces Master Plan*.

Since 1990, voters in Gresham, Lake Oswego, Portland, Tualatin, Tualatin Hills Park and Recreation District and North Clackamas Park and Recreation District have approved general obligation bond issues which support, in part, elements of the *Metropolitan Greenspaces Master Plan* and other outdoor recreation facilities and services needs.

More than \$6 million in federal transportation funding under the Intermodal Surface Transportation Efficiency Act of 1991 has been invested in trail projects in the region. Land acquisition can also be supported through donations of land, conservation easements and dedication of surplus land as open space.

Environmental education and incentive programs

Environmental education and incentive programs have the capacity to provide a level of protection for park and natural areas. Building an increased understanding and awareness of metropolitan natural resource values and the benefits of parks in general leads to informed management decisions and increased public participation in volunteer stewardship activities. An informed public uses parks and natural areas in ways that helps reduce the maintenance costs of these facilities. Incentive programs (e.g. grants, tax reductions, technical support) provide public agencies and private parties support in the restoration, enhancement, and management of natural areas.

Land Use and Environmental Regulations

Oregon land use policies and regulations provide limited protection of natural resources in the metropolitan region. Local governments can use the comprehensive land use planning process to establish protective zoning standards to protect natural resources within their jurisdiction, but they are often inconsistently applied. Natural resource management on a regional basis offers the opportunity for uniform standards to protect these resource values. Local planning efforts are needed to assure that an adequate supply of park land is available to meet the future demand for community and neighborhoods parks, sports fields, recreation centers and locally significant open space trails and greenways.

A combination of strategies will be required to protect and connect a regional system of parks, natural areas, trails and greenways for fish, wildlife and people. Metro will work with local governments, state and federal agencies, conservation organizations, businesses, and citizens to review, refine and further implement these protection strategies.

Management of the Regional System

Federal, state, county and local agencies have an important role in the management and operation of the metropolitan region's parks, natural areas and associated programs and services. The Metro Charter provides for Metro to serve as a regional provider of parks, natural areas, and recreational facilities. The 1994 City Club of Portland report, *Portland Metropolitan Area Parks*, cites the value of a regional parks authority. A cooperative, regional management approach can result in equitable distribution of facilities, funding equity, consistency in planning, management and operation of facilities and user benefits.

Currently, Regionally Significant Parks, Natural areas and Trails are managed by a variety of public entities with a variety of financial resources. There is little consistency in development, operation, and management standards and little or no integration regarding funding, user fees, or visitor services. Tax reform initiatives may have serious implications for local and state agencies' abilities to operate and maintain existing parks for the region's growing population. Local governments, in particular, may at some point wish to transfer management of regionally significant facilities to Metro, to address funding equity issues and allow local providers to focus on community and neighborhood parks and other facilities and programs related to active recreation.

Site specific management begins with the preparation of master/management plans. The primary purpose of a master plan is to articulate management, development and operation guidelines. Metro will prepare master/management plans for sites that Metro purchases or expects to manage. Sites which lack master/management plans will be "landbanked" and public use limited until appropriate facilities and services can be planned, developed and maintained.

Metro should provide the forum for addressing issues related to the coordination and integration of management, and of service delivery related to parks, open spaces and recreation. Metro should lead an effort to study and evaluate how park and recreation services are provided and recommend actions which will improve funding stability and equity, operational efficiency, customer service, management integration, coordination, and continuity.

Regional Trail and Greenway System

In their report to the Portland Parks Board in 1903, the Olmsted brothers recommended that a system of interconnected parks serves the public far better than a collection of isolated pieces of land. Regional trails and greenways provide the connective network necessary to link the region's parks and natural areas. It is also the critical component that provides people access to parks and natural areas, and the corridors to support movement of fish and wildlife. They connect communities with regionally-significant natural areas and also connect the metropolitan region to the Pacific Coast, Cascade Mountains and Washington state.

Since 1988, Metro has staffed a Regional Trails and Greenways Working Group composed of parks/trails/bike planners from local, regional, state and federal agencies, and nonprofit trail organizations. The working group assisted Metro in developing the

trails and greenways component of the *Greenspaces Master Plan*. Thirty-five trail and greenway corridors are identified in the master plan (see attached map, adopted by the Metro Council in 1995).

Refinement of the trails and greenways has been ongoing since the Master Plan was adopted in 1992. Citizen involvement also plays an important role in trail planning. For example, the Peninsula Crossing Trail was added to the Regional Trail System in 1993 at the request of residents of North Portland. Many of the trails and greenways segments support local comprehensive plans and/or local parks and trails master plans.

In 1996, Metro commissioned a Rails and Trails Strategic Plan which inventoried rail right-of- ways throughout the region and identified those having trail potential, should abandonment occur. Abandoned rail lines provide outstanding trail opportunities. The Springwater Trail, for example, was envisioned to link the metropolitan area with Mt. Hood National Forest. Constructed segments now link Gresham with Portland and provide 12.99 miles of constructed trail utilized by an estimated 500- 600 thousand people/year.

Public planning and transportation agencies incorporate elements of the Regional Trails Plan into state, regional, and local transportation projects and urban development projects (e.g., Mt. Hood Parkway, Sunrise Corridor, Hwy. 30 Corridor Study; Multnomah County West Hills Study).

Provision of Community and Neighborhood Parks, Open Spaces, Trails and Recreation Programs

Cities and two special districts (i.e., Tualatin Park and Recreation District; North Clackamas Park and Recreation District) in the region are responsible for community and neighborhood parks, open spaces, trails, and recreation programs. In the 1994 City Club of Portland report, *Portland Metropolitan Area Parks*, assessed and considered a vision for parks in the region. The report concluded that the size and configuration of the parks and recreation system is inadequate to meet current and future demand. In order to address this perceived inadequacy, the “completion ... of the core system” was envisioned.

In essence, a core system of parks would ensure that a “minimum level of parks and recreation facilities ... be available to all citizens regardless of income or geography in the metro area.” The approach was based on assessing local community values and making adjustments to reflect “separate social goals... held by a specific community.”

Not surprisingly, neighborhood and community parks were the first element of this system.

The City Club report recommended the provision of parks be coordinated with other basic services including schools, public safety, land use and transportation planning, and watershed management. Citing Portland as an example, the survey concluded that a “multi-generational community center at each middle school” should provide local communities in the region with a place of education, recreation, and congregation.

Local governments and park and recreation districts have been and will continue to be the primary providers of community and neighborhood parks, open space, trails, sports fields, recreation centers and recreation programs. These facilities and programs provide important opportunities for active and passive recreation in closest proximity to where citizens live.

Local governments should be encouraged to prepare park and recreation master plans which provide a framework for community level park and recreation facilities, trails and recreation programs. Master plans should:

- Identify parks deficient areas and include strategies for addressing these deficiencies.
- Integrate local trail systems with the regional trails system.
- Identify opportunities for cooperation and cost efficiencies between communities, schools, and quasi-public organizations such as the YMCA
- Provide for citizen involvement in the development and implementation of master plans.
- Identify funding strategies and implementation schedules.
- Be responsive to the State Comprehensive Outdoor Recreation Plan (SCORP).
- Compliment the Regional System.

Metro should identify and evaluate opportunities to assist local governments and park and recreation districts with development and implementation of master plans. Potential opportunities include:

- Provide mapping and information services through the agency’s Data Resources Center to support local planning efforts.
- Provide forums for the exchange of ideas, information, strategies and development of partnerships between providers, schools, and quasi-public organizations.
- Provide funding support by incorporating local parks components in regional funding strategies and continuing the restoration and education grants program.

- Advocate for the identification and implementation of state and federal funding sources which provide financial resources to supplement local investments in parks, open spaces, trails, recreation facilities and programs.
- Ensure that the regional and local park systems are incorporated into comprehensive plans and addressed in planning for urban reserve areas.

Participation of Citizens in Planning, Stewardship, Environmental Education and Recreational Activities

“What is not understood is not valued, what is not valued will not be protected, what is not protected will be lost.” Charles Jordan, Portland Bureau of Parks and Recreation

Public understanding and participation in the planning and protection of the region's parks, natural areas, open spaces, trails, greenways and recreational facilities are the foundation of successful parks and recreation services. Meaningful citizen involvement is fundamental to an effective response to community needs, it results in more responsive management through identification of appropriate priorities, and enhances financial and volunteer support. Metro, local governments, businesses and citizens working together must build a stewardship ethic and provide meaningful opportunities for public participation to assure parks and recreational services meet the needs of the metropolitan region and ensure the protection of natural resources.

As members of the public gain a comprehensive understanding of parks and natural area needs and opportunities, they will become active partners in efforts to determine future planning choices, and conduct periodic public review of local master plans and other related plans. Citizens can provide guidance through forums, participation on advisory committees, and in various other capacities.

Goal 5

In Oregon, local governments carry out planning to protect natural areas consistent with the State Land Use Planning Program. This land use program requires local governments to conform with up to nineteen statewide planning goals. Goal 5, Open Spaces, Scenic and Historic Area and Natural Resources is one of the key goals which can result in tools for protecting urban natural areas at the local level in the metropolitan region. A study, *To Save or to Pave; Planning for the Protection of Urban Natural Areas*, by the Portland Audubon Society and 1000 Friends of Oregon (1994), analyzed and evaluated the implementation of Goal 5 in the metropolitan region in protecting urban natural resources during the last decade. Some of the important findings from the study are listed below:

- Over three-fourths of local decisions examined allowed degradation of natural and scenic resources.
- Goal 5's rules were site specific and did not protect resources on an ecosystem or landscape level.
- Local governments employed a variety of regulatory and non-regulatory techniques with no overall consistency in an area.
- Goal 5 does not require standardized inventories or methods of data collection. As a result, important areas were omitted from consideration for protection, and inventories did not contain enough information to guide local planning decisions.
- Enforcement of local Goal 5 programs is difficult, inadequate and too reliant on citizen efforts.
- Upland forests are the least protected resource, and are vulnerable to being destroyed.

Metro has addressed natural resource issues in three policy documents: 1) the Metropolitan Greenspaces Master Plan (1992), 2) the Regional Urban Growth Goals and Objectives (RUGGOs) (1995), and 3) Title 3 of the Urban Growth Management Functional Plan (1996).

The *Metropolitan Greenspaces Master Plan*, adopted in 1992, through a mapping and public process, identified 57 sites in our metropolitan area that retained significant natural biological characteristics. Seventeen of these 57 sites are in the process of been acquired through the Open Spaces Parks and Streams Bond Measure 26-26. The remaining 40 sites are in private property, and are being urbanized at the rate of 6 percent. These sites are all Goal 5 areas, and land use regulations under the Goal 5 rule will help protect these regionally significant sites.

Title 3 of the Urban Growth Management Functional Plan (Water Quality and Floodplain Management Conservation), protects streams, wetlands, floodplains and steep slopes associated with vegetated corridors along streams by limiting or mitigating the impacts of development activities. Title 3 addresses Goal 6 and 7 and does not address Goal 5, because Goal 5's rules were changing when Title 3 was being addressed. However, Title 3 (Section 5 Fish and Wildlife Conservation Area) recommends local governments to address fish and wildlife habitat, but does not mandate any protection for the at this time. Title 3 does, however, require that Metro conduct a regional assessment of regionally significant Goal 5 resources and evaluate the protection of these resources. Based on this analysis, Metro will develop a strategy and action plan to address inadequacies in regional protection of Goal 5 resources. This plan will be carried out by Metro and local jurisdictions.

Metro recognizes that addressing Goal 5 will result in protecting fish and wildlife habitat, and balancing it with other economic uses in the metropolitan area. However, Goal 5 will have to be a comprehensive process which will include, protecting fish and wildlife habitat on a landscape level, standardizing inventory of resources, determining significance of resources, and systematizing land-use regulations through out the metropolitan area. In its eighteen month analysis, Metro will propose strategies and an action plan to address the protection of Goal 5 resources in the Metro region.

Policies

Policies related to the provision of parks, open spaces, and recreational services by Metro and local governments address inventory, protection, management and use of these resources at the regional and local levels. These policies have been derived from the Greenspaces Master Plan and the RUGGOs.

3.1 Policies related to the Inventory and Identification of Regionally Significant Parks, Natural Areas, Open Spaces, Trails and Greenways.

3.1.1. Metro will inventory and identify regionally significant parks, natural areas, open spaces, trails and greenways using landscape ecology as a basis, and watersheds as primary units of analysis, so that coordinated protection and enhancement of natural functions across jurisdictional boundaries will be assured.

3.1.2. Metro will identify natural corridors that connect regionally significant parks, natural areas, open spaces, trails and greenways. River and stream corridors will provide primary linkages.

3.1.3. Metro will inventory lands outside the urban growth boundary and Metro's jurisdictional boundary and identify them as prospective components of the Regional System when these lands are determined to be of direct benefit to citizens of the region.

3.2 Policies related to the Protection of Regionally Significant Parks, Natural Areas, Open Spaces, Trails and Greenways

3.2.1 Metro will create a Regional System of Parks Natural Areas, Open Spaces, Trails, and Greenways (The Regional System) to achieve the following objectives:

- a) provide citizens opportunities for natural resource dependent recreation
- b) protect the region's biodiversity

- c) contribute to the protection of air and water quality
- d) provide buffers between communities

3.2.2. Metro, upon the advice of citizens, and with the assistance of local governments and state and federal resource agencies, will finance and coordinate protection of the Regional system across jurisdictional boundaries.

3.2.3. Strategies to protect the Regional System will include, but not be limited to, acquisition, education, incentives, land use and environmental regulations.

3.2.4. Lands outside the Urban Growth Boundary and Metro's jurisdiction will be included in the Regional System when these lands are determined to be of direct benefit to citizens of the region.

3.2.5. Metro shall collect and evaluate baseline data related to natural resource values of the regional system to identify trends and guide management decisions.

3.2.6. New transportation and utility projects shall seek to avoid fragmentation of components of the Regional System. If avoidance is infeasible, impacts shall be minimized and fully mitigated.

3.2.7. Metro and affected local governments will work with the State to update, reinvigorate and implement a Willamette River Greenway Plan for the metropolitan region.

3.3 Policies related to the Management of the Publicly-Owned Portion of the Regional System of Parks, Natural Areas, Open Spaces, Trails and Greenways

3.3.1. Metro will assume management responsibility for parts of the publicly owned portion of the Regional System.

3.3.2. Metro will assume financial responsibility related to those portions of the publicly owned system which are owned or managed by Metro.

3.3.3. Local governments shall be given an opportunity to transfer existing publicly owned components of the Regional System to Metro and to acquire components of the Regional System with local resources.

3.3.4. The publicly owned portion of the Regional System shall be managed to protect fish, wildlife, and botanic values and to provide, primarily, natural resource related recreational opportunities.

3.3.5. Metro will acquire portions of the Regional System as financial resources allow. Metro will negotiate acquisition agreements primarily with willing sellers. Powers of eminent domain will be used only in extraordinary circumstances.

3.3.6 Master/Management plans shall be developed for each component of the Regional system to balance public use with natural resource protection. Master/Management plans shall be completed prior to formal public use.

3.3.7. Metro and cooperators in the Regional System shall be responsive to recreation demands and trends identified in the State Comprehensive Outdoor Recreation Plan (SCORP).

3.4.1. Metro will identify a Regional Trails System which shall be included in the Regional Transportation Plan.

3.4.2. The Regional Trail System shall provide access to publicly owned parks, natural areas, open spaces, and greenways.

3.4.3. Metro will coordinate planning for the Regional Trail System with local governments, federal and state agencies.

3.4.4. Metro will cooperate with citizens and other trail providers to identify and secure funding for development and operation of the Regional Trails System.

3.4.5. Local governments shall integrate local and neighborhood trail systems with the Regional Trail System.

3.5 Policies related to the Provision of Community and Neighborhood Parks, Open Spaces, Trails and Recreation Programs

3.5.1. Local governments shall be responsible for the planning and provision of community and neighborhood parks, locally significant open spaces, sports fields, recreational centers, trails, and associated recreation programs.

3.5.2. Local governments shall provide a park or recreation facility within one-half mile of all residents.

3.5.3. Local governments are encouraged to be responsive to recreation demand trends identified in the State Comprehensive Outdoor Recreation Plan (SCORP).

3.5.4. Local governments are encouraged to develop, adopt and implement Master Plans for community park and trail systems and recreational programs.

3.5.5. Local governments are encouraged to secure and appropriate sufficient funds for the provision of community and neighborhood parks, trails and recreational programs.

3.6 Policies related to Participation of Citizens in Environmental Education, Planning, Stewardship Activities, and Recreational Services.

3.6.1. Metro will encourage public participation in natural and recreation resource management decisions related to the Regional System.

3.6.2. Metro will provide educational opportunities to enhance understanding, enjoyment and informed use of natural, cultural, and recreational resources.

3.6.3. Metro will provide and promote opportunities for the public to engage in stewardship activities on publicly owned natural resource lands.

3.6.4. Local governments are encouraged to provide opportunities for public involvement in the planning and delivery of recreational facilities and services.

Water Management

Chapter 4 Water

Part 1 Urban Water Supply

Overview

Clean and sufficient quantities of water are essential to the people of the region as well as their commerce, agriculture and economic viability. It is not only important, however, to have adequate supply, but that supply must be able to reach where people are living throughout the region. How water is supplied to the region can also have impacts on the natural environment, including sufficient water for fish and wildlife habitats. This highlights the important linkage between growth management planning and planning for the provision of water supply and its related infrastructure.

This section of the Regional Framework Plan sets out the policies, their background and analysis, implications, and the implementation plan and regulations concerning urban water supply and storage.

Background

Metro's involvement in regional water resource planning extends back to the 1960s and 1970s when its predecessor, the Columbia Regional Area Government (CRAG) compiled water and sewer infrastructure needs, and met federal reporting mandates. This work coincided, in part, with a rapid surge of suburban growth in Oregon dating back to the 1950s. During the decade of the 1960s, residents in the Willamette Valley began to regard higher costs for services imposed on governments and urban development patterns with concern. Combined with an outspoken and environmentally-minded governor Tom McCall, the late-1960's direction in Oregon was to protect the state from the "grasping wastrels of the land." The state established the Oregon Department of Environmental Quality (DEQ) in 1969 to administer and monitor statewide environmental standards associated with existing federal mandates.

In 1973, the Legislature passed Senate Bill 100 calling for the formation of the Land Conservation and Development Commission (LCDC) to monitor compliance of local plans with state goals. State planning goals were written to link concerns about urban development with environmental protection measures. Goal 14 established the concept of urban growth boundaries (UGB) to separate urban from rural lands. The establishment of the UGB was considered not only a tool to reduce land extensive development, but also as a way to help minimize costs of extending public services and facilities, such as water and its transmission piping.

At the national level there was a parallel course of events that lead to the of the enactment of the Clean Water Act (CWA) in 1972, and the formation of the Environmental Protection Agency (EPA) to track progress towards the goals of the CWA.

It was during the early 1970's that CRAG was designated by DEQ as the region's Areawide Water Quality Planning Agency (1974), an effort that culminated in the Metro Council's adoption of the *Regional Wastewater Management Plan* (1980) and the *Regional Stormwater Plan* (1982).

The Metro Water Resources Policy Advisory Committee (WRPAC) was formed in the early-1980s to provide technical advice to the Metro Council on the development of Metro's functional plans for areawide wastewater and stormwater management. WRPAC, whose membership consisted of technical staff representing water providers and wastewater managers from around the region, extended the scope of its purview and membership to include matters related to "multi-objective watershed management" and policies and plans related to growth management planning.

Early Plans: Defining Roles and Responsibilities

In 1989, Metro began to evaluate regional water resource needs and to clarify its role, as described in a *Water Quality Issues Report* (July 1989). The following year, the Metro Council Planning Committee approved the *Water Resources Work Plan* (1990), which emphasized stormwater management, water quality modeling and participation in other regional water initiatives.

In 1991, the region's water providers formally organized a Regional Providers Advisory Group to discuss future water supply issues. It was agreed that the region would face future supply shortfalls based on current supplies, use patterns, and growth projections.

Over the next two years, including one summer of record drought (1992), the Portland Water Bureau, in coordination with other providers, sponsored a series of Phase I studies concerning future regional water demands, potential water source options and water conservation opportunities (*Water Source Options Study, 1991*).

An evaluation of Phase I results concluded that six source options to meet population growth forecasts over a 50 year-horizon were worthy of further analysis. A Phase II scope of work was developed that focused on the development of an integrated water supply plan for the region. Twenty-seven of the region's water providers signed an intergovernmental agreement in April 1993 to fund and manage the *Regional Water Supply Planning Study*. In 1994, Metro became the 28th project participant.

More Recent Regional Policies

In assessing how the region's growth should be managed, the Metro Council adopted The Regional Growth Goals and Objectives (RUGGOs). These goals identify both water quality and water quantity issues of regional significance in Metro's growth management planning. The RUGGOs also instruct Metro to work with all relevant jurisdictions to comply with state and federal requirements for drinking water, to sustain beneficial water uses and to accommodate growth.

Another source of regional policy, the 1992 Metro Charter, was approved by the region's voters in November, 1992. The charter recognized the important linkage between planning for the region's growth and planning for water supply needs, and directed Metro, in its Regional Framework Plan, to address "... water sources and storage.."

In response to requirements of the Metro Charter, the Future Vision document was adopted by the Metro Council in 1995. It states that there should be: "...intelligent integration of urban and rural development which seeks to: improve air and water quality..."

The *Metropolitan Greenspaces Master Plan*, adopted in by the Metro Council in 1992, called for the protection and enhancement of open space and natural areas, and directly linked their "survival" with water resources planning and management (see also Chapter 4). The Master Plan identified the need to protect and enhance waterways and floodplains as a strategy to protect and manage parks and open spaces. The plan recognized the value of watershed planning and, further, used watersheds as the basis for ecological planning and protection of resources.

The Region 2040 Growth Concept, adopted by the Metro Council as an ordinance in 1995, addressed land use, transportation, open space and livability for the region. The growth concept relied on a number of key elements, including population projections and projected land use densities and employment assumptions. It also analyzed the different water supply infrastructure needs and implications associated with three growth concepts. (*Concepts for Growth*, 1994). Metro worked closely with the region's water providers to rank each growth concept and compare the concepts based on various factors related to water supply. This work is summarized in Metro's *Water Descriptive Indicators Report* (1994) which also identified the relative cost differences between the three growth concepts.

The intent was to ensure that the eventual growth concept adopted by the Metro Council took into full consideration the implications of providing drinking water to future populations. The Region 2040 project and the *Regional Water Supply Planning Study* clearly identified how growth effects water supply and the need for coordinated planning to meet future water supply demands.

The *Metro FY 1994-99 Water Resources Work Plan* builds on the successes of the 1990 Water Resources Work Plan and on the water resources policies contained in the *RUGGOs*, *Metro Charter*, *Metropolitan Greenspaces Master Plan*, and *Metro's Regional Wastewater and Stormwater Management Plans*. These policies identified the water quality and water supply issues of regional concern that Metro should address in its planning functions.

The five-year work plan proposes work elements in the subject areas of water supply and water quality. The work plan sets out to accomplish the following:

- ensure sufficient quantity of surface water and groundwater is available to the region.
- protect and enhance water quality through coordinated growth management planning emphasizing integrated watershed management, technical assistance and public education.
- adopt water resource elements in the Regional Framework Plan.
- develop a watershed program, including water conservation program and public education and technical materials for the region's water providers
- recertify the annual wastewater management plan

Other Region-wide Work

As previously discussed, the scope for the *Regional Water Supply Plan* came about as a result of the Phase I *Water Source Options* studies conducted in 1991. Phase I study results pointed to the value of examining issues in a regional context, integrating available technical information and growth projections, and identifying strategies to develop water options for the future. The *Regional Water Supply Planning Study* was initiated in 1993; Metro formally joined the study in 1994. The final draft of the *Regional Water Supply Plan* was adopted by resolution by the Metro Council on November 21, 1996. This resolution also authorized Metro to join the Regional Water Providers Consortium.

The 27-member Regional Water Providers Consortium, formed at the end of 1996, was created to promote voluntary coordination of individual and collective actions of those parties implementing the *Regional Water Supply Plan*. In addition, the Consortium's general purposes include the following:

- serve as the central custodian for plan documents, including computer models
- review and recommend revisions of the Plan, as appropriate
- provide a forum for the study and discussion of water supply issues of mutual interest which could apply to statewide land use goals, comprehensive plans, regional plans or land use regulations
- establish an avenue for public participation in water supply issues

Metro is not bound by any federal or state regulatory requirements regarding water supply or drinking water quality because it is not a water provider. Though Metro does not have direct authority over water supply provision or transmission, its land use decisions have significant implications for drinking water quality, quantity and protection of current and future drinking water sources.

The tri-county region has high quality drinking water from numerous surface water and groundwater sources. Future development and expected population increases, however, will place new demands on these resources. The region's water suppliers predict regional mid-range average annual demand increases of 41 percent between 1990 and 2050. Comprehensive regional water supply planning is necessary to meet these future demands.

Serving future growth will have inherent opportunities and challenges. The more planning is coordinated, the better chance water providers will have to serve future growth.

The 1992 summer drought caused residents to realize that climatic drought cycles are a reality in this region and water conservation must be integrated into how we use water. Potential water shortages due to droughts, increased demands on water consumption due to population increases, and increasing state emphasis on instream water rights all highlight the crucial need for proactive regional planning to meet future demands.

Inappropriate land use activities also have an effect on water supply. Examples of industrial contamination of groundwater used for drinking water are found in the Portland metropolitan region. Land use planning and growth management, therefore, play a significant role in ensuring adequate future water supplies.

From the beginning of the Region 2040 program, it has been recognized that the future location of the urban growth boundary is very important to public agencies and water providers. These agencies and providers plan for water facilities that have useful lifetimes of 50 years or more and they need to know where they will be expected to provide these services.

As a result of this need for coordinated planning, there has been close coordination between the Region 2040 program and the Regional Water Supply Planning Study. The Region 2040 and concepts for growth studies relied on the region's water providers to provide technical expertise and best professional judgment in evaluating the associated implications and costs.

Now that Metro has adopted the *1996 Regional Water Supply Plan* and will be participating in the Regional Water Providers Consortium, there are several tasks on which WRPAC must make recommendations and, ultimately, the Metro Council may consider taking action. These could include:

- identify those portions, if any, of the 1996 Regional Water Supply Plan it will adopt as requirements.
- develop specific regulations and/or code language to enforce its water supply and storage policies.
- identify what activities Metro will carry out to implement the *Regional Water Supply Plan*.
- determine the relationship between the implementation of the *Regional Water Supply Plan* and achievement of goals in this chapter.

While Metro has adopted the *Regional Water Supply Plan* and the Metro Council has stated that this plan will be the basis for developing future Metro regulations and code, there are currently no Metro regulations regarding water supply and storage.

Accordingly as the Regional Water Supply Plan (RWSP) and the Regional Water Providers Consortium work toward implementation the following actions will be needed ensure coordination between the Framework Plan and the RWSP.

- identify the future resource needs of the region for municipal and industrial water supply
- identify the transmission and storage needs and capabilities for water supply to accommodate future growth
- identify water conservation technologies, practices and incentives for demand management as part of the regional water supply planning activities.
- adopt Metro requirements for water supply and storage based on the results of the RWSP that provide for the development of new sources, efficient transfer and storage of water, including water conservation strategies, which allow for the efficient and economical use of water to meet future growth.

Additionally Metro should:

- determine how the *Regional Water Supply Plan* will be updated in relation to the Regional Framework Plan chapter dealing with water supply and storage.
- determine how the activities of the *Regional Water Supply Plan* will be monitored for compliance with Regional Framework Plan water supply element.
- determine how Metro will monitor the implementation of the 2040 growth concept for implications to water supply issues (e.g., ensuring that future land use practices do not contaminate groundwater or degrade run-of- river sources of drinking water).

Policy

4.1 General Policy Direction

The Metro Council has communicated with the region's water providers that its main interests in water supply planning and implementation focus on water conservation and the link between land use and water supply. Based on this, future Metro policies will primarily concentrate on:

- promoting and achieving regional water conservation and demand management goals as
- defined in the *Regional Water Supply Plan*;
- promoting the coordination between regional growth management programs and water supply planning;
- promoting the coordination between land use planning and achieving the goals of the *Regional Water Supply Plan*; and

- setting benchmarks and evaluating achievement of the targets and goals established in the *Regional Water Supply Plan* in coordination with the region's water providers.

4.2 Process

The regional planning process shall be used to coordinate the development of a regional strategy and plan to meet future needs for water supply to accommodate growth.

A regional strategy and plan for the Regional Framework Plan element linking demand management, water supply sources and storage shall be developed to address future growth in cooperation with the region's water providers.

The regional strategy and plan element shall be based upon the adopted *1996 Regional Water Supply Plan*, which contain integrated regional strategies for demand management, new water sources and storage/transmission linkages. Metro shall evaluate its future role in encouraging conservation on a regional basis to promote the efficient use of water resources and develop any necessary regional plans/programs to address Metro's future role in coordination with the region's water providers.

Specific policy directions include the following;

4.3 Efficient Use of Water

Maximize the efficient use of water resources, taking in to account current and emerging conservation opportunities, availability of supplies, practicality, and relative cost-effectiveness of the options.

Make the best use of available supplies before developing new ones.

4.4 Water Supply Shortages

Minimize the frequency, magnitude, and duration of water shortages through a variety of methods including development and operation of efficient water supply systems, watershed protection and water conservation.

Ensure that the frequency, duration and magnitude of shortages can be managed.

Ensure that decision makers retain the flexibility to select appropriate risk levels for peak event water shortages given applicable future conditions, constraints, and community values.

4.5 Impacts of Catastrophic Events

Minimize the magnitude, frequency, and duration of service interruptions due to natural or human-caused catastrophes, such as earthquakes, landslides, volcanic eruptions, floods, spills, fires, sabotages.

Maximize the ability to deal with aesthetic factors, such as taste, color, hardness and odor.

4.6 Water Quality

Meet or surpass all current federal and state water quality standards for finished water.

Utilize sources with the highest raw water quality.

Maximize the ability to protect water quality in the future, including support for and participation in watershed-protection and pollution-prevention based approaches.

Maximize cooperative partnerships to co-sponsor projects and programs that provide mutual and multiple benefits.

4.7 Economic Costs and Cost Equity

Minimize the economic impact of capital and operating costs of new water resources on customers.

Ensure the ability to allocate capital and operating costs (e.g., rate impacts) for new water supply, related infrastructure, and conservation water savings, among existing customers, future customers, and other customer groups, proportional to benefits derived by the respective customer group(s).

Foster protection of environmental values through water source protection and enhancement efforts, and conservation.

4.8 Environmental Stewardship

Avoid, reduce and/or mitigate the impact of water resource development on the natural and human environments.

4.9 Flexibility to Deal with Future Uncertainty

Maximize the ability to anticipate and respond to unforeseen future events and changes in forecasted trends.

4.10 Growth and Land Use Planning

Be consistent with Metro's regional growth strategy and local land-use plans.

Facilitate and promote effective Regional Water Supply Plan implementation through local and regional land use planning and growth management programs.

Ensure that the plan includes flexible strategies for meeting both sub-regional and regional water demands in the near-term and beyond.

Part 2 Watershed Management and Water Quality

Overview

Watershed management and clean water are essential as habitat for fish and wildlife. They are also keys to a region's livability and future growth. The interconnected web of rivers and streams, which have played such an important role in the region's history and economic success are also important to the commerce, agriculture and economic vitality of the region.

Tremendous advances have been made in the last 25 years to improve regional water quality and protect natural resources and open space. Future growth and development, however, will place increasing demands on the region's natural resources and effect water quality. Metro recognizes this inherent conflict and strives to implement policies which protect natural resources and water quality while the region grows. This conflict, however, will need to be continually monitored and new challenges met.

Watershed management is a planning tool which recognizes the dynamic connectivity between different components of a watershed. It identifies land use and management activities which protect the functions of natural systems while achieving desired land use patterns.

Metro recognizes that citizens are concerned about protecting resources and maintaining open space to enhance the region's livability. It acknowledges the importance of

different components of a watershed and recommends that these lands be removed from the inventory of urban land available for development and that some are acquired for purchase as parks and open space. Finally, it recommends development of regulations to protect these critical natural resources.

Background

Federal Mandates

The Clean Water Act (1972) was established amid a growing tide of environmentalism that swept over the United States concerning the extent of water pollution in our rivers, lakes and oceans and the public's demand that these waters be cleaned up and protected. The goal of the Clean Water Act (CWA) was to ensure clean water for beneficial uses, such as drinking, swimming, fishing and to protect fish and wildlife.

This federally-mandated law created a system regulating direct and indirect discharges of pollutants in the country's waters (the National Pollutant Discharge Elimination System, or NPDES) that heralded a fundamental shift in approach to dealing with water quality issues. The act introduced two types of regulatory controls: water quality-based and technology-based effluent standards. It also introduced areawide water quality planning and recognized the link between land use and water quality.

Under provisions of the act, the Environmental Protection Agency was formed to administer the federal program. The Department of Environmental Quality (DEQ) took on the role of the state agency responsible for protecting water quality in Oregon.

The basis for DEQ's monitoring of Oregon's water quality program is the preparation of a routine water quality report describing and documenting monitoring and sampling programs at established river and estuary stations. These reports, developed by DEQ, are submitted to the EPA every two years, as required in Section 305(b) of the Clean Water Act. In this fashion, EPA has been able to compile a national summary of water quality conditions for the Congress in order to track progress on the goals of the CWA.

State Requirements

The DEQ, under guidance from the state Environmental Quality Commission, is the agency responsible for administering environmental laws in Oregon. The water quality program managed by DEQ is based on the protection of recognized "beneficial uses,"

such as water supply, fisheries, aquatic life and wildlife, recreation, and navigation. Water quality criteria, designed to protect these “beneficial uses,” provide the basis for DEQ’s evaluation of the status of water quality.

The Oregon Legislature declared the following to be beneficial uses for the waters of Oregon: public water supplies, propagation of wildlife, fish and aquatic life, and domestic, agricultural, industrial, municipal, recreational, and other legitimate beneficial uses of such waters.

The Clean Water Act, Section 303(d) requires each state to identify those waters for which existing required pollution controls are not stringent enough to achieve that state’s water quality standards. As a result of this requirement, in 1996 DEQ published its 303(d) list of Water Quality Limited Waterbodies which includes many stream segments in the metropolitan region.

Another set of state requirements come from the Oregon Statewide Planning Goals, adopted by the Legislature in 1969 through the passage Senate Bill 100 in 1974, address water quality and human health and safety in the context of land use planning. Goal 5 addresses open spaces, scenic and historic areas, and natural resources, Goal 6 pertains to air, water and land use resources and Goal 7 to Areas subject to natural disasters and hazards.

Goal 5 is intended to protect natural resources to “...promote a healthy environment and natural landscape that contributes to Oregon’s livability.” Comprehensive plans of cities and counties are to demonstrate consistency with this goal as are such Metro policies as its regional goals and objectives and this Regional Framework Plan.

Goal 6 objective is “to maintain and improve the quality of the air, water and land resources of the state.” The goal states that local comprehensive land use plans should provide for the maintenance and improvement of air, land and water resources, including the carrying capacity of such resources of the planning area. The goal also states that, with regard to river basins, pollutant discharges should (1) not exceed the carrying capacity of such resources, consider long range needs; (2) degrade such resources; or (3) threaten the availability of such resources.

The objective of Goal 7 is “to protect life and property from natural disasters and hazards.” This goal strives to ensure that development will not be located in areas known to be prone to natural disasters and hazards without appropriate safeguards. Areas that are known to result in death or to endanger development include such things as stream

flooding, groundwater contamination, erosion and deposition, landslides, earthquakes and weak foundation soils. Goals 6 and 7 are closely linked through the connection between the carrying capacity of land and water resources, and natural disasters and hazards associated with exceeding the carrying capacity of such resources.

In addition, with the enabling legislation that created Metro in the late 1970's, the state statutes were amended to include a chapter on metropolitan service districts. These statutes provide the authority for Metro to:

“Define and apply a planning procedure which identifies and designated areas and activities having significant impact upon the orderly and responsible development of the metropolitan area, including, but not limited to, impact on:...water quality...”

Further, it states that Metro may “Prepare and adopt functional plans for those areas designated under subsection (1) of this section to control metropolitan areas impact on air and water quality....”

Regional policies

Metro's involvement in regional water resource planning dates back to the 1970s when CRAG compiled reports documenting water and sewer infrastructure needs. These efforts culminated in the Metro Council adoption of the *Regional Wastewater Management Plan* (1980), which provides for regional coordination and staging for construction of wastewater treatment facilities, and the *Regional Stormwater Management Plan* (1982), which identifies eight major watersheds in the region and policies to reduce soil erosion and protect streams from degradation.

In 1989, Metro published its *Water Quality Issues Report*, followed by an *Areawide Water Quality Report* (1992) which identified the following water quality issues of regional concern: stormwater management, water quality- limited streams, wetlands and groundwater. The 1992 report also considered Metro's role in addressing the region's water quality problems, and suggested that Metro take on the following responsibilities: land use planning, watershed planning and technical assistance to local governments in addressing regional water quality issues.

The Regional Growth Goals and Objectives (RUGGOs), adopted by the Metro Council in 1991, and most recently revised in 1995 and the Metro Charter, adopted in 1992, identified the specific components Metro must address. In addition to water source and storage planning, Metro has “planning responsibilities mandated by state law” and “other growth management and land use planning matters which the Council... determines are of metropolitan concern and will benefit from regional planning.”

In response to the charter mandate, a Future Vision was completed. This document states in part:

“Our place sits at the confluence of great rivers – the Columbia...Willamette and its tributaries...” To achieve this vision:

...Manage watersheds to protect, restore and maintain the integrity of streams, wetlands and floodplains, and their multiple biological, physical and social values.”

In addition, as part of implementation of the Growth Concept, Metro is developing plans in relation to floodplains, stream corridors, wetlands and steep slopes (see appendices) in an effort to protect the function and values of these resources, protect human health and safety, and maintain or enhance the quality of life in the region.

Analysis

Water Quality

Water quality has declined throughout the Portland metropolitan region as development has occurred. Over 213 miles of streams and rivers within the Metro boundary have been cited by the State as not meeting current water quality standards. Pollutants include dioxin, sediment, or fecal coliform and such conditions as lack of dissolved oxygen or high temperatures which greatly reduce its ability to support fish and wildlife. The State has indicated that more miles of streams and rivers within the Metro boundary also may not meet State standards, but insufficient monitoring equipment is available to confirm this.

Degraded water quality has reduced the beneficial uses of the region's streams, rivers and wetlands. Uses that depend on clean surface waters include domestic, fish life, industrial, irrigation, mining, municipal, pollution abatement, power development, recreation, stockwater and wildlife uses. Clean water is essential to the quality of life in the region and the protection and enhancement of this resource is essential to achieving Metro's regional goals. As noted in a recent paper, “As long as the region is able to provide a quality of life that many people find attractive, it should continue to prosper”. (*Economic Well-Being and Environmental Protection in the Pacific Northwest*, 1995, T.M. Power)

Riparian and Wetland Areas

The natural areas along rivers and streams as well as wetlands and the actual bodies of water provide fish and wildlife habitat. That is, space for spawning, nesting and rearing; feeding; migrating and other life cycle needs of the region's fauna is provided by these areas. Protection and management of these resource areas will ensure that habitat is available for current and future fish and wildlife populations which may depend on these areas for some or all stages in their life cycles. For humankind, these areas provide a place for active recreation and scenic views and vistas which can help maintain a region's quality of life even as the region grows.

These areas can be protected by avoiding, limiting and managing development which adversely impact fish and wildlife habitat. These actions need not reduce the development potential of a property, although, in some circumstances, public acquisition or transfer of development rights may be the only equitable solution to properties wholly within such areas. A project alternatives analysis would be an effective tool under specific circumstances. In addition, establishing performance standards and promoting coordination by Metro of regional urban watersheds would help to address the issue.

Impacts of urbanization on watersheds and biodiversity

Urban runoff, or "stormwater," has garnered concern focused on flooding and its potential threat to property and human life in rapidly developing areas of the region. More recently, however, concern about stormwater has focused on affects to the water quality of receiving streams. Based on national water quality studies in urban areas, it is clear that past efforts to improve water quality problems have not achieved set goals. Nonpoint sources of pollution are the principal problem behind the failure of rivers and other water bodies to support their designated uses. Consequently, control of nonpoint pollution is a new national focus as it becomes increasingly clear that water quality will not improve if nonpoint sources remain uncontrolled. For example, analysis of the literature (King County Surface Water Report, Johnson, 1992) shows that the wider the riparian buffer, the more impacts that can be addressed. The narrowest buffer widths can control nutrients, water temperature and stormwater runoff, while much wider buffers are needed to control for fecal coliform (primarily from nonperforming septic tanks in urban areas or livestock in rural areas) and sediment control (from soil erosion). The widest buffers are needed if wildlife habitat is to be maintained. In addition, urban development design can greatly impact the amount, if not quality of stormwater. In an analysis of potential strategies in the Olympia, Washington area, reduction of

commercial parking was the most effective strategy assessed followed by reduction of commercial, industrial and multifamily roof areas, followed by reductions in public street widths.

Within this region, discharges from combined sewer overflows (CSOs) and storm sewers are also a major public health concern. As with numerous cities across the country, the City of Portland violates standards due to CSO discharges into rivers at times of high stormwater runoff. Extensive reconstruction of the system is now under way. In addition, many storm sewers receive illicit discharges. These range from individuals dumping used motor oil into storm drains, to spills from transportation accidents, to improper commercial disposal of large amounts of unwanted liquid materials. Control of these discharges will greatly reduce stormwater pollution and improve water quality. Public education, source reduction and monitoring are essential to successful abatement or prevention of pollution.

Watershed-based management and planning

Biodiversity is also impacted by urbanization. Habitat is lost or becomes so fragmented that species survival and mobility is threatened. Wildlife movement corridors have been designed as a result of the *Metropolitan Greenspaces Master Plan* throughout the region to facilitate movement of animals and to connect isolated parks.

The impacts of urbanization on watersheds and biodiversity has been researched and documented within the metropolitan region. Our local streams, tributaries of the Willamette, Columbia, Clackamas, Sandy and Tualatin Rivers, have suffered from the region's dramatic growth. The Columbia Slough and the Tualatin River have been designated water-quality limited by DEQ. Increasing urbanization and poor land use practices threaten the water quality of surface and groundwater in the metropolitan area. Water quality has diminished, groundwater has become contaminated, water supplies are threatened, water recreation is restricted in certain areas during rain events, and fish and wildlife habitat has been degraded.

Watershed analyses are being carried out in selected locations in the Portland metropolitan region. Though these analyses are primarily used by water resource managers, the goal is that they would also guide land use and transportation planning to foster a more comprehensive and integrated approach to land use planning.

Clearly, a regional comprehensive, integrated and multi-disciplinary watershed-based approach is needed to address these complex and far-reaching impacts. This will require

a “big picture” perspective at the landscape scale where protection, restoration, enhancement, planning and implementation of urban projects must take natural resources and biodiversity into consideration.

The Growth Concept (see chapter 2) places strong emphasis on the protection and management of natural resources within the urban growth boundary and surrounding the metropolitan region. It acknowledges public concern and appreciation for environmental quality, open space and the scenic beauty provided by the region’s natural resources. The Growth Concept identifies key natural features within the landscape for protection as greenspaces. These areas may be used as parks, open spaces, protected areas (such as wetlands and floodplains), or low-density residential development. Many of these areas have been set aside as park areas or may be acquired by Metro or local jurisdictions through implementation of the *Metropolitan Greenspaces Master Plan*. The Growth Concept identifies three strategies for their protection: 1) remove these lands from the inventory of urban land available for development; 2) these natural areas will receive high priority for purchase as parks and open space; and finally, 3) regulations could be developed to protect these critical natural areas that would not conflict with housing and economic goals. Transfer of development rights is one strategy or “tool” available to local governments to achieve this goal. Other areas will be protected through local zoning changes as a result of implementation of the Growth Concept (see appendix 1a).

The Metro Council has adopted regional stream protection and floodplain management performance standards. (see Appendix 1a). This includes a model ordinance and maps of the protection areas within the region. Policies for implementation and regulation of regional watershed planning and regional Goal 5 planning has yet to be developed (see Appendix 1f).

In addition, Metro must develop, test and monitor innovative ways to manage land use and protect receiving streams within the context of the Growth Concept. There must be encouragement to implement and monitor projects that use best management practices, innovate urban site design and landscaping to eliminate, reduce and manage nonpoint source pollution, manage stormwater, and prevent stream and floodplain degradation within the context of the Growth Concept land use densities. There is a need for documentation and dissemination of information about best management practices and nonpoint source pollution control.

Water quality protection and management can be achieved by managing how and where development and land use activities occur within the region. There are several ways in

which this can be achieved. First, riparian areas along the region's rivers and streams can be protected from development by establishing riparian protection zones. Development and land use activities can be prohibited, limited or managed within these zones to protect riparian functions and values. Second, soil disturbing activities and soil erosion can be eliminated, managed or minimized in order to reduce sediment entering receiving streams. This can be achieved through the identification, use and enforcement of specific best management practices when development occurs. Third, vegetation within this zone can be maintained and protected and where removal is unavoidable, vegetation can be re-established in a timely manner to maintain the functions and values of the riparian corridor in order to protect water quality

Finally, partnerships can be encouraged between jurisdictions, developers and "friends" groups to test innovative water pollution control techniques.

Federal and State implications

There are several federal and state initiatives that will influence how Metro and local jurisdictions plan and manage water resources and watersheds within our region. At the federal level there is the potential listing of fish species through the Endangered Species Act which will potentially affect activities on selected rivers and streams within the Metro region. For example, the steelhead trout is currently nominated for listing on the Clackamas and Sandy rivers within our region. A decision on any potential federal action is expected in mid-1997.

Additional federal implications for our region include revisions and reauthorization of the Clean Water Act and any expansion of the National Pollutant Discharge Elimination System (NPDES) program to include smaller cities in the region. Changes to federally-mandated programs will have a ripple effect on state water quality standards and regional water resources policies and planning. Any revisions to or expansion of such programs will require coordination by regional partners to respond accordingly.

Other Outstanding Issues

There are other issues that will need to be addressed in the future, including:

- impervious surface standards to minimize the impact of stormwater run-off in watersheds
- regional watershed management with particular emphasis on the linkage between riparian areas and upland areas

- a plan to create a regional fish and wildlife conservation area management and implementation strategy

Critical technical work that remains includes:

- identification of the future resource needs for designated beneficial uses of water resources that recognizes the multiple values of rural and urban watersheds.
- monitoring of regional water quality and quantity trends vis-à-vis beneficial use standards adopted by federal, state, regional and local governments for specific water resources important to the region, and use the results to change water planning activities to accomplish the watershed management and regional water quality objectives.
- assessment of integration methods for urban and rural watershed management in coordination with local water quality agencies.
- evaluation of the cost-effectiveness of alternative water resource management practices, including conservation.

Policies

These policies strive to address the inherent conflict between the function of natural systems and the effects of growth and development in the region. In order to meet the challenge of formulating policy in coordination with local jurisdictions and citizens, it is essential to acknowledge the dynamic process whereby such policies will continue to be developed and refined.

4.11 Overall Watershed Management

Planning and management of water resources should be coordinated in order to improve the quality and ensure sufficient quantity of surface water and groundwater available to the region.

Metro will develop a long-term regional strategy for comprehensive water resource management, created in partnership with the jurisdictions and agencies charged with planning and managing groundwater resources and aquatic habitats. The regional strategy shall meet state and federal water quality standards and complement, but not duplicate, local integrated watershed plans. It shall:

- manage watersheds to protect, restore and ensure to the maximum extent practicable the integrity of streams, wetlands and floodplains, and their multiple biological, physical and social values;
- comply with state and federal water quality requirements;
- protect designated beneficial water uses;

- implement multi-objective management of the region's watershed to the maximum extent practicable; and
- require the use of techniques relying on natural processes to address flood control, stormwater management, abnormally high winter and low summer stream flows and nonpoint pollution reduction.

4.12 Water Quality Goals

Metro should protect and enhance the water quality of the region by:

- establishing vegetative corridors along streams
- encouraging urban development which minimize soil erosion
- implementing best management practices (BMPs)
- maintain vegetation buffers along riparian areas.

4.13 Urban Planning and Natural Systems

Urban planning within the region should:

- promote the incorporation of natural watershed systems into future planning and design processes and balance their contributions to environmental improvement with recreational and other uses, and
- address the interrelatedness of greenspace protection, land use, transportation and water resources management issues.

4.14 Water quality protection

The water quality of the region should be protected and restored by:

- implementing watershed wide planning
- implementing erosion control practices
- promoting the protection of natural areas along waterways and encourage continuous improvement of water quantity and quality through liaison with agencies that influence changes along streams and rivers in the metropolitan area.

4.15 Fish and Wildlife Habitat Conservation Area

Metro should establish standards to conserve, protect, and enhance fish and wildlife habitat within the fish and wildlife habitat conservation areas identified on the water quality and flood management area map by determining performance standards and promoting coordination by Metro of regional urban water sheds.

Natural Hazards

Chapter 5 Regional Natural Hazards

Overview

Natural hazards provide a “reality check” to growth in any region, a yardstick against which we can ask, “Has the region’s future been built on solid ground?”

In the past few years, nature has been unkind to many local communities. Two examples include the Scott Mills earthquake in 1993, and the 1996 floods. For the three-county area, the cost of flooding and landslides from the February, 1996 event has been estimated at almost \$60 million – some 200 households were within the area of inundation. Figure 10 depicts the frequency of flooding in the region. Reminders of the power that natural hazards can unleash on communities include distant more powerful events, such as the Loma Prieta (1989) and Northridge (1994) earthquakes in California; and the widespread Midwest floods in 1993. We know that major disaster can strike this region.

Flood Date	Height ² of Willamette at Portland	Height of Columbia at Vancouver
February 1996	30.2 ft.	28.8 ft.
December 1977	17.6 ft.	Not available
January 1974	25.7 ft.	25.0 ft.
December 1964	29.8 ft.	29.5 ft.
June 1956	26.4 ft.	26.8 ft.
May 1951	Not available	21.5 ft.
June 1950	Not available	25.1 ft.
June 1948	31.6 ft.	32.8 ft.
January 1943	21.8 ft.	Not available
June 1894	35.1 ft.	36.0 ft.

Figure 10 Columbia and Willamette River Flooding

² River heights are measured by National Geodetic Vertical Datum

Hazard mitigation planning, part of a new comprehensive approach to emergency management, can be instrumental in reducing the region's vulnerability to disasters. Hazard mitigation requires a partnership between emergency managers who are experts in emergency response needs, and experts in other professions such as land use planning, engineering and economics.

Growth expected to occur as estimated in Metro population growth forecasts will require Metro, local governments and private partners to balance numerous factors. Failure to address natural hazard management issues in the community planning and development stages can lead to amplification of future losses.

This chapter of the Regional Framework Plan outlines the background, analysis and policies concerning natural hazard mitigation planning. It addresses known regional natural hazards, and offers plans for a comprehensive planning that will help minimize the risks associated with such hazards to communities.

Background

In the past decade, local, state and federal agencies have launched initiatives to improve our knowledge of natural hazards. Understanding natural hazards and the risks they create is the starting point for the long and costly process of improving the safety of communities in relation to natural disasters. Only recently has the concept of hazard mitigation become the cornerstone for developing strategies to reduce the billions of dollars spent on response and recovery operations following natural disasters.

National Mitigation Planning

The Federal Emergency Management Agency (FEMA) coordinates all federal resources in support of state and local government activities in all phases of the emergency management process: emergency preparedness, mitigation, response and recovery. Congress stated its intention in the Robert T. Stafford Disaster Relief and Emergency Assistance Act to "...provide an orderly and continuing means of assistance...to local governments in carrying out their responsibilities by...encouraging hazard mitigation measures to reduce losses from disasters, including development of land use and construction regulations."

FEMA adopted a national strategy to carry out the intent of Congress to reduce the cost of natural hazards through hazard mitigation programs.

State Mitigation Planning

State land use planning goals were adopted in 1969 by the Oregon Legislature requiring counties and cities to prepare comprehensive land use plans. In 1973, Senate Bill 100 established the Land Conservation and Development Commission to monitor compliance of local plans with state goals which, through passage of the bill, were rewritten to link concerns about urban sprawl with environmental protection measures. Goal 7, Areas Subject to Natural Disaster and Hazards, mandated that developments should not be planned in locations that could result in loss of life. Some of those factors identified in Goal 7 that could contribute to loss of life include "natural disaster and hazards."

Local governments are required, in city and county comprehensive plans, to respond to state land use planning goals and, specifically, to identify and mitigate known hazards. The Metro Regional Framework Plan, as well, must also comply with state goals.

Some state agencies have expanded their purview to include mitigation planning, response and recovery strategies. Examples include the Oregon Department of Geology and Mineral Industries, providing earthquake information and the Office of Emergency Management, a division of the Oregon State Police which organized the Governor's Mitigation Policy Task Force, in response to the 1996 floods.

Regional Mitigation Planning

The Metro Charter, adopted in 1992 by a popular vote of the citizens of the region, authorized Metro to focus on guiding the region in how and where it will grow. The charter also authorized Metro to exercise authority related to the "Metropolitan aspects of natural disaster planning and response coordination" function. (Section 6, part 3). Although the Charter did not include natural disaster planning as one of the required elements of the Regional Framework Plan, recently, both the Metro Council and the Metro Policy Advisory Committee directed that natural disaster planning should become a part of the plan.

In response to another portion of the Metro Charter, a Future Vision statement was created and adopted by the Metro Council in 1995. This document states the importance of safety and that:

"...personal safety within communities and throughout the region is commonly expected as well as a shared responsibility involving citizens and all government agencies. Our definition of personal safety extends from the elimination of prejudice to the physical protection of life and

property from criminal harm, to mitigation and preparation for and response to natural disasters.”

Metro’s Growth Management Services department has played a pivotal role in initiating coordination of regional growth management and natural disaster planning responsibilities.

The Department’s Data Resource Center (DRC) has collected and maintained demographic and geographic information, including databases for emergency 9-1-1 purposes to mapping flood hazard data that can assist in the mitigation process, and is an essential component of the urban growth process. Through its centralized data base server, the Regional Land Information System (RLIS), can spatially depict a variety of data for a geographical area, including land use records, zoning codes, urban development patterns and natural resource information. RLIS has become a tool for planning programs, including natural hazards mitigation.

Since 1992, Metro and the Oregon Department of Geology and Mineral Industries (DOGAMI) have worked to produce earthquake hazard maps showing areas of the region where the geology is more likely to cause damage in an earthquake. As part of the project, Metro continues to evaluate buildings for seismic risk, identify vital systems and key facilities. With hazards and risks identified, Metro’s geographic information system then can be used to assess the region’s vulnerability to earthquake hazards. The earthquake hazard mapping will be concluded in early 1997.

As the seismic hazard maps produced by Metro and DOGAMI became available, a gathering of emergency management professionals from throughout the region began informal review sessions. More recently, the membership of the once “informal” gathering (including Metro), signed an intergovernmental agreement to form the Regional Emergency Management Group to develop a work plan for emergency management planning activities related to regional disaster issues.

As Metro worked to develop plans for how the region will grow, it became obvious that the region’s ability to mitigate and respond to natural hazards needed to be considered. In response to this need, Metro’s natural hazards mitigation program was created. The program provides regional coordination, outreach, data management services and technical assistance in developing regional strategies for mitigating natural hazards and preparing communities and residents for disasters. Metro has been collecting and analyzing seismic risk in parts of the region and collaborating with local and state

emergency management agencies to develop a comprehensive emergency management plan and system in the region.

Metro also conducted a survey aimed at local governments in an attempt to identify policies, ordinances and administrative rules or codes for mitigating natural hazards. The results of the survey shed light on the status of the region's mitigation efforts. In addition, the Metro Council approved the formation of a Natural Hazards Technical Advisory Committee to consider measures that local governments, businesses and residents can take to reduce damage from natural disasters.

Analysis

Natural hazard issues create implications for the regional planning process and the urban forms that develop from that planning process. Over time, implementing natural hazards planning measures can reduce the disaster vulnerability of the people of the region and the structures they build. Recognizing the linkage between the quality of life and the urban form of the Metro region, several metropolitan planning issues that describe the natural and built environments raise natural hazards implications.

Following are categories of metropolitan features that could be affected by natural disasters.

Housing

Regional objectives for housing related to specific goals for low- and moderate-income housing can be thwarted by a disaster if the desired housing is located on hazardous ground or not engineered to economically survive an event. Natural hazard considerations can encourage the location of housing mixtures on different hazard zones.

For example, concentrations of lower income housing on marginal land can create significant housing shortages after a natural disaster. A regional policy of evenly distributing low- and medium-income throughout all communities may improve the performance of the housing stock in a natural hazard event by distributing the population across a variety of soil and slope conditions.

Public Services and Facilities

Natural hazards considerations will play a key role in the development and redevelopment of public services and facilities. Public safety services, schools and other

key facilities must be built to standards that provide some assurance that they will survive a natural hazard event and be available to provide service when most needed. Natural hazard events can cause expensive and prolonged disruption of a community's vital systems (e.g., water, sewer, telecommunications and other utility services). Identification of system segments that cross hazardous ground can offer opportunities to engineer system components to respond better in an event, or relocating an especially fragile component to safer ground.

Transportation

Transportation routes can be severely disrupted by natural events, hampering response and delaying recovery. Priority routes for response and recovery resource movement can be identified. Intermodal transfer points can be especially important after a natural hazards event. Engineering strategies to improve transportation structure performance can be developed. Alternative routes can be designated to improve resource movement in the event of failure to a priority route. Natural hazards considerations can be incorporated in the public involvement process to establish transportation funding priorities.

Economic Opportunity

Natural hazard events can severely disrupt the local and regional economy. For example, hard hit areas may lose many of its stores, requiring neighborhood residents to travel to distant stores, thereby also placing additional burdens on transportation systems in the disaster recovery phase.

To the extent that long-term economic development plans describe the types of industrial and commercial development appropriate to designated areas, consideration of the relationship of development to the location of natural hazards should be incorporated.

Urban/Rural Transition

Natural hazards can play a role in defining an Urban Growth Boundary (UGB) providing a clear transition between urban and rural land. Located along natural and built features (e.g., roads, rivers, floodplains or other major topographic features), the UGB may help define the types of natural hazards to be considered in the land use and emergency planning process.

Developed Urban Land

One key objective of growth management is to encourage the development and redevelopment of existing urban land. Development in areas known or newly discovered to be susceptible to natural hazards is especially ripe for redevelopment to reduce the vulnerability of the people who live in the area. In coordination with land use, economic development, redevelopment and financing agencies, a combination of regulations and incentives may be employed to encourage people to continue to live, work and shop in already developed areas that are susceptible to natural hazards.

For example, unreinforced masonry buildings (URMs) can pose significant earthquake risks to inhabitants and passersby. Neighborhoods that contain many URMs may become candidates for targeted regulation and assistance, perhaps requiring life safety retrofit of URMs by a specified date, and developing the bonding authority to provide low-interest loans to building owners for that work.

Urban Design

Excellent design of settlement patterns, structures and landscapes is a distinguishing characteristic of healthy communities. Natural hazard considerations can assist in the design process to match structures to their environment and improve the feeling of personal safety in an urban setting.

Other Implications

The natural hazards management planning process also has close ties to watershed management and water quality and supply measures, including those related to watershed protection and restoration to ensure the integrity of streams, wetlands and floodplains, and their multiple biological, physical and social values. Natural hazards considerations can also create multi-objective watershed management opportunities and encourage reliance on natural processes to address flood control, storm water management, abnormally high winter and low summer stream flows.

Hazard factors can influence where natural areas should be identified for preservation. In many cases, land susceptible to flooding is also appropriate for wildlife habitat. Identification of land subject to natural hazards other than flooding may offer similar opportunities. After a natural disaster, programs to preserve damaged areas as open space can be a key component of the post-disaster mitigation and recovery process. This process can be described in the natural hazards functional plan (see Appendix 1g), and

procedures to implement the program outlined in the comprehensive emergency management plan.

Although the potential for water quality degradation resulting from flood has been addressed in the Watershed Management and Regional Water Quality chapter of this plan, other growth management planning measures remain to be discussed in relation to:

- Life protection

- Personal and public property loss reduction

- Business recovery policies

While each of the above categories can be affected by natural disasters, some areas may be affected by more than one hazard. For example, some of the areas in the most hazardous zones depicted in the relative earthquake hazard map can also be within the 100-year floodplain. In addition, several areas in the region are prone to other natural hazards such as severe weather, wildland urban interface fire and volcano at various levels. These hazards have yet to be extensively analyzed.

Consideration of natural hazards as a major factor or constraint in all aspects of the regional planning process will produce realistic information that can be used in developing procedures and standards for achieving Metro's 2040 Growth Concept. This has direct implications on the development of comprehensive land-use plans by cities and counties, and in the development of comprehensive emergency management plans to address issues related to hazard mitigation, emergency preparedness, disaster response and recovery.

Policies

Policies concerning identification and implementation of hazard mitigation, emergency preparedness, disaster response and recovery should be adopted and implemented.

Policies addressing natural hazards are as follows:

5.1 Earthquake Hazard Mitigation Measures

The risk of loss or damage from an earthquake depends on: 1) the presence of seismically-hazardous land (land subject to failure or strong effects from an earthquake); and 2) land use (structures by type and occupancy or use characteristics).

Metro will consider the relative earthquake hazard maps for a variety planning purposes, including:

- urban growth boundary selection
- public facility plans
- transportation planning
- solid waste management plans
- natural hazard mitigation programs
- parks and greenspaces planning

Local governments should be encouraged to apply information contained in the relative earthquake hazard maps in developed and undeveloped areas, including:

- comprehensive land use plans updates
- redevelopment plans updates
- subdivision reviews
- zoning
- infrastructure plans updates
- citing of new public facilities
- public facility plans updates
- developing retrofit and other mitigation programs
- emergency response planning

Comprehensive plans and/or building codes prepared by local governments should be used effectively to institute seismic hazard mitigation measures. Adoption of the earthquake hazard maps and land use mitigation goals and policies in the comprehensive plans is the first step in establishing seismic hazard mitigation measures.

In planning for seismic hazards, land use classifications were established as shown in Figure 11 group land uses according to a common tolerance for risk. Representatives of the public and private sectors participated through the Metro Advisory Committee on Earthquake Damages in reviewing and approving the land use groups in this figure. Each land use group is comprised of uses recommended as having roughly equivalent ability to withstand earthquake damage. Local governments should consider these land use groups for seismic hazard mitigation planning and actions. Many land uses could be placed into more than one category. The table begins with land uses that should be most protected from earthquake damage and ending with land uses that need minimal protection.

Land Uses with Potentially Catastrophic Consequences if Damaged

- Large dams
- Nuclear facilities
- Facilities using/ storing large quantities of hazardous materials (defined by Oregon State law)

High-Occupancy Land Uses with Involuntary or Dependent Occupants

- Day care centers < 250 children
- Day care centers > 250 children
- Schools K-12 < 300 students
- Schools K-12 > 300 students
- Convalescent homes < 50 persons
- Convalescent homes > 50 persons
- Jails and retention facilities

Land Uses Essential for Emergency Response

- Fire and police stations
- Garages for emergency vehicles
- Water tanks
- Structures housing fire suppressants
- Government communications centers
- Emergency response centers
- Hospitals
- Medical buildings with surgical services

Land Uses Critical to the Functioning of the Metro Region

- Large power plants
- Power intertie
- Sewage treatment plants
- Water storage/treatment facilities
- Regional highways, bridges & tunnels
- Regional rail lines
- Port facilities
- Major communications facilities
- Telephone exchanges
- Radio and TV stations

Land Uses with High-Occupancy

- Buildings > 10 stories
- Public & private colleges < 500 occupants
- Public & private colleges > 500 occupants
- Public assembly places w/ > 300 capacity
- Hotels & motels > 50 rooms > 60,000 sq. ft. > 10 stories
- Major industries & employers
- Apartments > 25 units
- Buildings w/ > 150 employees

Land Uses with Important Local Impacts if Damaged

- Facilities using/storing small quantities of hazardous materials
- Small dams that could cause flooding
- Gas stations
- Highways, streets & bridges
- Utility lines, substations, & gas mains
- Water & sewer mains
- Industries & businesses important to economy
- Health care clinics
- Co-generation plants

Land Uses with Moderate-Occupancy

- Buildings w/ 4 to 10 stories
- Apartments 9 to 25 units
- Buildings w/ 50 to 150 employees
- Buildings w/ 50 to 150 employees > 60,000 sq. ft. > 10 stories
- Public assembly places: 50 to 300 capacity
- Hotels & motels < 50 rooms < 60,000 sq. ft. < 10 stories

Land Uses with Low-Occupancy

- Apartments w/ 2 to 8 units
- Buildings w/ < 50 employees
- Buildings w/ 1 to 3 stories
- Public assembly places w/ < 50 capacity
- Single-family houses in a subdivision
- Single-family houses
- Mobile homes in a subdivision
- Mobile homes

Figure 11 Land Uses Grouped By Seismic Risk

5.2 Flood Hazard Mitigation Measures

The surest and safest flood hazard mitigation measure is to build outside areas that can be flooded. However, the FEMA designated floodplains have been shown to be insufficient in protecting property from much less than catastrophic events. Regardless,

many areas that were outside the FEMA 100 year floodplain flooded in 1996.

Acquisition of vulnerable property and relocation of structures can convert a flood hazard area into a community asset.

Approaches for mitigating flood hazards should include but not be limited to the following:

- updating the existing 100-year floodplain using recent flood levels
- separate districts for cluster or planned unit development that keep buildings out of floodplains
- overlay zoning that sets public health, safety or welfare requirements
- subdivision development requirements for locating public utilities and facilities (such as sewer and water systems) to minimize flood damage
- construction of levees and flood walls to mitigate flood hazards, particularly in densely developed urban areas, but should only be utilized when potential upstream and downstream damage is minimal.
- plans to leverage federal, state and local disaster assistance funds that may become available following a flood event.
- long-term capital improvement plans should be prepared and include provisions to elevate above the floodplain essential buildings for public health, safety and welfare services.
- flood threat recognition and/or warning systems should be investigated for cost-effectiveness

5.3 Landslide Hazard Mitigation Measures

Exposure to landslide is a function of site location, type of construction and events that trigger landslides. The affect of landslides hazard on public safety, welfare and recovery cost can be minimized by measures that focus on mitigation. Land use policies and regulations are often the most effective measures for mitigating or minimizing exposure of lives and property to landslides. Such measures include restrictions or the prohibition of development in landslide hazard zones.

Mapping of these areas within the region has not been completed at this time, although efforts are being made to fund this effort.

Local governments should discourage development in the areas of greatest landslide hazard because of the high cost associated with mitigation design, disaster response and recovery. If outright prohibition is not possible, land use policies can ensure or enhance emergency personnel and equipment movement for response to events in landslide hazard zones. Local governments should use land use policies to reduce damage and

maintenance requirements to public and private property thereby enhancing the value of land and facilities in the vicinity of the landslide zone.

Measures for Other Natural Hazards

Although extensive analysis of other natural hazards such as wildland urban interface fire, severe weather and volcano has not been performed, local governments should initiate actions to provide protection to the growing population of the region. Local governments have the primary responsibility for prevention or mitigation of wildland urban fire hazards and emergency response to fire and severe weather events.

Subdivision ordinances, zoning codes, fire and building codes, basic fire prevention equipment and other measures can be used to protect vulnerable lives and property. Coordination of mitigation efforts between governments, utilities and insurance industry should be encouraged in the region.

Clark County

Chapter 6: Clark County

Overview

Clark County is located in southwest Washington, just across the Columbia River from the Metro area. The Metro charter, adopted by the voters within the Metro boundary (Clackamas, Multnomah and Washington counties only) includes the requirement that the regional framework plan shall address:

"....(8) coordination, to the extent feasible, of Metro growth management and land use planning policies with those of Clark County, Washington..."

Such coordination, if it is to be achieved, cannot take the form of unilateral actions by Metro. Rather, it can only come about with the consent of the jurisdictions on both sides of the River. The Future Vision recognized that decisions made in the Metro area could have a much wider impact. The Future Vision Commission concluded that:

"The bi-state metropolitan area has effects on, and is affected by, a much bigger region than the land inside Metro's boundaries. Our ecologic and economic region stretches from the Cascades to the Coastal Range, from Longview to Salem."

This chapter documents coordination, to date, and is not meant as an endpoint. It describes the background and challenges to the Metro region and Clark County communities. Only after review and discussion with representatives from Clark County can new actions, if any, be considered. This regional framework plan allows Clark County to see in one place, existing and contemplated policies of the Metro area and provides for consideration of new policies that might be beneficial to the communities on each side of the Columbia River. Additions or revisions to this chapter may occur after these discussions with representatives from the jurisdictions of Southwest Washington.

Background

Clark County has an estimated 1996 population of 303,500 people. When compared with growth in Clackamas, Multnomah and Washington counties during the period 1980 - 1996, Clark County had the fastest growth rate.

<i>County</i>	<i>1980</i>	<i>1996</i>	<i>Percent Change</i>	<i>Added Population</i>
Clackamas	241,900	313,200	23%	71,300
Clark	192,000	303,500	37%	111,500
Multnomah	562,600	636,000	12%	73,400
Washington	245,800	376,500	35%	130,700
Total	1,244,280	1,631,196	23%	386,916

Figure 12: Population Change by County 1980-1996

A little more than half (52 percent) of the county's population is located within unincorporated areas of the county, but the county also includes the cities of Camas, Battleground, La Center, Ridgefield, Vancouver, Washougal, Yacolt and a portion of Woodland, Washington. Vancouver, which recently completed a large annexation, has a population of 128,453 and is now is the fourth most populous city in the state of Washington. Vancouver was established in 1825 as an outpost of Britain and its Hudson's Bay Company and predates Vancouver, BC, that was established after Oregon and Washington became a U.S. territory.

While separated by the Columbia River, Clark County and its cities are a vital part of the economy of the greater metropolitan area. For example, according to 1990 Census data, about 34 percent of the Clark County workforce worked in the Metro area. This could also be described as about 7 percent of the Metro area workforce lives in Clark County. These workers provide the Metro area with many different skills and contribute to Oregon State revenues through the non-resident income taxes they pay. Residents of Clark County are able to utilize many of the amenities of the Metro area, including Portland International Airport, cultural and recreational opportunities, as well as retail shopping opportunities, given that Oregon has no sales tax. Information about development trends in Clark County since 1990 suggest that the percent of the Clark County workforce that commutes to the Metro area remains at least at 1990 levels, if not higher.

Coordination between the region and Clark County is important if issues of common concern are to be addressed. Metropolitan-wide aspects of transportation, air quality, land use and economic development issues have been raised from time to time and bi-state coordination can aid resolution of such issues.

Accordingly, representatives from the County and Vancouver, Washington are members of several Metro policy advisory Committees, including MPAC and JPACT, as well as two technical committees (TPAC and MTAC). The Future Vision Commission, required by the Metro Charter to complete a broad vision statement about the region, also included the Chair of the Clark County Commissioners, John Magnano. His personal declaration included in the Future Vision stated: "Future Vision recognizes that we are irreversibly linked. It will help bring our communities together to create something greater than the sum of our individual parts."

Other examples of ongoing bi-state coordination include population forecasts, transportation modeling and land use plan mapping. Population forecasts for the Metro area prepared by Metro are coordinated with those for Clark County, which are prepared by the Office of Financial Management, State of Washington. The transportation model that Metro maintains includes Clark County and as such is coordinated with the jurisdictions of southwest Washington, consistent with their comprehensive land use plans and policies. In addition, as the Metro 2040 Growth Concept concept was being developed, staffs from both sides of the River worked to ensure that the Metro 2040 Growth Concept map accurately reflected the Vancouver and Clark County Comprehensive plans.

Further, some joint policy actions have been coordinated between the region and Clark County regarding issues of joint concern. For example, transportation is an issue that transcends political boundaries. Coordinated transportation between the two states dates back at least to the early 1900's, when a bridge across the Columbia was built. This bridge, still in use today, included lanes for auto and truck traffic as well as for a trolley car. At that time, it was possible to take a street car from Oregon City to Vancouver and the Orchards area of Clark County.

In the intervening years, the privately owned system which by 1925 included over 700 miles of urban and interurban street car lines, were gradually eliminated on both sides of the River and public road, highway and freeway investments were made. Public transit systems based on buses using public roads were also established as a substitute for the rail-based transit systems. The most notable roadway improvements included substantial additions to the interstate bridge, conversion of Highway 99 to the Interstate 5 Freeway and the construction of the Interstate 205 Freeway bypass, including the Glenn Jackson bridge providing a second bridge over the Columbia River.

More recently, the Metro jurisdictions and the jurisdictions within southwest Washington have worked on reestablishing possible light rail connections. Initial joint transportation system analysis concluded that all high capacity transit (HCT) modes, including light rail transit (LRT), should be further evaluated in the I-5 corridor and that only HCT bus options should be further evaluated in the I-205 corridor. Analysis of the two bi-state corridors resulted in the selection of the I-5 corridor as the first priority for HCT in Clark County.

Subsequent studies resulted in the selection of LRT as the preferred mode and I-5 as the preferred alignment in Clark County with a terminus in the vicinity of 88th Street. A local financing proposal was developed to provide local funding for an LRT project from Clark County to Clackamas County, Oregon.

While the voters of the Metro region approved a \$475 million bond measure providing the local match for South/North project, Clark County voters rejected the financing proposal for the Clark County portion of the South/North LRT project in February 1995. The defeat of the LRT vote in Clark County led to an extensive discussion of the next steps for addressing bi-state transportation needs. Policy makers agreed that it was imperative to engage the community in a full debate on a wide range of transportation issues and needs facing Clark County. (In spite of a Metro-wide bond measure approval, a state-wide approval of a transportation funding package including the South/North project was defeated in 1996, leading to substantial cost cutting proposals to the proposed South/North LRT project and will need to be brought back to Metro area voters. In addition to the road, freight, transit, bike and pedestrian improvements included in the current Regional Transportation Plan, Metro is also analyzing other methods of addressing transportation needs including congestion pricing)

Shortly after the Clark County vote, county elected officials recommended that a citizens-based discussion of future transportation issues be implemented. As a first step in the process, the Board of Clark County Commissioners and the Vancouver City Council appointed a group of citizens to serve on a Focus Group to recommend a citizen-based approach to discuss southwest Washington's future transportation needs. Coordinated by the Southwest Washington Regional Transportation Council, the results of the two Focus Group meetings in May 1995 became the foundation for the issues subsequently examined by the Transportation Futures Committee.

Among the findings of the Transportation Futures Committee were the following:

- Current and past land use and transportation planning and funding have encouraged use of the auto to the detriment of alternative modes of transportation, such as public transit, bicycle and pedestrian travel.
- The Committee recommended adjusting this imbalance by supporting a balanced approach to improvements, including public mass transit, bicycle, and pedestrian facilities and roads.
- The Committee found that land use decisions should not only be supported by transportation planning, but should encourage more responsible neighborhood development that supports multiple transportation alternatives. Techniques to achieve this goal include:
 - allow for appropriate commercial development in predominantly residential neighborhoods
 - reduce or eliminate minimum parking requirements in favor of maximum requirements
 - provide significant incentives for businesses to reduce parking needs and improve access for pedestrians, bicyclists and buses
 - include capacity for public mass transit and other alternative modes in overall road capacity when meeting concurrency requirements.

To reduce commuting trips, the Committee recommended incentives for citizens and the private sector and requirements for government to encourage:

- Telecommuting
- Altered work hours (flex-time or staggered work hours)
- Ride-sharing

In addition, the Committee endorsed sufficient funding for maintenance and necessary expansion of their community's existing road system.

With regard to I-5 capacity, the Committee recommended that I-5 remain as the priority corridor for bi-state transportation improvements and called for making more effective use of existing facilities with the focus on lower capital improvements before higher cost options are considered. Results of the survey also indicated that HOV improvements and I-5 widening be given consideration in the corridor. A detailed analysis of I-5 capacity, including a reconnaissance of the effectiveness of a wide range of transportation modes should be undertaken to provide more balanced capacity and improved travel flows along I-5. Scope of analysis should include the full bi-state I-5 corridor from Clark County to downtown Portland.

Regarding the South/North Corridor Project Involvement, light rail transit in the I-5 corridor was identified as a viable option by the Committee based on technical findings

that the Clark County segment of the South/North Corridor has significant bi-state mobility benefits. It was recommended that a strategy be undertaken which focuses on lower cost options for the corridor in the near term and leaves light rail as an option for a future community decision. Accordingly, the Committee recommended that the South/North Final Environment Impact Statement (scheduled for completion Fall, 1997) reflect a phased bi-state strategy which includes near term bus and park-and-ride improvements in Clark County in place of the Clark County light rail terminus option. Additional new study activities previously mentioned in this report will be coordinated with the phased bi-state strategy and will include the bi-state mobility impacts of high occupancy vehicle improvements, commuter rail, and I-5 corridor travel flow improvement options. The Clark County region should continue participation in the South/North Corridor Study to ensure a coordinated strategy for resolving bi-state mobility problems.

With regard to bi-state transportation facilities, the Committee supported a balanced approach to bi-state transportation issues, focusing on:

- Reducing demand for new transportation facilities and improvements in the long-term by encouraging economic development that supports family wage jobs in Clark County and reduces the need to commute to Oregon.
- Promoting the use of alternative modes of transportation to driving alone (e.g. public transit, carpooling, bicycling, altered work hours and telecommuting)
- Increasing capacity to accommodate long-term population growth and continued need for bi-state transportation facilities, with first priority on the I-5 corridor.
- Making more effective use of existing facilities is a high priority in the following order of preference.
 1. Improved and/or expanded bus service
 2. High Occupancy Vehicle lanes (using existing facilities wherever possible)
 3. Commuter rail
 4. Light rail
 5. Reversible lanes
 6. Widening I-5 (highway and bridge) for general purpose traffic
 7. Ferry system

Further, the Committee found that: a third auto bridge and highway corridor was not an acceptable solution to bi-state congestion; reducing automobile congestion and demand will free up capacity for freight highway needs; the practice of "piggybacking"

(transporting truck containers by rail) as well as improved rail/truck/port connections should be encouraged.

With regard to a third highway corridor and bridge, Metro came to similar conclusions to those of the Clark County Transportation Futures Committee. The Metro Council approved resolution 96-2316, establishing a position on a third Columbia River Highway Bridge. This resolution concluded that the two Columbia River crossing concepts which were under consideration by the Clark County Transportation Futures Committee were inconsistent with long-range planning efforts in the Oregon portion of the metropolitan area and would not provide significant transportation benefits to the residents of the region.

However, while the Clark County Transportation Futures Committee found that a third highway corridor and bridge was not an acceptable solution to address bi-state congestion, results from a Clark County citizens survey of the Committee's findings, indicated a difference of opinion on this issue. Accordingly, The Transportation Futures Committee recommended that in order to further community discussion, a public discussion of a third highway corridor concept was recommended. They further recommended that in addition to the travel and cost impacts developed for the TFC, this discussion should address air quality, land use, historical and cultural resources, and community goals and livability.

Analysis

Given the variety and strength of connections between the Metro area and southwest Washington and the growth that is likely to occur on both sides of the Columbia River, it is probable that at a minimum, transportation will remain an important subject of bi-state discussion. Residents of southwest Washington will remain concerned with access to the Metro area for jobs, airport entry, shopping and cultural opportunities. Residents of the Metro area will remain concerned with the capacity of the existing and an enhanced road system to carry auto and freight at reasonable levels of service. These concerns are likely to be heightened in the near future, when half of the lanes on the I-5 bridge are closed for repair.

A combination of transportation, land use, demand management and economic development strategies may be means to address the fundamental challenge to the bi-state area. That is, the capacities of the I-5 and I-205 bridges is limited and plans for substantial increases in their capacity is not currently planned. As noted earlier, a third

bridge is not consistent with Metro Council policy and not favored by the Clark County Transportation Futures Committee. The problem could be addressed by exploring growth management and land use solutions as enumerated by the Transportation Futures Committee. Possible solutions could include ways to ensure that the Clark County ratio of jobs created to new housing built is greater than current rates. For such a strategy to be effective, the jobs created would have to be consistent with the wage and skill profile of Clark County. Encouraging such job creation may prove difficult as the infrastructure and sheer number of jobs in the Metro area are much more numerous than in Clark County. While there is a substantial amount of land designated for various employment uses within the county, as noted in the Columbia River Economic Development Council's *1997 Clark County Profile*, for at least the past twelve years, the Oregon state tax structure is lower than that of the state of Washington's. While the difference between the two states has narrowed substantially and there are now only marginal differences, job creation and population statistics document the continuing tendency towards greater job creation in the Metro area and greater population growth in southwest Washington.

Discussions with representatives of southwest Washington may provide opportunities to explore these and other growth management and land use policy options to address this and other issues of common interest. This Chapter merely attempts to present the challenges before the communities.

Environmental Education

Chapter 7: Environmental Education

Overview

Vital to any plan is the need to communicate the basic policy choices and the underlying rationale for the selected policies to as many of the residents of the region as possible. This chapter is intended to address the role of environmental awareness and education in relationship to the principles of this Regional Framework Plan.

Metro's Regional Framework Plan has been written to reflect the values of the citizens of the region for a compact urban form and the resulting conservation of rural areas and contiguous wildlife corridors. However, the degree to which these goals are implemented or not implemented will likely make a substantial difference to the future livability of the region, as well as the state of rural areas and wildlife beyond. In order to communicate the tradeoffs between urban needs and those of the wildlife and natural landscape beyond our region, a technical plan and venues for dissemination of that information are necessary and integral components in the policy.

The following six statements describe the values that will help form an educational policy to help the community understand the implications of the regional framework plan's urban policies and how these can be implemented in a meaningful and productive way to preserve or enhance our region's livability.

- The roots of meaningful action are caring relationships
- Every person makes a difference in the quality of life
- The future depends on our reverence for life
- Diversity is essential to the balance of life
- We meet life's challenges through discovery, exploration and sharing
- We live our values.

The Metro Washington Park Zoo is an institution dedicated to these values and has the largest recreational attendance in the region. For these reasons, education about the connection between the natural world and the urban one seems particularly fitted to the Zoo.

This chapter will outline methods of implementing educational policies that can guide Metro and local governments in reaching the public in a meaningful way. It will also provide opportunities for public discourse on subjects such as protection of natural resources, importance of contiguous open spaces, balance of human settlement and green space, and the impact of development on Oregon's natural environment. This chapter is written to focus on the educational policies that are necessary to help the community understand the environmental choices still before the residents of the region.

This chapter is in development. When completed, it will synthesize the policies and discussions covered in the other sections of the plan. It is anticipated that the draft of this chapter will follow within the next few months and evolve simultaneously with the other sections as they are reviewed by the public and local governments.

Management

Chapter 8 Management

Overview

Any plan put into effect is only a set of policies or actions based on what is known at the time. Actual conditions can and do change. Accordingly, any plan which is intended to be useful over a period of time, must include ways of addressing new sets of circumstances. To this end, this chapter includes descriptions of policies and processes that will be used to keep the regional framework plan abreast of current conditions and a forward thinking document.

In addition, this plan includes disparate subjects, ones that while interconnected, at times suggest conflicting policy actions. This chapter describes the ways in which such conflicts can be resolved.

Background

Goal I of the Regional Urban Growth Goals and Objectives, originally adopted in 1991 and now wholly incorporated within this document, provides the process for determining regional policies which includes key participants, roles and procedures to be used.

Citizen involvement in the discussion of issues must be paramount in any public decision and regional issues are no different. While detailed discussions with each and every of the 1.2 million residents of the region on any one issue is not practical, responsibility for determining the general public's values and interests as well as responding to individual citizen's concerns is one which Metro must take seriously and continue to find ways to improve. An advisory committee, the Metro Committee for Citizen Involvement, is the primary resource for determining how best to hear citizen concerns. Tools for determining the general public's values are newsletters that describe the choices related to upcoming public decisions, open houses, presentations to neighborhood and citizen participation organizations, Metro's web page, random surveys and related public opinion measuring instruments.

Methods for hearing individual concerns are the Metro hotline, e-mail, written mailed correspondence to the Metro Council and its members and testimony at public hearings. When the Metro Council is making a decision, these materials are provided to the Metro Council and any interested parties and included in the public hearing record. (For example, oral comments recorded on the hotline are transcribed and forwarded to the Metro Council as are any written correspondence.)

Implementation of region-wide policies are dependent on actions by the cities, counties and special districts of the region. In order to ensure that local jurisdictions have an opportunity to discuss, debate and recommend regional policies, two advisory committees have been created comprised primarily of elected officials of the region. These two committees are the Metro Policy Advisory Committee (MPAC) and the Joint Policy Advisory Committee (JPACT). MPAC deals primarily with land use issues of regional significance, while JPACT addresses regional scale transportation concerns. Prior to regional land use or transportation decisions, the Metro Council seeks recommendations from one or in some cases both of these committees. In addition, MPAC and JPACT have technical committees (MTAC and TPAC) which serve the policy committees, providing technical analysis and recommendations as requested. These technical committees are comprised of the chief planning and transportation staffs from throughout the region as well as having citizen members and members from various interest groups.

Analysis

There are two major issues with regard to management of the regional framework plan. These are: 1) coordination of the elements of the regional framework plan and 2) maintaining the regional framework plan as a document which continues to address the demands of a changing future.

Coordination and integration of the various elements is an important, yet difficult task. This regional framework plan addresses many disparate elements. Coordination is pursued by several means. First, by listing all of the objectives and policies in one document, everyone can see the various elements. Second, the Growth Concept map illustrates how the various elements - land use, transportation, open space, etc. are expected to develop or be conserved on the landscape.

However, implementation of the Growth Concept will inevitably result in some conflicts. Economic theory suggests that it is not possible to maximize for all values

simultaneously. If all of the goals and objectives could be expressed in dollars or some other common measurement, then total merit to the region of a plan could be calculated. However, such a common measure is not available and at least each element, if not portions of each element are attempts to articulate very different, though particular values, such as mobility or protection of the natural habitat, etc.

What is available is a much more common sense approach. Each element expresses policies and values to which the region aspires. As implementation of the plan is accomplished by the cities, counties and special districts of the region, conflicts between these will inevitably arise. In most cases, these conflicts will be resolved at the local level, although recurring conflicts or conflicts with region-wide significance may be addressed by Metro. In either case, the process for such resolution will be a public one. That is, the conflict will be described, technical information provided, the public will have the opportunity to make their concerns known and then the public's duly elected officials (city or county if at the local level or, after consultation with local jurisdictions, the Metro Council if at the region level) will make a decision. While any one party may find fault with any one decision, and may appeal a decision to the courts, it is important to remember that in most cases it is impossible to maximize for all values and the decisions before elected officials are ones in which conflicting values are expressed. By making these decisions in a public forum by a public body serving the public, a democratic, though not always quick, decision is made. It is also the way in which conflicting values can be sorted out.

Another management issue is understanding how the policies are affecting the region and understanding when changes in conditions in the region may call for changes in the regional framework plan. Sometimes these "points of divergence" are subtle and only years later is it clear that conditions have changed. In other cases major changes in public attitudes, economic conditions or other factors may be clearly evident. One way to help understand what is happening is to institute a system of measurements to gauge the success or lack thereof, of regional policies. Performance measures, a term used in this document, can be used to periodically measure factors relating to growth capacity, housing affordability, open space conservation and other conditions which are of public concern and for which in some cases, small changes may signal greater future problems. These measurements can also help the region assess its value choices and may be a basis for emphasizing or reducing the priority of any one value compared with another.

Following are the management policies that should be pursued as Metro develops, implements and monitors compliance with the policies contained in the previous chapters.

Policies

8.1 Citizen Participation

Metro shall develop and implement an ongoing program for citizen participation in all aspects of the regional planning program. Such a program shall be coordinated with local programs for supporting citizen involvement in planning processes and shall not duplicate those programs.

Metro Committee for Citizen Involvement (Metro CCI). Metro shall establish a Metro Committee for Citizen Involvement to assist with the development, implementation and evaluation of its citizen involvement program and to advise the MPAC regarding ways to best involve citizens in regional planning activities.

Notification. Metro shall develop programs for public notification, especially for (but not limited to) proposed legislative actions, that ensure a high level of awareness of potential consequences as well as opportunities for involvement on the part of affected citizens, both inside and outside of its district boundaries.

8.2 Metro Policy Advisory Committee

The 1992 Metro Charter has established the MPAC to:

assist with the development and review of Metro's regional planning activities pertaining to land use and growth management, including review and implementation of these goals and objectives, development and implementation of the regional framework plan, present and prospective functional planning, and management and review of the region's UGB;

serve as a forum for identifying and discussing areas and activities of metropolitan or subregional concern; and

provide an avenue for involving all cities and counties and other interests in the development and implementation of growth management strategies.

MPAC Composition. The initial MPAC shall be chosen according to the Metro Charter and, thereafter, according to any changes approved by majorities of the MPAC and the Metro Council. The composition of the Committee shall reflect the partnership that must exist among implementing jurisdictions in order to effectively address areas and

activities of metropolitan concern. The voting membership shall include elected and appointed officials and citizens of Metro, cities, counties, school districts and states consistent with section 27 of the 1992 Metro Charter..

Advisory Committees. The Metro Council, or the MPAC consistent with the MPAC by-laws, shall appoint technical advisory committees as the Council or the MPAC determine a need for such bodies.

Joint Policy Advisory Committee on Transportation (JPACT). JPACT with the Metro Council shall continue to perform the functions of the designated Metropolitan Planning Organization as required by federal transportation planning regulations. JPACT and the MPAC shall develop a coordinated process, to be approved by the Metro Council, to assure that regional land use and transportation planning remains consistent with these goals and objectives and with each other.

8.3 Applicability of Regional Framework Plan Policies

The goals and objectives included in Regional Framework Plan Policies have been developed pursuant to ORS 268.380(1) and adopted and acknowledged as the Regional Urban Growth Goals and Objectives. Therefore, they comprise neither a comprehensive plan under ORS 197.015(5) nor a functional plan under ORS 268.390(2). All functional plans adopted by the Metro Council shall be consistent with these goals and objectives. Metro's management of the UGB shall be guided by standards and procedures which must be consistent with these goals and objectives. These goals and objectives shall not apply directly to site-specific land use actions, including amendments of the UGB.

These Framework Plan policies shall apply to adopted and acknowledged comprehensive land use plans as follows:

- components of the regional framework plan that are adopted as functional plans, or other functional plans, shall be consistent with these goals and objectives, and
- the management and periodic review of Metro's acknowledged UGB Plan, shall be consistent with these goals and objectives, and
- the MPAC may identify and propose issues of regional concern, related to or derived from these goals and objectives, for consideration by cities and counties at the time of periodic review of their adopted and acknowledged comprehensive plans.

These Framework Plan Policies shall apply to Metro land use, transportation and greenspace activities as follows:

- the urban growth boundary plans, regional framework plan, functional plans, and other land use activities shall be consistent with these goals and objectives.
- to the extent that a proposed policy or action may be compatible with some goals and objectives and incompatible with others, consistency with this Framework Plan may involve a balancing of applicable goals, subgoals and objectives by the Metro Council that considers the relative impacts of a particular action on applicable goals and objectives.

Periodic Updates of the Framework Plan. The MPAC shall consider the regular updates of these goals and objectives and recommend based on a periodic update process adopted by the Metro Council.

8.4 Urban Growth Boundary Plan

The UGB Plan has two components:

- the acknowledged UGB line
- acknowledged procedures and standards for amending the UGB line. Metro's UGB Plan is not a regional comprehensive plan but a provision of the comprehensive plans of the local governments within its boundaries. The UGB Plan shall be in compliance with applicable statewide planning goals and laws and consistent with these goals and objectives. Amendments to the UGB Plan shall demonstrate consistency only with the acknowledged procedures and standards. Changes of Metro's acknowledged UGB Plan may require changes in adopted and acknowledged comprehensive plans.

8.5 Functional Plans

Functional plans are limited purpose plans, consistent with these goals and objectives, which address designated areas and activities of metropolitan concern. Functional plans are established in state law as the way Metro may recommend or require changes in local plans.

Those functional plans or plan provisions containing recommendations for comprehensive planning by cities and counties may not be final land use decisions. If a provision in a functional plan, or an action implementing a functional plan require changes in an adopted and acknowledged comprehensive plan, then adoption of provision or action will be a final land use decision. If a provision in a functional plan, or Metro action implementing a functional plan require changes in an adopted and acknowledged comprehensive plan, then that provision or action will be adopted by Metro as a final land use action required to be consistent with statewide planning goals. In addition, regional framework plan components will be adopted as functional plans if

they contain recommendations or requirements for changes in comprehensive plans. These functional plans, which are adopted as part of the regional framework plan, will be submitted along with other parts of the regional framework plan to LCDC for acknowledgment of their compliance with the statewide planning goals. Because functional plans are the way Metro recommends or requires local plan changes, most regional framework plan components will probably be functional plans. Until regional framework plan components are adopted, existing or new functional plans will continue to recommend or require changes in comprehensive plans.

- Existing Functional Plans. Metro shall continue to develop, amend and implement, with the assistance of cities, counties, special districts and the state, statutorily required functional plans for air, water and transportation, as directed by ORS 268.390(1) and for solid waste as mandated by ORS ch 459.
- New Functional Plans. New functional plans shall be proposed from one of two sources:
 - the MPAC may recommend that the Metro Council designate an area or activity of metropolitan concern for which a functional plan should be prepared; or
 - the Metro Council may propose the preparation of a functional plan to designate an area or activity of metropolitan concern and refer that proposal to the MPAC.

The matters required by the Charter to be addressed in the regional framework plan shall constitute sufficient factual reasons for the development of a functional plan under ORS 268.390.

Upon the Metro Council adopting factual reasons for the development of a new functional plan, the MPAC shall participate in the preparation of the plan, consistent with these goals and objectives and the reasons cited by the Metro Council. After preparation of the plan and seeking broad public and local government consensus, using existing citizen involvement processes established by cities, counties and Metro, the MPAC shall review the plan and make a recommendation to the Metro Council. The Metro Council may act to resolve conflicts or problems impeding the development of a new functional plan and may complete the plan if the MPAC is unable to complete its review in a timely manner.

The Metro Council shall hold a public hearing on the proposed plan and afterwards shall:

- adopt the proposed functional plan; or
- refer the proposed functional plan to the MPAC in order to consider amendments to the proposed plan prior to adoption; or
- amend and adopt the proposed functional plan; or

- reject the proposed functional plan.

The proposed functional plan shall be adopted by ordinance and shall include findings of consistency with these goals and objectives.

- **Functional Plan Implementation and Conflict Resolution.** Adopted functional plans shall be regionally coordinated policies, facilities and/or approaches to addressing a designated area or activity of metropolitan concern, to be considered by cities and counties for incorporation in their comprehensive land use plans. If a city or county determines that a functional plan requirement should not or cannot be incorporated into its comprehensive plan, then Metro shall review any apparent inconsistencies by the following process:
 - Metro and affected local governments shall notify each other of apparent or potential comprehensive plan inconsistencies.
 - After Metro staff review, the MPAC shall consult the affected jurisdictions and attempt to resolve any apparent or potential inconsistencies.
 - The MPAC shall conduct a public hearing and make a report to the Metro Council regarding instances and reasons why a city or county has not adopted changes consistent with requirements in a regional functional plan.
 - The Metro Council shall review the MPAC report and hold a public hearing on any unresolved issues. The Council may decide to:
 - amend the adopted regional functional plan; or
 - initiate proceedings to require a comprehensive plan change; or
 - find there is no inconsistency between the comprehensive plan(s) and the functional plan.

8.6 Periodic Review of Comprehensive Land Use Plans

At the time of LCDC initiated periodic review for comprehensive land use plans in the region the MPAC:

- shall assist Metro with the identification of regional framework plan elements, functional plan provisions or changes in functional plans adopted since the last periodic review for inclusion in periodic review notices as changes in law; and
- may provide comments during the periodic review of adopted and acknowledged comprehensive plans on issues of regional concern.

8.7 Implementation Roles

Regional planning and the implementation of this Framework Plan shall recognize the inter-relationships between cities, counties, special districts, Metro, regional agencies and the State, and their unique capabilities and roles.

- **Metro Role.** Metro shall:
 - identify and designate areas and activities of metropolitan concern;

- provide staff and technical resources to support the activities of the MPAC within the constraints established by Metro Council;
- serve as a technical resource for cities, counties, school districts and other jurisdictions and agencies;
- facilitate a broad-based regional discussion to identify appropriate strategies for responding to those issues of metropolitan concern;
- adopt functional plans necessary and appropriate for the implementation of the regional framework plan;
- coordinate the efforts of cities, counties, special districts and the state to implement adopted strategies; and
- adopt and review consistent with the Metro Charter and amend a Future Vision for the region, consistent with Objective 9.
- **Role of Cities**
 - adopt and amend comprehensive plans to conform to functional plans adopted by Metro;
 - identify potential areas and activities of metropolitan concern through a broad-based local discussion;
 - cooperatively develop strategies for responding to designated areas and activities of metropolitan concern ;
 - participate in the review and refinement of these goals and objectives.
- **Role of Counties**
 - adopt and amend comprehensive plans to conform to functional plans adopted by Metro;
 - identify potential areas and activities of metropolitan concern through a broad-based local discussion;
 - cooperatively develop strategies for responding to designated areas and activities of metropolitan concern;
 - participate in the review and refinement of these goals and objectives.
- **Role of Special Service Districts.**
 - assist Metro, through a broad-based local discussion, with the identification of areas and activities of metropolitan concern and the development of strategies to address them, and participate in the review and refinement of these goals and objectives. Special Service Districts will conduct their operations in conformance with acknowledged Comprehensive Plans affecting their service territories
- **Role of School Districts**
 - advise Metro regarding the identification of areas and activities of school district concern;
 - cooperatively develop strategies for responding to designated areas and activities of school district concern;

- participate in the review and refinement of these goals and objectives.
- Role of the State of Oregon
 - advise Metro regarding the identification of areas and activities of metropolitan concern;
 - cooperatively develop strategies for responding to designated areas and activities of metropolitan concern;
 - review state plans, regulations, activities and related funding to consider changes in order to enhance implementation of the regional framework plan and functional plans adopted by Metro, and employ state agencies and programs and regulatory bodies to promote and implement these goals and objectives and the regional framework plan;
- participate in the review and refinement of these goals and objectives.

8.8 Performance Measures

Metro Council, in consultation with MPAC and the public, will develop performance measures designed for considering the Regional Framework Plan policies. The term “performance measure” means a measurement aimed at determining whether a planning activity or ‘best practice’ is meeting the objective or intent associated with the ‘best practice.’ This concept is also consistent with the Future Vision call for a “....state of the region report on our progress toward achieving the objectives....”

Performance measures for this chapter will use state benchmarks to the extent possible or be developed by Metro Council in consultation with MPAC and the Metro Committee for Citizen Involvement. Performance measures for Chapters 2-6 are measured by several different geographies including by region, jurisdiction, 2040 design type and market area..

Performance Measures for Chapters 2-6 include the following:

1. Vacant Land Conversion
2. Housing Development, Density, Rate and Price
3. Job Creation
4. Infill and Redevelopment
5. Environmentally Sensitive Lands
6. Price of Land
7. Residential Vacancy Rates
8. Access to Open Space
9. Transportation Measures

After concluding which measures are most useful in assessing progress in implementing Metro policies, the Metro Council has directed these measures to be completed every two years. Corrective actions may be taken by the Metro Council if they find that anticipated progress is lacking or if Metro goals or policies need adjustment. By assessing progress or lack of it on a relatively short time frame, it is hoped that if need arises for adjustments these can be made soon after any problem arises and so that relatively stable conditions can be maintained.

Placeholder – Describe forthcoming Metro Council decision about Performance Measures here.

8.9 Monitoring and Updating

The regional framework plan and all Metro functional plans shall be reviewed every seven years, or at other times as determined by the Metro Council after consultation with or upon the advice of the MPAC. Any review and amendment process shall involve a broad cross-section of citizen and jurisdictional interests, and shall involve the MPAC consistent with Goal 1: Regional Planning Process. Proposals for amendments shall receive broad public and local government review prior to final Metro Council action.

- **Impact of Amendments.** At the time of adoption of amendments to these goals and objectives, the Metro Council shall determine whether amendments to adopted regional framework plan, functional plans or the acknowledged regional UGB are necessary. If amendments to the above are necessary, the Metro Council shall act on amendments to applicable functional plans. The Council shall request recommendations from the MPAC before taking action. All amendment proposals will include the date and method through which they may become effective, should they be adopted. Amendments to the acknowledged regional UGB will be considered under acknowledged UGB amendment procedures incorporated in the Metro Code.

If changes to the regional framework plan or functional plans are adopted, affected cities and counties shall be informed in writing of those changes which are advisory in nature, those which recommend changes in comprehensive land use plans and those which require changes in comprehensive plans. This notice shall specify the effective date of particular amendment provisions.

Implementation

Chapter 9: Implementation

To summarize how each Regional Framework Plan policy is to be implemented, the following table lists each regional policy, and the related implementation recommendation or requirement. After adoption of regional framework plan policies and implementation methods by the Metro Council, demonstration of conformity with the implementation action identified for the Regional Framework Plan policy shall be deemed compliance with that Regional Framework Plan policy.

The land-use section is illustrated below as an example. In coming weeks, a full chart with all policy topics will be completed and made available.

Regional Framework Plan Policy	Implementation Recommendation(s) or Requirement(s)
Land Use	
1.1 Urban Form	Metro Code Chapter 2.01
1.2 Built Environment	Urban Growth Management Functional Plan title 1,2,3,4,6 and 7
1.3 Housing	Urban Growth Management Functional Plan, title 1 and table 1 and title 7.
1.4 Economic Opportunity	Urban Growth Management Functional Plan title 1 and table 1
1.5 Urban Vitality	Urban Growth Management Functional Plan title 1, 7.
1.6 Growth Management	Metro Code Chapter 2.01
1.7 Urban/Rural Transition	Metro Code Chapter 2.01
1.8 Developed Urban Land	Urban Growth Management Functional Plan, title 1 and table 1
1.9 Urban Growth Boundary	Metro Code Chapter 2.01
1.10 Urban Design	Urban Growth Management Functional Plan titles 1, 2, 3, 4 and 6.
1.11 Neighbor Cities	Intergovernmental agreements, as may be signed by cities, counties, state and Metro.
1.12 Protection of Agriculture and Forest Resource Lands	Metro Code Chapter 2.01
1.13 Growth Concept	Urban Growth Management Functional Plan, titles 1,2,3,4 and 6.

Appendices

Appendix A: Urban Growth Management Functional Plan

Adopted by the Metro Council by Ordinance 96-647C, November 21, 1996

URBAN GROWTH MANAGEMENT FUNCTIONAL PLAN

A functional plan for early implementation of the Metro 2040 Growth Concept

Introduction

Metro was created after a vote of the citizens of the region as an elected regional government responsible for addressing issues of metropolitan concern and is enabled by state law, adopted by the Oregon Legislature in 1977. In addition, the voters of the region adopted a Metro Charter in 1992, which describes additional responsibilities for the agency. Metro has an elected seven member Council which determines region-wide policies. In addition, Metro has an elected Executive Officer to enforce Metro ordinances and execute the policies of the council.

The Metro Policy Advisory Committee (MPAC) is comprised of local government elected officials and appointed citizens from throughout the region and was created to advise the regionally elected Metro Council on matters of metropolitan concern. MPAC has recommended specific policies to be included in a new functional plan to be adopted by the Metro Council as soon as practicable. Early implementation of the 2040 Growth Concept is intended to take advantage of opportunities now and avoid use of land inconsistent with the long-term growth policy.

MPAC, as well as the Joint Policy Advisory Committee on Transportation (JPACT), and the Water Resource Policy Advisory Committee (WRPAC) have made recommendations that are the basis for this functional plan. All of the elements considered by MPAC, JPACT and WRPAC were deemed by the Metro Council to be matters of metropolitan concern that have significant impact upon the orderly and responsible development of the metropolitan area. The functional plan establishes regional policies, which will apply to all 24 cities and 3 counties within the Metro region. The legal form of these regional policies is a functional plan, not adoption as a "component" of the Regional Framework Plan. The policies in this functional plan will be updated and coordinated with other policies to be adopted as components of the Metro Charter mandated Regional Framework Plan, on or before December 30, 1997.

Functional plans are a primary regional policy tool that may contain both "recommendations" and "requirements" for changes in local plans. This functional plan relies on further actions, primarily changes to local government comprehensive plans and implementing ordinances, to effectuate the actions described below.

The Meaning of Regional Functional Plan Adoption

The regional policies which are adopted by this Urban Growth Management Functional Plan recommend and require changes to city and county comprehensive plans and implementing ordinances. The purpose of this functional plan is to implement regional goals and objectives adopted by the Metro Council as the Regional Urban Growth Goals and Objectives (RUGGO), including the Metro 2040 Growth Concept. The comprehensive plan changes and related

actions, including implementing regulations, required by this functional plan, shall be adopted by all cities and counties in the Metro region within twenty-four (24) months from the effective date of this ordinance.

Any city or county determination not to incorporate all required functional plan policies into comprehensive plans shall be subject to the conflict resolution and mediation processes included within the RUGGO, Goal I provisions, prior to the final adoption of inconsistent policies or actions. Upon the effective date of this ordinance, any city or county amendment to a comprehensive plan or implementing ordinance that is inconsistent with requirements of this functional plan, is subject to appeal for violation of the functional plan.

Regional Policy Basis

The regional policies adopted in this functional plan are formulated from, and are consistent with, the RUGGOs, including the Metro 2040 Growth Concept. The overall principles of the Greenspaces Master Plan are also incorporated within this functional plan. In addition, the updated Regional Transportation Plan (RTP)¹, when adopted, will serve as the primary transportation policy implementation of the 2040 Growth Concept. However, early implementation land use policies in this functional plan are integrated with early implementation transportation policies derived from preparation of the 1996 Regional Transportation Plan, and consistent with the Metro 2040 Growth Concept.

Structure of Requirements

The Urban Growth Management Functional Plan is a regional functional plan which contains "requirements" that are binding on cities and counties of the region as well as recommendations that are not binding. "Shall" or other directive words are used with requirements. The words "should" or "may" are used with recommendations. In general, the Plan is structured so that local jurisdictions may choose either performance standard requirements or prescriptive requirements. The intent of the requirements is to assure that cities and counties have a significant amount of flexibility as to how they meet requirements. Performance standards are included in most titles. If local jurisdictions demonstrate to Metro that they meet the performance standard, they have met that requirement of the title. Standard methods of compliance are also included in the plan to establish one very specific way that jurisdictions may meet a title requirement, but these standard methods are not the only way a city or county may show compliance. In addition, certain mandatory requirements that apply to all cities and counties are established by this functional plan.

¹ Metro has an adopted Regional Transportation Plan. However, because of changing local and regional conditions, as well as state and federal requirements, the RTP is scheduled to be amended in 1997.

REGIONAL FUNCTIONAL PLAN REQUIREMENTS

TITLE 1: REQUIREMENTS FOR HOUSING AND EMPLOYMENT ACCOMMODATION

Section 1. Intent

State law and Metro Code require that the Metro urban growth boundary (UGB) have sufficient capacity to accommodate the expected growth for 20 years. It is Metro policy to minimize the amount of urban growth boundary expansion required for the expected population and employment growth by the year 2017 consistent with all Statewide Goals. To further that policy, it is beneficial and desirable for Metro to require actions intended to increase the capacity for development of land within the UGB. Increasing the capacity of land within the UGB will include requiring changes for appropriate locations in both the rate of development permitted per acre (zoned density) and the rate at which housing and employment are actually built within the UGB. Development consistent with the design types of the Metro 2040 Growth Concept will focus these efforts. As a matter of regional policy, each city and county must contribute its fair share to increasing the development capacity of land within the UGB.

Metro will work with local jurisdictions to develop a set of region-wide community development code provisions, standards and other regulations which local jurisdictions may adopt that will help implement the 2040 Growth Concept and this Functional Plan. Included in this project will be a review of development standards in support of smaller lots and more flexible use of land, strategies to encourage land assembly, more flexible zoning and improvements in the pre-application process to ensure timely and thorough review and to provide for early involvement by the public to address neighborhood concerns and assure community acceptance of these changes.

Section 2. Methods to Increase Calculated Capacity Required for All Cities and Counties

All cities and counties within Metro are required to include within their comprehensive plans and implementing ordinances the following provisions:

A. Cities and counties shall apply a minimum density standard to all zones allowing residential use as follows:

1. a. Provide that no development application, including a subdivision, may be approved unless the development will result in the building of 80 percent or more of the maximum number of dwelling units per net acre permitted by the zoning designation for the site; or
- b. Adopt minimum density standards that apply to each development application that vary from the requirements of subsection 1.a., above.

105 However, for the purpose of compliance with Table 1, only those
106 dwelling units that are allowed at these minimum density standards shall
107 be counted for compliance with the calculated capacities of Table 1.

108 2. The minimum density standard may be achieved by use of a small lot district
109 where an average lot size of 5000 to 6200 square feet allows flexibility within
110 that range on development applications, so long as the district remains in
111 compliance with the minimum density standard used to calculate capacities for
112 compliance with Table 1 capacities.

113 3. No comprehensive plan provision, implementing ordinance or local process
114 (such as site or design review) may be applied and no condition of approval may
115 be imposed that would have the effect of reducing the minimum density
116 standard.

117 4. For high density zones with maximum zoned density higher than 37 dwelling
118 units per net acre, the minimum residential density may be 30 dwelling units per
119 net acre.

120 5. This minimum density requirement does not apply (1) outside the urban growth
121 boundary, (2) inside areas designated as open space on the attached Open Spaces
122 Map, and (3) inside areas designated as unbuildable on the attached Open Spaces
123 Map. The maximum zoned density does not include the density bonus for zones
124 that allow them.

125 B. Cities and counties shall not prohibit partitioning or subdividing inside the Metro urban
126 growth boundary where existing lot sizes are two or more times that of the minimum
127 lot size in the development code.

128 C. Cities and counties shall not prohibit the construction of at least one accessory unit
129 within any detached single family dwelling that is permitted to be built in any zone
130 inside the urban growth boundary. Reasonable regulations of accessory units may
131 include, but are not limited to, size, lighting, entrances and owner occupancy of the
132 primary unit, but shall not prohibit rental occupancy, separate access, and full kitchens
133 in the accessory units.

134 Section 3. Design Type Boundaries Requirement

135 For each of the following 2040 Growth Concept design types, city and county comprehensive
136 plans shall be amended to include the boundaries of each area, determined by the city or county
137 consistent with the general locations shown on the 2040 Growth Concept Map:

138 Central City--Downtown Portland is the Central City which serves as the major regional center,
139 an employment and cultural center for the metropolitan area.

140 Regional Centers--Nine regional centers will become the focus of compact development,
141 redevelopment and high-quality transit service and multimodal street networks.

142 Station Communities--Nodes of development centered approximately one-half mile around a
143 light rail or high capacity transit station that feature a high-quality pedestrian environment.

144 Town Centers--Local retail and services will be provided in town centers with compact
145 development and transit service.

146 Main Streets--Neighborhoods will be served by main streets with retail and service developments
147 served by transit.

148 Corridors--Along good quality transit lines, corridors feature a high-quality pedestrian
149 environment, convenient access to transit, and somewhat higher than current densities.

150 Employment Areas--Various types of employment and some residential development are
151 encouraged in employment areas with limited commercial uses.

152 Industrial Areas--Industrial area are set aside primarily for industrial activities with limited
153 supporting uses.

154 Inner Neighborhoods--Residential areas accessible to jobs and neighborhood businesses with
155 smaller lot sizes are inner neighborhoods.

156 Outer Neighborhoods--Residential neighborhoods farther away from large employment centers
157 with larger lot sizes and lower densities are outer neighborhoods.

158 **Section 4. Requirements to Increase Capacity If Recent Development At Low Density**

159 A. All cities and counties shall determine whether actual built densities for housing during
160 1990-1995 were less than 80 percent of maximum zoned densities. The 1990-1995
161 actual built densities within cities and counties inside the urban growth boundary shall
162 be compared with zoned densities for housing units during that period.

163 Residential developments to be analyzed shall be those which were permitted by a land
164 use action and constructed during the period from 1990 to 1995, and residential density
165 shall be measured in households per net developed acre.¹

166 B. If the comparison of actual built densities to maximum zoned densities for the period
167 1990-1995 indicates that actual built densities were less than 80 percent of maximum
168 zoned densities, the city or county shall also demonstrate that it has considered and
169 adopted at least two of the following methods to increase capacity:

170 a. Financial incentives for higher density housing;

¹ See Title 10, Definitions.

- b. Provisions permitting additional density beyond that generally allowed in the zoning district in exchange for amenities and features provided by the developer;
- c. Removal or easing of approval standards or procedures;
- d. Redevelopment and infill strategies; and
- e. Authorization of housing types not previously allowed by the plan or regulations.

Section 5. Determination of Calculated Capacity of Housing Units and Jobs

The purpose of this section is to require each city and county within the Metro region to determine the housing and employment capacity of its existing comprehensive plan and implementing ordinances, determine calculated capacity for dwelling units and jobs by the method in this section, and increase calculated capacity, if necessary, to achieve the functional plan capacities in Table 1. Each city and county within the Metro region is hereby required to complete the following steps:

A. Determine the calculated capacity of dwelling units and jobs by the year 2017 using the zoned capacity² of its current comprehensive plan and implementing ordinances.

1. Cities and counties shall use Metro estimates of vacant land, and land likely to redevelop, unless they have data that they believe is more accurate. In this case, the city or county may provide Metro the following:

- a. The source of the data;
- b. The reasons that the locally developed data is a more accurate estimate than the Metro estimate of vacant and redevelopable land;
- c. The database from which the above were derived;
- d. The database of committed development lands.

Cities and counties may use their data, subject to acceptance by the Metro Council or its designee, after the Executive Officer determines that the city or county data may be more accurate than the Metro data. The Executive Officer shall notify the Metro Council of each instance in which the data submitted by a city or county is determined by the Executive Officer to be less accurate than Metro data.

2. In determining the calculated capacity of existing comprehensive plans and implementing ordinances, cities and counties shall not use a calculated capacity for dwelling units of more than 80 percent of maximum zoned residential density, unless:

² See Title 10, Definitions, "zoned density" and "calculated capacity."

- 205 a. Actual experience in the jurisdiction since 1990 has shown that
206 development has occurred at density greater than 80 percent of zoned
207 residential density; or
208 b. Minimum density standards are adopted or proposed for adoption in the
209 zoning code that require residential development at greater than 80 percent
210 of maximum zoned residential density.

211 3. Cities and counties calculating capacity through the use of density bonus
212 provisions may consider transfers, including off-site transfers, only upon
213 demonstration that previous approvals of all density transfers within the past 5
214 years have resulted in an average of at least 80 percent of maximum zoned
215 densities actually being built.

216 4. The capacity calculation shall use only those development types that are
217 allowed in the development code. Any discretionary decision must not diminish
218 the zoned density if it is to be counted as a part of calculated capacity; and

219 5. Cities and counties, in coordination with special districts, shall demonstrate that
220 they have reviewed their public facility capacities and plans to assure that planned
221 public facilities can be provided, to accommodate the calculated capacity within
222 the plan period.

223 B. Calculate the increases in dwelling unit and job capacities by the year 2017 from any
224 proposed changes to the current comprehensive plans and implementing ordinances that
225 must be adopted to comply with Section 2 of this Title and add the increases to the
226 calculation of expected capacities.

227 C. Determine the effect of each of the following on calculated capacities, and include any
228 resulting increase or decrease in calculated capacities:

229 1. Required dedications for public streets, consistent with the Regional Accessibility
230 Title;

231 2. Off-street parking requirements, consistent with this functional plan;

232 3. Landscaping, setback, and maximum lot coverage requirements;

233 4. The effects of tree preservation ordinances, environmental protection ordinances,
234 view preservation ordinances, solar access ordinances, or any other regulations
235 that may have the effect of reducing the capacity of the land to develop at the
236 zoned density;

237 5. The effects of areas dedicated to bio-swales, storm water retention, open space
238 dedications, and other requirements of local codes that may reduce the capacity of
239 the land to develop at the zoned density.

240 D. If any of the calculated capacities are determined to be less than any of the city or county
241 target dwelling unit and job capacities in Table 1, either jurisdiction-wide or in mixed-use
242 areas, or both, then the city or county shall comply with the performance standards in
243 Section 6 of this Title by amending its comprehensive plans and implementing ordinances
244 to increase calculated capacities, as needed, to comply with the calculated capacities
245 required in Table 1.

246 E. Exceptions to the Section 6.B requirement that target capacities be demonstrated may be
247 requested according to Title 8 if a city or county determines that any calculated
248 capacity requirement in Table 1 cannot be achieved after implementation of Sections 2,
249 3 and 4 of this Title to increase expected capacities.

250 **Section 6. Local Plan Accommodation of Expected Growth Capacity for Housing and**
251 **Employment—Performance Standard**

252 All cities and counties within Metro shall demonstrate that:

253 A. The provisions required in Section 2 of this Title have been included in comprehensive
254 plans and implementing ordinances; and that

255 B. Using the computation method in Section 5, including the minimum residential density
256 provisions required in Section 2, that calculated capacities will achieve the target
257 capacities for dwelling units and full-time and part-time jobs contained in Table 1 in
258 the Appendix to this plan, including both jurisdiction-wide expected capacities and
259 capacities for mixed-use areas; and that

260 C. Effective measures have been taken to reasonably assure that the calculated capacities
261 will be built for dwelling units and jobs; and that

262 D. Expected development has been permitted at locations and densities likely to be
263 achieved during the 20-year planning period by the private market or assisted housing
264 programs, once all new regulations are in effect.

265 **Section 7. Design Type Density Recommendations**

266 A. For the area of each of the 2040 Growth Concept design types, the following average
267 densities for housing and employment are recommended to cities and counties:

268 Central City - 250 persons per acre
269 Regional Centers - 60 persons per acre
270 Station Communities - 45 persons per acre
271 Town Centers - 40 persons per acre
272 Main Streets - 39 persons per acre
273 Corridor - 25 persons per acre

274 **Employment Areas - 20 persons per acre**
275 **Industrial Areas - 9 employees per acre**
276 **Inner Neighborhoods - 14 persons per acre**
277 **Outer Neighborhoods - 13 persons per acre**

278 **TITLE 2: REGIONAL PARKING POLICY**

279 **Section 1. Intent**

280 The State's Transportation Planning Rule calls for reductions in vehicle miles traveled per
281 capita and restrictions on construction of new parking spaces as a means of responding to
282 transportation and land use impacts of growth. The Metro 2040 Growth Concept calls for more
283 compact development as a means to encourage more efficient use of land, promote non-auto trips
284 and protect air quality. In addition, the federally mandated air quality plan adopted by the state
285 relies on the 2040 Growth Concept fully achieving its transportation objectives. Notably, the air
286 quality plan relies upon reducing vehicle trips per capita and related parking spaces through
287 minimum and maximum parking ratios. This title addresses these state and federal requirements
288 and preserves the quality of life of the region.

289 A compact urban form requires that each use of land is carefully considered and that more
290 efficient forms are favored over less efficient ones. Parking, especially that provided in new
291 developments, can result in a less efficient land usage and lower floor to area ratios. Parking also
292 has implications for transportation. In areas where transit is provided or other non-auto modes
293 (walking, biking) are convenient, less parking can be provided and still allow accessibility and
294 mobility for all modes, including autos. Reductions in auto trips when substituted by non-auto
295 modes can reduce congestion and increase air quality.

296 **Section 2. Performance Standard**

297 A. Cities and counties are hereby required to amend their comprehensive plans and
298 implementing regulations, if necessary, to meet or exceed the following minimum
299 standards:

- 300 1. Cities and counties shall require no more parking than the minimum as shown on
301 Regional Parking Ratios Table, attached hereto; and
- 302 2. Cities and counties shall establish parking maximums at ratios no greater than
303 those listed in the Regional Parking Ratios Table and as illustrated in the Parking
304 Maximum Map.. The designation of A and B zones on the Parking Maximum
305 Map should be reviewed after the completion of the Regional Transportation Plan
306 and every three years thereafter. If 20-minute peak hour transit service has
307 become available to an area within a one-quarter mile walking distance for bus
308 transit or one-half mile walking distance for light rail transit, that area shall be
309 added to Zone A. If 20-minute peak hour transit service is no longer available to
310 an area within a one-quarter mile walking distance for bus transit or one-half mile
311 walking distance for light rail transit, that area shall be removed from Zone A.
312 Cities and counties should designate Zone A parking ratios in areas with good
313 pedestrian access to commercial or employment areas (within 1/3 mile walk) from
314 adjacent residential areas.

315 3. Cities and counties shall establish an administrative or public hearing
316 process for considering ratios for individual or joint developments to allow
317 a variance for parking when a development application is received which
318 may result in approval of construction of parking spaces either in excess of
319 the maximum parking ratios; or less than the minimum parking ratios.

320 Cities and counties may grant a variance from any maximum parking ratios through a
321 variance process.

322 B. Free surface parking spaces shall be subject to the regional parking maximums provided
323 for Zone A and Zone B. Parking spaces in parking structures, fleet parking, parking
324 for vehicles that are for sale, lease, or rent, employee car pool parking spaces,
325 dedicated valet parking spaces, spaces that are user paid, market rate parking or other
326 high-efficiency parking management alternatives may be exempted from maximum
327 parking standards by cities and counties. Sites that are proposed for redevelopment
328 may be allowed to phase in reductions as a local option. Where mixed land uses are
329 proposed, cities and counties shall provide for blended parking rates. It is
330 recommended that cities and counties count adjacent on-street parking spaces, nearby
331 public parking and shared parking toward required parking minimum standards.

332 C. Cities and counties may use categories or measurement standards other than those in the
333 Regional Parking Ratios Table, but must provide findings that the effect of the local
334 regulations will be substantially the same as the application of the Regional Parking
335 Ratios.

336 D. Cities and counties shall monitor and provide the following data to Metro on an annual
337 basis:

- 338 1. the number and location of newly developed parking spaces, and
- 339 2. demonstration of compliance with the minimum and maximum parking
340 standards, including the application of any variances to the regional standards
341 in this Title. Coordination with Metro collection of other building data should
342 be encouraged.

343 **TITLE 3: WATER QUALITY AND FLOOD MANAGEMENT CONSERVATION**

344 **Section 1. Intent**

345 To protect the beneficial uses and functional values of resources within the Water Quality and
346 Flood Management Areas by limiting or mitigating the impact on these areas from development
347 activities.

348 **Section 2. Requirement**

349 Cities and counties shall ensure that their comprehensive plans and implementing regulations
350 protect Water Quality and Flood Management Areas pursuant to Section 4. Exceptions to this
351 requirement will be considered under the provisions of Section 7.

352 **Section 3. Implementation Process for Cities and Counties**

353 Cities and counties are hereby required to amend their plans and implementing ordinances, if
354 necessary, to ensure that they comply with this Title in one of the following ways:

- 355 A. Either adopt the relevant provisions of the Metro Water Quality and Flood Management
356 model ordinance and map entitled Metro Water Quality and Flood Management
357 Conservation Area Map; or
- 358 B. Demonstrate that the plans and implementing ordinances substantially comply with the
359 performance standards, including the map, contained in Section 4. In this case, the
360 purpose of this map is to provide a performance standard for evaluation of substantial
361 compliance for those jurisdictions who choose to develop their own map of water quality
362 and flood management areas ; or
- 363 C. Any combination of A and B above that substantially complies with all performance
364 standards in Section 4.

365 **Section 4. Performance Standards**

- 366 A. **Flood Mitigation.** The purpose of these standards is to protect against flooding, and
367 prevent or reduce risk to human life and properties, by allowing for the storage and
368 conveyance of stream flows through these natural systems.

369 The plans and implementing ordinances of cities and counties shall be in substantial compliance
370 with the following performance standards:

- 371 1. Prohibit development within the water quality and flood management area; or
- 372 2. Limit development in a manner that requires balanced cut and fill; unless the
373 project is demonstrated, by an engineering study, that there is no rise in flood
374 elevation or that it will have a net beneficial effect on flood mitigation.

3. Require minimum finished floor elevations at least one foot above the design flood height or other applicable flood hazard standard for new habitable structures in the Water Quality and Flood Management Area.

4. Require that temporary fills permitted during construction shall be removed.

B. Water Quality. The purpose of these standards is to protect and allow for enhancement of water quality associated with beneficial uses as defined by the Oregon Water Resources Department and the Oregon Department of Environmental Quality.

The plans and implementing ordinances of cities and counties shall be in substantial compliance with the following performance standards:

1. Require erosion and sediment control for all new development within the Metro boundary as contained in the Metro Water Quality and Flood Management model ordinance.

2. Require to the maximum extent practicable that native vegetation cover is maintained or re-established during development, and that trees and shrubs in the Water Quality and Flood Management Area are maintained. The vegetative cover required pursuant to these provisions shall not allow the use of "Prohibited Plants for Stream Corridors and Wetlands" contained in the Water Quality and Flood Management Model Code adopted by the Metro Council.

3. Prohibit new uses of uncontained areas of hazardous materials as defined by DEQ in the Water Quality and Flood Management Areas; and

C. Protect the long term regional continuity and integrity of Water Quality and Flood Management Areas

Standards: Local jurisdictions shall establish or adopt transfer of density within ownership to mitigate the effects of development in Water Quality and Flood Management Areas, or through Transferable Development Rights (TDRs), which have substantially equivalent effect as the Metro Water Quality and Flood Management Model Ordinance.

Metro encourages local government to require that approvals of applications for partitions, subdivisions and design review actions must be conditioned with protecting Water Quality and Flood Management Areas with a conservation easement, platted as a common open space, or through purchase or donation of fee simple ownership to public agencies or private non-profits for preservation where feasible. Metro and cities and counties shall recognize that applications involving pre-existing development within the Water Quality and Flood Management Areas shall be exempted from the provisions concerning conservation easements and purchase or donation of fee simple ownership to public agencies or private non-profits for preservation.

411 **Section 5. Fish and Wildlife Habitat Conservation Area**

412 A. The purpose of these standards is to conserve, protect, and enhance fish and wildlife
413 habitat within the fish and wildlife habitat conservation areas identified on the water
414 quality and flood management area map by establishing performance standards and
415 promoting coordination by Metro of regional urban water sheds.

416 B. Fish and Wildlife Habitat Conservation Area Recommendations

417 These areas shall be shown on the Water Quality and Flood Management Area Map.
418 Fish and Wildlife Habitat Conservation Areas generally include and/or go beyond
419 the Water Quality and Flood Management Areas. These areas shown on the map are
420 Metro's initial inventory of significant fish and wildlife habitat conservation areas. Metro
421 hereby recommends that local jurisdictions adopt the following temporary standards:

- 422 1. Prohibit development in the Fish and Wildlife Conservation Areas that adversely
423 impacts fish and wildlife habitat.

424 Exceptions: It is recognized that urban development will, at times, necessitate
425 development activities within or adjacent to Fish and Wildlife Habitat
426 Conservation Areas. The following Fish and Wildlife Habitat Conservation
427 Mitigation Policy, except for emergency situations, applies to all the following
428 exceptions:

429 A project alternatives analysis, where public need for the project has been
430 established, will be required for any of the exceptions listed below. The
431 alternatives analysis must seek to avoid adverse environmental impacts by
432 demonstrating there are no practicable, less environmentally damaging
433 alternatives available. In those cases where there are no practicable, less
434 environmentally damaging alternatives, the project proponent will seek
435 alternatives which reduce or minimize adverse environmental impacts. Where
436 impacts are unavoidable, compensation, by complete replacement of the impacted
437 site's ecological attributes or, where appropriate, substitute resources of equal or
438 greater value will be provided in accordance with the Metro Water Quality and
439 Flood Management model ordinance.

- 440 a. Utility construction within a maximum construction zone width
441 established by cities and counties.
442 b. Overhead or underground electric power, telecommunications and cable
443 television lines within a sewer or stormwater right-of-way or within a
444 maximum construction zone width established by cities and counties.
445 c. Trails, boardwalks and viewing areas construction.
446 d. Transportation crossings and widenings. Transportation crossings and
447 widenings shall be designed to minimize disturbance, allow for fish and

wildlife passage and crossings should be preferably at right angles to the stream channel.

2. Limit the clearing or removal of native vegetation from the Fish and Wildlife Habitat Conservation Area to ensure its long term survival and health. Allow and encourage enhancement and restoration projects for the benefit of fish and wildlife.
3. Require the revegetation of disturbed areas with native plants to 90 percent cover within three years. Disturbed areas should be replanted with native plants on the Metro Plant List or an approved locally adopted plant list. Planting or propagation of plants listed on the Metro Prohibited Plant List within the Conservation Area shall be prohibited.
4. Require compliance with Oregon Department of Fish and Wildlife (ODFW) seasonal restrictions for in-stream work. Limit development activities that would impair fish and wildlife during key life-cycle events according to the guidelines contained in ODFW's "Oregon Guidelines for Timing of In-water Work to Protect Fish and Wildlife Resources."

C. Fish and Wildlife Habitat Protection

Within eighteen (18) months from the effective date of this functional plan, Metro shall complete the following regional coordination program by adoption of functional plan provisions.

1. Metro shall establish criteria to define and identify regionally significant fish and wildlife habitat areas.
2. Metro shall adopt a map of regionally significant fish and wildlife areas after (1) examining existing Goal 5 data, reports and regulation from cities and counties, and (2) holding public hearings.
3. Metro shall identify inadequate or inconsistent data and protection in existing Goal 5 data, reports and regulations on fish and wildlife habitat. City and county comprehensive plan provisions where inventories of significant resources were completed and accepted by a LCDC Periodic Review Order after January 1, 1993, shall not be required to comply until their next periodic review.
4. Metro shall complete Goal 5 economic, social, environmental and energy (ESEE) analyses for mapped regionally significant fish and wildlife habitat areas only for those areas where inadequate or inconsistent data or protection has been identified.

482 5. Metro shall establish performance standards for protection of regionally
483 significant fish and wildlife habitat which must be met by the plans implementing
484 ordinances of cities and counties.

485 **Section 6. Metro Model Ordinance Required**

486 Metro shall adopt a Water Quality and Flood Management Model Ordinance and map for use by
487 local jurisdictions to comply with this section. Sections 1-4 of this title shall not become
488 effective until 24 months after Metro Council has adopted a Model Code and map that addresses
489 all of the provisions of this title. Metro may adopt a Model Code and map for protection of
490 regionally significant fish and wildlife habitat. Section 5 of this title shall be implemented by
491 adoption of new functional plan provisions.

492 **Section 7. Variances**

493 City and county comprehensive plans and implementing regulations are hereby required to
494 include procedures to consider claims of map error and hardship variances to reduce or remove
495 stream corridor protection for any property demonstrated to be converted to an unbuildable lot by
496 application of stream corridor protections.

497 **TITLE 4: RETAIL IN EMPLOYMENT AND INDUSTRIAL AREAS**

498 **Section 1. Intent**

499 It is the intent of the Metro 2040 Growth Concept that Employment and Industrial Areas contain
500 supportive retail development. Employment and Industrial areas would be expected to include
501 some limited retail commercial uses primarily to serve the needs of people working or living in
502 the immediate Employment or Industrial Areas; not larger market areas outside the
503 Employment or Industrial Areas.

504 **Section 2. Comprehensive Plan and Implementing Ordinance Changes Required**

505 A. Cities and counties are hereby required to amend their comprehensive plans and
506 implementing regulations, if necessary, to prohibit retail uses larger than 60,000 square
507 feet of gross leasable area per building or business in the Industrial Areas designated on
508 the attached Employment and Industrial Areas Map.

509 B. This subsection applies to city and county comprehensive plan designations and zoning
510 ordinances acknowledged by the effective date of this Functional Plan, which allow retail
511 uses larger than 60,000 square feet of gross leasable area per building or business in
512 Employment Areas designated on the attached Employment and Industrial Areas Map.
513 These cities and counties may continue to allow the extent and location of retail uses
514 allowed in Employment Areas on the effective date of this Functional Plan for the
515 specific zones in acknowledged land use regulations listed in Exhibit A of this Title. For
516 all other zones in Employment Areas, these cities and counties are hereby required to
517 amend their comprehensive plans and implementing regulations, if necessary, to require a
518 process resulting in a land use decision for any retail uses larger than 60,000 square feet
519 of gross leasable area per building or business on those lands where such uses are
520 currently allowed by any process. The standards for the land use decision to allow any
521 such retail uses shall require (1) a demonstration in the record that transportation facilities
522 adequate to serve the retail use, consistent with Metro's functional plans for
523 transportation, will be in place at the time the retail use begins operation; and (2) a
524 demonstration that transportation facilities adequate to meet the transportation need for
525 the other planned uses in the Employment Areas are included in the applicable
526 comprehensive plan provisions. If the city and county comprehensive plan designations
527 and zoning ordinances which allow retail uses larger than 60,000 square feet of gross
528 leasable area per building or business in Employment Areas have not been acknowledged
529 by the effective date of this Functional Plan, subsection 2.C. of this Title shall apply.

530 C. City or county comprehensive plan designations and zoning ordinances acknowledged by
531 the effective date of this Functional Plan which do not allow retail uses larger than 60,000
532 square feet of gross leasable area per building or business in Employment Areas
533 designated on the attached Employment and Industrial Areas Map shall continue to
534 prohibit them unless an exception is established under Section 3 of this Title pursuant to
535 the compliance procedures of Title 8.

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566 **TITLE 5: NEIGHBOR CITIES AND RURAL RESERVES**

567 **Section 1. Intent**

568 The intent of this title is to clearly define Metro policy with regard to areas outside the Metro
569 urban growth boundary. **NO PORTION OF THIS TITLE CAN REQUIRE ANY ACTIONS**
570 **BY NEIGHBORING CITIES.** Metro, if neighboring cities jointly agree, will adopt or sign
571 rural reserve agreements for those areas designated rural reserve in the Metro 2040 Growth
572 Concept with Multnomah, Clackamas, and Washington County, and Neighbor City Agreements
573 with Sandy, Canby, and North Plains. Metro would welcome discussion about agreements with
574 other cities if they request such agreements.

575 In addition, counties and cities within the Metro boundary are hereby required to amend their
576 comprehensive plans and implementing ordinances within twenty-four months to reflect the rural
577 reserves and green corridors policies described in the Metro 2040 Growth Concept.

578 **Section 2. Rural Reserves and Green Corridors**

579 Metro shall attempt to designate and protect common rural reserves between Metro's urban
580 growth boundary and designated urban reserve areas and each neighbor city's urban growth
581 boundary and designated urban reserves, and designate and protect common locations for green
582 corridors along transportation corridors connecting the Metro region and each neighboring city.
583 For areas within the Metro boundary, counties are hereby required to amend their comprehensive
584 plans and implementing ordinances to identify and protect the rural reserves and green corridors
585 described in the adopted 2040 Growth Concept and shown on the adopted 2040 Growth Concept
586 Map. These rural lands shall maintain the rural character of the landscape and our agricultural
587 economy. New rural commercial or industrial development shall be restricted to the extent
588 allowed by law. Zoning shall be for resource protection on farm and forestry land, and very low-
589 density residential (no greater average density than one unit for five acres) for exception land.

590 For areas outside the Metro boundary, Metro shall encourage intergovernmental agreements with
591 the cities of Sandy, Canby and North Plains.

592 **Section 3. Invitations for Intergovernmental Agreements**

593 Metro shall invite the cities and counties outside the Metro boundary and named in Section 1 of
594 this title to sign an Intergovernmental Agreement, similar to the draft agreements attached hereto.

595 **Section 4. Metro Intent with Regard to Green Corridors**

596 Metro shall attempt to negotiate a Green Corridor Intergovernmental Agreement with Oregon
597 Department of Transportation (ODOT) and the three counties (Clackamas, Multnomah and
598 Washington) to designate and protect areas along transportation corridors connecting Metro and
599 neighboring cities.

TITLE 6: REGIONAL ACCESSIBILITY

Section 1. Intent

Implementation of the 2040 Growth Concept requires that the region identify key measures of transportation effectiveness which include all modes of transportation. Developing a full array of these measures will require additional analysis. Focusing development in the concentrated activity centers, including the central city, regional centers, and station communities, requires the use of alternative modes of transportation in order to avoid unacceptable levels of congestion. The continued economic vitality of industrial areas and intermodal facilities is largely dependent on preserving or improving access to these areas and maintaining reasonable levels of freight mobility in the region. Therefore, regional congestion standards and other regional system performance measures shall be tailored to reinforce the specific development needs of the individual 2040 Growth Concept design types.

These regional standards will be linked to a series of regional street design concepts that fully integrate transportation and land use needs for each of the 2040 land use components. The designs generally form a continuum; a network of throughways (freeway and highway designs) will emphasize auto and freight mobility and connect major activity centers. Slower-speed boulevard designs within concentrated activity centers will balance the multi-modal travel demands for each mode of transportation within these areas. Street and road designs will complete the continuum, with multi-modal designs that reflect the land uses they serve, but also serving as moderate-speed vehicle connections between activity centers that complement the throughway system. While these designs are under development, it is important that improvements in the most concentrated activity centers are designed to lessen the negative effects of motor vehicle traffic on other modes of travel. Therefore, implementation of amenity oriented boulevard treatment that better serves pedestrian, bicycle and transit travel in the central city, regional centers, main streets, town centers, and station communities is a key step in the overall implementation of the Metro 2040 Growth Concept.

It is intended that the entirety of these Title 6 standards will be supplemented by the Regional Transportation Plan (RTP) when the RTP is approved and adopted by the Metro Council.

Section 2. Boulevard Design

Regional routes in the central city, regional centers, station communities, main streets and town centers are designated on the Boulevard Design Map. In general, pedestrian and transit oriented design elements are the priority in the central city and regional centers, station communities, main streets and town centers. All cities and counties within the Metro region shall implement or allow others to implement boulevard design elements as improvements are made to these facilities including those facilities built by ODOT or Tri-Met. Each jurisdiction shall amend their comprehensive plans and implementing ordinances, if necessary, to require consideration or installation of the following boulevard design elements when proceeding with right-of-way improvements on regional routes designated on the boulevard design map:

A. Wide sidewalks with pedestrian amenities such as benches, awnings and special lighting;

- 639 B. Landscape strips, street trees and other design features that create a pedestrian buffer
640 between curb and sidewalk;
- 641 C. Pedestrian crossings at all intersections, and mid-block crossings where intersection
642 spacing is excessive;
- 643 D. The use of medians and curb extensions to enhance pedestrian crossings where wide
644 streets make crossing difficult;
- 645 E. Accommodation of bicycle travel;
- 646 F. On-street parking;
- 647 G. Motor vehicle lane widths that consider the above improvements;
- 648 H. Use of landscaped medians where appropriate to enhance the visual quality of the
649 streetscape.

650 **Section 3. Design Standards for Street Connectivity**

651 The design of local street systems, including "local" and "collector" functional classifications, is
652 generally beyond the scope of the Regional Transportation Plan (RTP). However, the aggregate
653 effect of local street design impacts the effectiveness of the regional system when local travel is
654 restricted by a lack of connecting routes, and local trips are forced onto the regional network.
655 Therefore, the following design and performance options are intended to improve local
656 circulation in a manner that protects the integrity of the regional system.

657 Local jurisdictions within the Metro region are hereby required to amend their comprehensive
658 plans and implementing ordinances, if necessary, to comply with or exceed one of the following
659 options in the development review process:

- 660 A. **Design Option.** Cities and counties shall ensure that their comprehensive plans,
661 implementing ordinances and administrative codes require demonstration of compliance
662 with the following:
 - 663 1. New residential and mixed-use developments shall include local street plans that:
 - 664 a. encourage pedestrian and bicycle travel by providing short, direct public
665 right-of-way routes to connect residential uses with nearby existing and
666 planned commercial services, schools, parks and other neighborhood
667 facilities; and
 - 668 b. include no cul-de-sac streets longer than 200 feet, and no more than 25
669 dwelling units on a closed-end street system except where topography,
670 barriers such as railroads or freeways, or environmental constraints such as
671 major streams and rivers, prevent street extension; and

- c. provide bike and pedestrian connections on public easements or right-of-way when full street connections are not possible, with spacing between connections of no more than 330 feet except where topography, barriers such as railroads or freeways, or environmental constraints such as major streams and rivers, prevent street extension; and
- d. consider opportunities to incrementally extend and connect local streets in primarily developed areas; and
- e. serve a mix of land uses on contiguous local streets; and
- f. support posted speed limits; and
- g. consider narrow street design alternatives that feature total right-of-way of no more than 46 feet, including pavement widths of no more than 28 feet, curb-face to curb-face, sidewalk widths of at least 5 feet and landscaped pedestrian buffer strips that include street trees; and
- h. limit the use of cul-de-sac designs and closed street systems to situations where topography, pre-existing development or environmental constraints prevent full street extensions.

2. For new residential and mixed-use development, all contiguous areas of vacant and primarily undeveloped land of five acres or more shall be identified by cities and counties and the following will be prepared:

A map that identifies possible local street connections to adjacent developing areas. The map shall include street connections at intervals of no more than 660 feet, with more frequent connections in areas planned for mixed use or dense development.

- B. Performance Option.** For residential and mixed use areas, cities and counties shall amend their comprehensive plans, implementing ordinances and administrative codes, if necessary, to require demonstration of compliance with performance criteria in the following manner. Cities and counties shall develop local street design standards in text or maps or both with street intersection spacing to occur at intervals of no less than eight street intersections per mile except where topography, barriers such as railroads or freeways, or environmental constraints such as major streams and rivers, prevent street extension. The number of street intersections should be greatest in the highest density 2040 Growth Concept design types. Local street designs for new developments shall satisfy the following additional criteria:

1. Performance Criterion: minimize local traffic on the regional motor vehicle system, by demonstrating that local vehicle trips on a given regional facility do not exceed the 1995 arithmetic median of regional trips for facilities of the same motor vehicle system classification by more than 25 percent.
2. Performance Criterion: everyday local travel needs are served by direct, connected local street systems where: (1) the shortest motor vehicle trip over public streets from a local origin to a collector or greater facility is no more than

twice the straight-line distance; and (2) the shortest pedestrian trip on public right-of-way is no more than one and one-half the straight-line distance.

Section 4. Transportation Performance Standards

A. Alternative Mode Analysis

1. Mode split will be used as the key regional measure for transportation effectiveness in the Central City, Regional Centers and Station Communities. Each jurisdiction shall establish an alternative mode split target (defined as non-Single Occupancy Vehicle person-trips as a percentage of all person-trips for all modes of transportation) for each of the central city, regional centers and station communities within its boundaries. The alternative mode split target shall be no less than the regional targets for these Region 2040 Growth Concept land use components to be established in the Regional Transportation Plan.
2. Cities and counties which have Central City, regional centers and station communities shall identify actions which will implement the mode split targets. These actions should include consideration of the maximum parking ratios adopted as part of Title 2; Section 2: Boulevard Design of this Title; and transit's role in serving the area.

B. Motor Vehicle Congestion Analysis for Mixed Use Areas

1. Level-Of-Service (LOS) is a measurement of the use of a road as a share of designed capacity. The following table using Level Of Service may be incorporated into local comprehensive plans and implementing ordinances to replace current methods of determining motor vehicle congestion on regional facilities, if a city or county determines that this change is needed to permit Title 1, Table 1 capacities in the Central City, Regional Centers, Town Centers, Main Streets and Station Communities:

General Congestion Performance Standards (using LOS)*

	Preferred	Acceptable	Exceeds
Mid-Day one-hour	C or better	D	E or worse
Peak two-hour	E/E or better	F/E	F/F or worse

*Level-of-Service is determined by using either the latest edition of the Highway Capacity Manual (Transportation Research Board) or through volume to capacity ratio equivalencies as follows: LOS C = .8 or better; LOS D = .8 to .9; LOS = .9 to 1.0; and LOS F = greater than 1.0. A copy of the Level of Service Tables from the Highway Capacity Manual is attached as Exhibit A.

2. Accessibility. If a congestion standard is exceeded as identified in 4.B.1, cities and counties shall evaluate the impact of the congestion on regional accessibility using the best available methods (quantitative or qualitative). If a determination is made

by Metro that the congestion negatively impacts regional accessibility, local jurisdictions shall follow the congestion management procedures identified in 4.C. below.

3. The identified function or the identified capacity of a road may be significantly affected by planning for Central City, Regional Centers, Town Centers, Main Streets and Station Communities. Cities and counties shall amend their transportation plans and implementing ordinances to either change or take actions as described in Section 4.C., below, to preserve the identified function and identified capacity of the road, if necessary, to retain consistency between allowed land uses and planning for transportation facilities.

C. Congestion Management

For a city or county to amend their comprehensive plan to add a significant capacity expansion to a regional facility, the following actions shall be applied, unless the capacity expansion is included in the Regional Transportation Plan:

1. To address Level of Service, the following shall be implemented:
 - a. Transportation system management techniques
 - b. Corridor or site-level transportation demand management techniques
 - c. Additional motor vehicle capacity to parallel facilities, including the consideration of a grid pattern consistent with connectivity standards contained in Title 6 of this plan
 - d. Transit service improvements to increase ridership
2. To address preservation of motor vehicle function:
 - a. Implement traffic calming
 - b. Change the motor vehicle function classification
3. To address or preserve existing street capacity, implement transportation management strategies (e.g. access management, signal interties, lane channelization)

If the above considerations do not adequately and cost-effectively address the problem, capacity improvements may be included in the comprehensive plan.

D. Motor Vehicle Congestion Analysis Outside of Mixed Use Areas

Outside of Central City, Regional Centers, Town Centers, Main Streets and Station Communities, and where cities and counties have not elected to use the General Congestion Performance Standards in subsection 4.B of this Title:

1. The identified function or the identified capacity of a road may be significantly affected by implementation of this functional plan. Cities and counties shall amend their transportation plans and implementing ordinances to change or take actions as described in Section 4.C., below, to preserve the identified function and identified capacity of the facility, if necessary, to retain consistency between allowed land uses and planning for transportation facilities.
2. The congestion performance standard for designated state highways as identified in the 1990 Oregon Highway Plan shall be the peak and off-peak performance criteria in Appendix F of the 1992 Oregon Transportation Plan.
3. The congestion performance standard for arterials of regional significance identified at Figure 4-2 of Chapter 4 of the 1992 Regional Transportation Plan should be the peak and off-peak performance criteria in Chapter 1, Section D of the 1992 Regional Transportation Plan.
4. Congestion level of service standards are not required for all other roads.
5. If the congestion performance for a road is exceeded or the identified function or identified capacity is inconsistent with land uses, cities and counties shall apply the congestion management actions identified in 4.C.1-3, above. If these actions do not adequately and cost-effectively address the problem, capacity improvements may be included in the comprehensive plan."

Level of Service (LOS) Definitions for Freeways, Arterials and Signalized Intersections

LOS	FREEWAYS (average travel speed assuming 70 mph design speed)	ARTERIALS (average travel speed assuming a typical free flow speed of 40 mph)	SIGNALIZED INTERSECTIONS (stopped delay per vehicle).	TRAFFIC FLOW CHARACTERISTICS
A	Greater than 60 mph Average spacing: 22 car-lengths	Greater than 35 mph	Less than 5 seconds; most vehicles do not stop at all	Virtually free flow; completely unimpeded Volume/capacity ratio less than or equal to .60
B	57 to 60 mph Average spacing: 13 car-lengths	28 to 35 mph	5.1 to 15 seconds; more vehicles stop than for LOS A	Stable flow with slight delays; reasonably unimpeded Volume/capacity ratio .61 to .70
C	54 to 57 mph Average spacing: 9 car-lengths	22 to 28 mph	15.1 to 25 seconds; individual cycle failures may begin to appear	Stable flow with delays; less freedom to maneuver Volume/capacity ratio of .71 to .80
D	46 to 54 mph Average spacing: 6 car-lengths	17 to 22 mph	25.1 to 40 seconds; individual cycle failures are noticeable	High density but stable flow Volume/capacity ratio of .81 to .90
E	30 to 46 mph Average spacing: 4 car-lengths	13 to 17 mph	40.1 to 60 seconds; individual cycle failures are frequent; poor progression	Operating conditions at or near capacity; unstable flow Volume/capacity ratio of .91 to 1.00
F	Less than 30 mph bumper-to-bumper	Less than 13 mph	Greater than 60 seconds; not acceptable for most drivers	Forced flow, breakdown conditions Volume/capacity ratio of greater than 1.00
>F	Demand exceeds roadway capacity, limiting volume that can be carried and forcing excess demand onto parallel routes and extending the peak period			Demand/capacity ratios of greater than 1.10

Source: 1985 Highway Capacity Manual (A through F Descriptions)
Metro (>F Description)

799 **TITLE 7: AFFORDABLE HOUSING**

800 **Section 1. Intent**

801 RUGGO Objective 17 requires that Metro adopt a "fair share" strategy for meeting the housing
802 needs of the urban population in cities and counties based on a subregional analysis. A "fair
803 share" strategy will include (1) a diverse range of housing types available within cities and
804 counties inside the UGB; (2) specific goals for low and moderate rate housing to ensure that
805 sufficient and affordable housing is available to households of all income levels that live or have
806 a member working in each jurisdiction; (3) housing densities and costs supportive of adopted
807 public policy for the development of the regional transportation system and designated centers
808 and corridors; and (4) a balance of jobs and housing within the region and subregions.

809 Title 1 of this functional plan requires cities and counties to change their zoning to accommodate
810 development at higher densities in locations supportive of the transportation system. Two other
811 parts of the "fair share" strategy are addressed here: (1) encouraging use of tools identified to
812 improve availability of sufficient housing affordable to households of all income levels; and (2)
813 encouraging manufactured housing to assure a diverse range of available housing types.

814 **Section 2. Recommendations to Improve Availability of Affordable Housing**

815 According to HUD standards, housing is affordable if the resident is paying no more than one-
816 third of their income for housing. Data from the federally required County Consolidated Plans
817 clearly demonstrate that there exists a shortage of housing affordable to low and moderate
818 income people in most, if not all, cities and counties. Metro recommends that cities and counties
819 increase their efforts to provide for the housing needs of households of all income levels that live
820 or have a member working in each jurisdiction and that they consider implementation of some or
821 all of the following tools and approaches to facilitate the development of affordable housing:

- 822 A. Donate buildable tax-foreclosed properties to nonprofit organizations or
823 governments for development as mixed market affordable housing.
- 824 B. Develop permitting process incentives for housing being developed to serve
825 people at or below 80% of area median income.
- 826 C. Provide fee waivers and property tax exemptions for projects developed by
827 nonprofit organizations or governments serving people at or below 60% of area
828 median income.
- 829 D. Create a land banking program to enhance the availability of appropriate sites for
830 permanently affordable housing.
- 831 E. Consider replacement ordinances that would require developers of high-income
832 housing, commercial, industrial, recreational or government projects to replace
833 any affordable housing destroyed by these projects.

834 F. Consider linkage programs that require developers of job-producing development,
835 particularly that which receives tax incentives, to contribute to an affordable
836 housing fund.

837 G. Commit locally controlled funds, such as Community Development Block Grants,
838 Strategic Investment Program tax abatement funds or general fund dollars, to the
839 development of permanently affordable housing for people at or below 60% of
840 area median income.

841 H. Consider inclusionary zoning requirements, particularly in tax incentive
842 programs, for new development in transit zones and other areas where public
843 investment has contributed to the value and developability of land.

844 **Section 3. Recommendations to Encourage Manufactured Housing**

845 State housing policy requires the provision of manufactured housing inside all Urban Growth
846 Boundaries as part of the housing mix with appropriate placement standards. The following are
847 recommended to reduce regulatory barriers to appropriately placed manufactured housing:

848 A. Requirements for a minimum of five acres to develop a manufactured housing
849 park should be reviewed to consider a lesser requirement, or elimination of a
850 minimum parcel and/or lot size entirely.

851 B. Manufactured homes configured as duplexes, triplexes, fourplexes, etc. should be
852 encouraged outside manufactured dwelling parks where zoning densities are
853 consistent with single story development.

854 **TITLE 8: COMPLIANCE PROCEDURES**

855 **Section 1. Compliance Required**

856 All cities and counties within the Metro boundary are hereby required to amend their
857 comprehensive plans and implementing ordinances to comply with the provisions of this
858 functional plan within twenty-four months of the effective date of this ordinance. Metro
859 recommends the adoption of the policies that affect land consumption as soon as possible.

860 **Section 2. Compliance Procedures**

861 A. On or before six months prior to the deadline established in Section 1, cities and counties
862 shall transmit to Metro the following:

- 863 1. An evaluation of their local plans, including public facility capacities and the
864 amendments necessary to comply with this functional plan;
- 865 2. Copies of all applicable comprehensive plans and implementing ordinances and
866 public facility plans, as proposed to be amended;
- 867 3. Findings that explain how the amended city and county comprehensive plans will
868 achieve the standards required in titles 1 through 6 of this functional plan.

869 In developing the evaluation, plan and ordinance amendments and findings, cities and
870 counties shall address the Metro 2040 Growth Concept, and explain how the proposed
871 amendments implement the Growth Concept.

872 B. Exceptions to any of the requirements in the above titles may be granted by the Metro
873 Council, as provided for in the Regional Urban Growth Goals and Objectives, Section
874 5.3, after MPAC review. Requests for an exception should include a city or county
875 submittal as specified in this section. The Metro Council will make all final decisions
876 for the grant of any requested exception .

- 877 1. Population and Capacity. An exception to the requirement contained in Table 1
878 of Title 1 that the target capacities shall be met or exceeded may be granted based
879 on a submittal which includes, but is not limited to, the following:
- 880 a. A demonstration of substantial evidence of the economic infeasibility to
881 provide sanitary sewer, water, stormwater or transportation facilities to an
882 area or areas; or
- 883 b. A demonstration that the city or county is unable to meet the target
884 capacities listed in Table 1 because substantial areas have prior
885 commitments to development at densities inconsistent with Metro target;
886 or

- 887 c. A demonstration that the dwelling unit and job capacities cannot be
888 accommodated at densities or locations the market or assisted programs
889 will likely build during the planning period.

890 As part of any request for exception under this subsection, a city or county
891 shall also submit an estimate of the amount of dwelling units or jobs
892 included in the capacity listed in Table 1 that cannot be accommodated;
893 and a recommendation which identifies land that would provide for the
894 unaccommodated capacity located outside the urban growth boundary and
895 near or adjacent to the city or county.

896 In reviewing any request for exception based on the financial feasibility of
897 providing public services, Metro, along with cities and counties, shall estimate the
898 cost of providing necessary public services and compare those with the estimated
899 costs submitted by the city or county requesting the exemption.

- 900 2. Parking Measures. Subject to the provisions of Title 2, cities or counties may
901 request an exception to parking requirements. Metro may consider a city or
902 county government request to allow areas designated as Zone A to be subject to
903 Zone B requirements upon the city or county establishing that, for the area in
904 question:

- 905 a. There are no existing plans to provide transit service with 20-minute or
906 lower peak frequencies; and
907 b. There are no adjacent neighborhoods close enough to generate sufficient
908 pedestrian activity; and
909 c. There are no significant pedestrian activity within the present business
910 district; and
911 d. That it will be feasible for the excess parking to be converted to the
912 development of housing, commerce or industry in the future.

913 The burden of proof for a variance shall increase based on the quality and timing
914 of transit service. The existence of transit service or plans for the provision of
915 transit service near a 20-minute or lower peak frequency shall establish a higher
916 burden to establish the need for the exception.

- 917 3. Water Quality and Flood Management Areas. Cities and counties may request
918 areas to be added or deleted from the Metro Water Quality and Flood
919 Management Area based on a finding that the area identified on the map is not a
920 Water Quality and Flood Management Area or a Fish and Wildlife Habitat
921 Conservation Area, as defined in this functional plan. Areas may also be deleted
922 from the map if the city or county can prove that its deletion and the cumulative
923 impact of all deletions in its jurisdiction will have minimal impact on the water
924 quality of the stream and on flood effects. Findings shall be supported by
925 evidence, including the results of field investigations.

4. Retail in Employment and Industrial Areas. Subject to the provisions of Title 4, cities and counties may request a change in the Employment and Industrial Areas Map. Metro may consider a city or county request to modify an Employment Area to exempt existing or locally designated retail areas, unacknowledged by the date of this Functional Plan, where they can demonstrate that

a. The Employment and Industrial Areas Map included lands within Employment Areas having a substantially developed existing retail area or a locally designated retail area pursuant to a comprehensive plan acknowledged by the date of this Functional Plan which allowed retail uses larger than 60,000 square feet of gross leasable area per building or business; or

b. The requested retail area in an Employment Area has been found to be appropriate for an exception based upon current or projected needs within the jurisdiction and the city or county can demonstrate that adequate transportation facilities capacity exists for that retail area.

5. Regional Accessibility. Cities or counties may request an exception to the requirements of Title 6, Regional Accessibility, where they can show that a street system or connection is not feasible for reasons of topographic constraints or natural or built environment considerations.

C. The Metro Council may grant an extension to time lines under this functional plan if the city or county has demonstrated substantial progress or proof of good cause for failing to complete the requirements on time. Requests for extensions of the compliance requirement in Section 1 of this Title should accompany the compliance transmittal required in Section 2.A. of this Title.

D. In addition to the above demonstrations, any city or county request or determination that functional plan policies should not or cannot be incorporated into comprehensive plans shall be subject to the conflict resolution and mediation processes included within the RUGGO, Goal I, provisions prior to the final adoption of inconsistent policies or actions. Final land use decisions of cities and counties inconsistent with functional plan requirements are subject to immediate appeal for violation of the functional plan.

E. Compliance with requirements of this plan shall not require cities or counties to violate federal or state law, including statewide land use goals. Conflicting interpretations of legal requirements may be the subject of a compliance interpretation and conflict resolution under RUGGO Objective 5.3.

Section 3. Any Comprehensive Plan Change must Comply

After the effective date of this ordinance, any amendment of a comprehensive plan or implementing ordinance shall be consistent with the requirements of this functional plan. Metro

shall assist cities and counties in achieving compliance with all applicable functional plan requirements. Upon request, Metro will review proposed comprehensive plan and implementing ordinances for functional plan compliance prior to city or county adoption.

Section 4. Compliance Plan Assistance

A. Any city or county may request of Metro a compliance plan which contains the following:

1. An analysis of the city or county comprehensive plan and implementing ordinances, and what sections require change to comply with the performance standards.
2. Specific amendments that would bring the city or county into compliance with the requirements of Sections 1 to 8, if necessary.

B. Cities and counties must make the request within four months of the effective date of this ordinance. The request shall be signed by the highest elected official of the jurisdiction.

C. Metro shall deliver a compliance plan within four months of the request date. The compliance plan shall be a recommendation from the Executive Officer. The compliance plan shall be filed with the Metro Council two weeks before it is transmitted, for possible review and comment.

Section 5. Functional Plan Interpretation Process

The Metro Council may initiate a functional plan interpretation through whatever procedures it deems appropriate on its own motion with or without an application. After the effective date of this ordinance, Metro shall provide a process for cities and counties required by this functional plan to change their plans to seek interpretations of the requirements of this functional plan. The process shall provide, in addition to other requirements that the Metro Council may establish, (1) the applications must state the specific interpretation requested; (2) the Executive Officer shall seek comment from interested parties, review the application and make an interpretation to the Metro Council; (3) the Executive Officer's interpretation shall be final unless appealed to the Metro Council by the applicant or any citizen or party who presented written comments to the Executive Officer; (4) the Metro Council may also on its own motion review an Executive Officer interpretation before it becomes final.

Section 6. Citizen Review Process

A citizen who has presented written or oral testimony to a city or county on an issue of application of this functional plan may petition the Metro Council to initiate a functional plan interpretation or conflict resolution action. After hearing the citizen petition and any response from any affected cities and counties, the Metro Council may, as it considers necessary, decide to:

- 998 1. Interpret the functional plan; or
- 999 2. Initiate a functional plan interpretation using the process in Section 5 of this Title; or
- 1000 3. Initiate the conflict resolution process of RUGGO Objective 5.3 for any apparent or
1001 potential inconsistencies between comprehensive plans and this functional plan; or
- 1002 4. Postpone consideration of the issue to an appropriate time when compliance with a
1003 functional plan requirement is scheduled.

1004 **Section 7. Enforcement**

- 1005 A. Prior to a final decision to amend a comprehensive plan or implementing ordinance, a
1006 city or county determination that a requirement of this functional plan should not or
1007 cannot be implemented may be subject to a compliance interpretation and the conflict
1008 resolution process provided for in RUGGO, Goal I at the request of the city or county.
- 1009 B. City or county actions to amend a comprehensive plan or implementing ordinance in
1010 violation of this functional plan at any time after the effective date of this ordinance shall
1011 be subject to appeal or other legal action for violation of a regional functional plan
1012 requirement, including but not limited to reduction of regional transportation funding and
1013 funding priorities.
- 1014 C. Failure to amend comprehensive plans and implementing ordinances as required by
1015 Section 1 of this Title shall be subject to any and all enforcement actions authorized by
1016 law.

1017 **TITLE 9: PERFORMANCE MEASURES**

1018 **Section 1. Intent**

1019 In order to monitor progress in implementation of this functional plan, and in order to implement
1020 Objective 10 of RUGGO, Metro shall establish performance measures related to the achievement
1021 and expected outcome resulting from the implementation of this functional plan.

1022 **Section 2. Performance Measures Adoption**

1023 A. Within three months of the adoption of this functional plan, the Metro Executive Officer
1024 shall submit to the Council the Executive Officer's recommendations for:

1025 1. Performance measures to be used in evaluating the progress of the region in
1026 implementation of this functional plan; and

1027 2. Policies for corrective action should the performance measures indicate that the
1028 goals contained in the functional plan are not being achieved.

1029 In developing these performance measures and policies, the Executive Officer shall use the best
1030 technology available to Metro, and shall, in addition, submit the current and recent historic levels
1031 for the proposed performance measures.

1032 B. The Council, after receiving advice and comment from the Metropolitan Policy Advisory
1033 Committee, shall adopt a list of performance measures that will be used to monitor and
1034 evaluate this functional plan. The performance measures will be evaluated at least by
1035 regional level, by Growth Concept design types, by regional and town center market
1036 areas, and by jurisdiction. The performance measures shall include a biennial goal for the
1037 next six years, and shall be accompanied by policies for adjusting the regional plans
1038 based on actual performance.

1039 C. The performance measures shall include, but shall not be limited to the following:

1040 1. Amount of land converted from vacant to other uses, according to jurisdiction,
1041 Growth Concept design type, and zoning;

1042 2. Number and types of housing constructed, their location, density, and costs,
1043 according to jurisdiction, Growth Concept design type, and zoning;

1044 3. The number of new jobs created in the region, according to jurisdiction, Growth
1045 Concept design type, and zoning;

1046 4. The amount of development of both jobs and housing that occurred as
1047 redevelopment or infill, according to jurisdiction, Growth Concept design type,
1048 and zoning;

1049 5. The amount of land that is environmentally sensitive that is permanently
1050 protected, and the amount that is developed;

1051 6. Other measures that can be reliably measured and will measure progress in
1052 implementation in key areas.

1053 7. Cost of land based on lot prices according to jurisdiction, Growth Concept design
1054 type, and zoning; and according to redeveloped and vacant classifications.

1055 8. The average vacancy rate for all residential units.

1056 D. Use of the performance measures

1057 1. The performance measures will contain both the current level of achievement, and
1058 the proposed level necessary to implement this functional plan and achieve the
1059 Metro 2040 Growth Concept adopted in the Regional Urban Growth Goals and
1060 Objectives (RUGGO). The performance measures will be used to evaluate and
1061 adjust, as necessary, Metro's functional plans, Urban Growth Boundary, and other
1062 regional plans.

1063 2. By March 1 of every other year beginning March 1, 1999, the Executive Officer
1064 shall report to the Council an assessment of the regional performance measures,
1065 and recommend corrective actions, as necessary, consistent with the Metro
1066 Council's policies.

1067 3. The Council shall refer the recommendations to the Hearing Officer, who shall
1068 hold a hearing to review the data in the Executive Officer's report on the
1069 performance measures, and gather additional data from any interested party. The
1070 Hearing officer shall review all of the information presented on the performance
1071 measures. The complete record of information, findings of fact, and a
1072 recommendation shall be forwarded to the Council by the Hearing Officer.

1073 4. The Council shall hold a hearing on the record, adopt findings of fact, and take
1074 any necessary corrective action by September 1 of the year.

See Glossary for Urban Growth Management Functional Plan definitions

Table 1 - Target Capacity for Housing and Employment Units - Year 1994 to 2017

City or County	Dwelling Unit Capacity ¹	Job Capacity	Mixed Use Areas ⁴	
			Dwelling Unit Capacity	Job Increase
Beaverton	15,021	25,122	9,019	19,084
Cornelius	1,019	2,812	48	335
Durham	262	498	0	0
Fairview	2,921	5,689	635	2,745
Forest Grove	2,873	5,488	67	628
Gladstone	600	1,530	20	140
Gresham	16,817	23,753	3,146	9,695
Happy Valley	2,030	1,767	52	245
Hillsboro	14,812	58,247	9,758	20,338
Johnson City	168	180	0	0
King City	182	241	55	184
Lake Oswego	3,353	8,179	446	3,022
Maywood Park	27	5	0	0
Milwaukie	3,514	7,478	2,571	6,444
Oregon City	6,157	8,185	341	2,341
Portland	70,704	158,503	26,960	100,087
River Grove	(15)	41	0	0
Sherwood	5,010	8,156	1,108	3,585
Tigard	6,073	14,901	981	8,026
Troutdale	3,789	5,570	107	267
Tualatin	3,635	9,794	1,248	2,069
West Linn	2,577	2,114	0	594
Wilsonville	4,425	15,030	743	4,952
Wood Village	423	736	68	211
Clackamas County ³	19,530	42,685	1,661	13,886
Multnomah County	3,089	2,381	0	0
Washington County ³	54,999	52,578	13,273	25,450
	243,993	461,633		

¹ Based on Housing Needs Analysis. Applies to existing city limits as of June, 1996. Annexations to cities would include the city assuming responsibility for Target Capacity previously accommodated in unincorporated county.

² Mixed use areas are: Central City - about 250 persons per acre; regional centers - about 60 ppa; town centers 40 ppa.; station communities - about 45 ppa.; main streets - about 39 ppa.

³ Standards apply to the urban unincorporated portion of the county only. At the request of cities, Metro may also supply targets for planning areas for cities in addition to the existing boundary targets cited above.

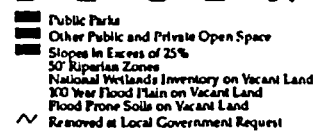
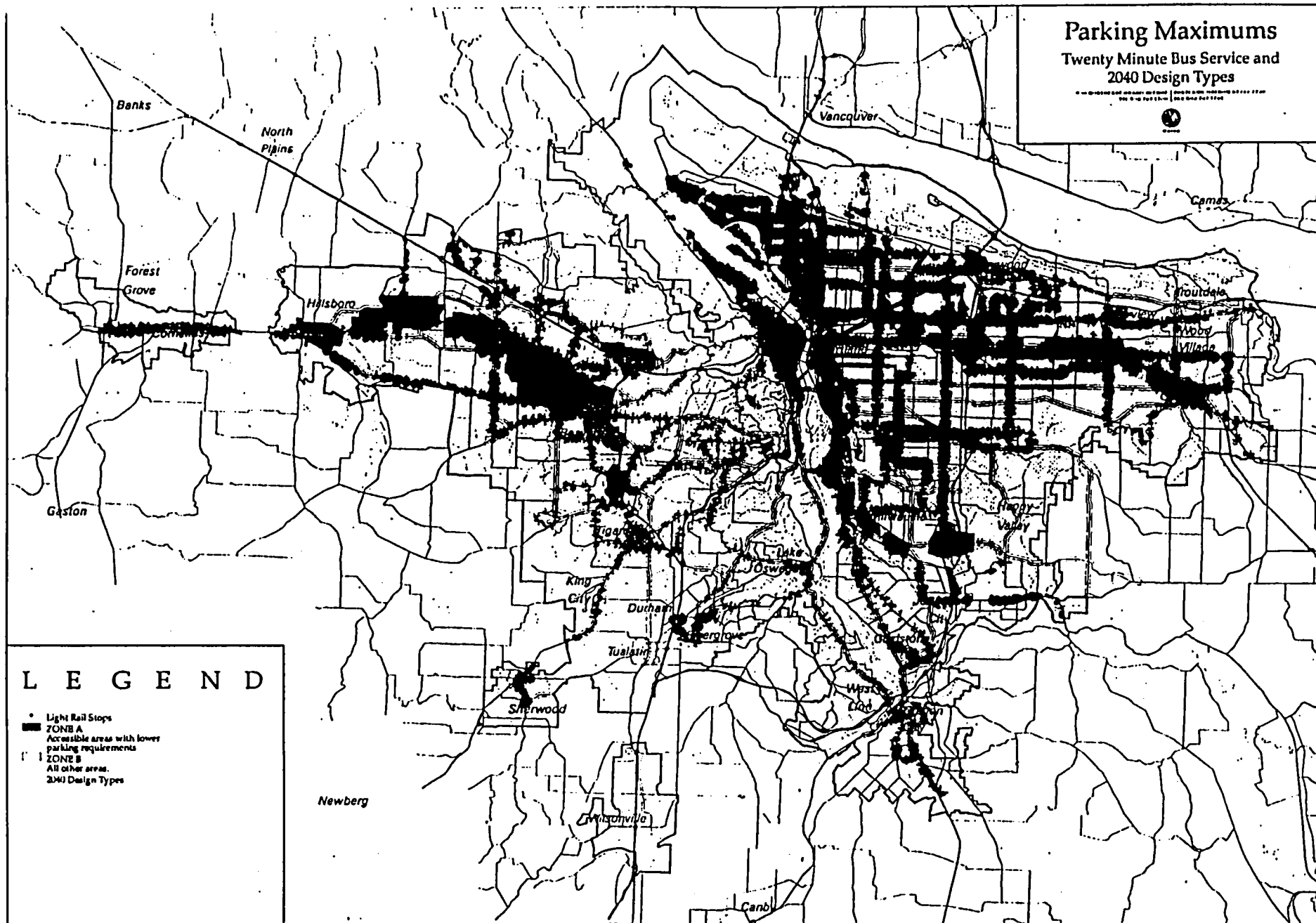


Table 2 - Regional Parking Ratios (parking ratios are based on spaces per 1,000 sq ft of gross leasable area unless otherwise stated)			
Land Use	Minimum Parking Requirements (See) Central City Transportation Management Plan for downtown Portland stds)	Maximum Permitted Parking - Zone A:	Maximum Permitted Parking Ratios - Zone B:
	Requirements may Not Exceed	Transit and Pedestrian Accessible Areas ¹	Rest of Region
General Office (includes Office Park, "Flex-Space", Government Office & misc. Services) (gsf)	2.7	3.4	4.1
Light Industrial Industrial Park Manufacturing (gsf)	1.6	None	None
Warehouse (gross square feet; parking ratios apply to warehouses 150,000 gsf or greater)	0.3	0.4	0.5
Schools: College/ University & High School (spaces/# of students and staff)	0.2	0.3	0.3
Tennis Racquetball Court	1.0	1.3	1.5
Sports Club/Recreation Facilities	4.3	5.4	6.5
Retail/Commercial, including shopping centers	4.1	5.1	6.2
Bank with Drive-In	4.3	5.4	6.5
Movie Theater (spaces/number of seats)	0.3	0.4	0.5
Fast Food with Drive Thru	9.9	12.4	14.9
Other Restaurants	15.3	19.1	23
Place of Worship (spaces/seats)	0.5	0.6	0.8
Medical/Dental Clinic	3.9	4.9	5.9
Residential Uses			
Hotel/Motel	1	none	none
Single Family Detached	1	none	none
Residential unit, less than 500 square feet per unit, one bedroom	1	none	none
Multi-family, townhouse, one bedroom	1.25	none	none
Multi-family, townhouse, two bedroom	1.5	none	none
Multi-family, townhouse, three bedroom	1.75	none	none

¹ Ratios for uses not included in this table would be determined by cities and counties. In the event that a local government proposes a different measure, for example, spaces per seating area for a restaurant instead of gross leasable area, Metro may grant approval upon a demonstration by the local government that the parking space requirement is substantially similar to the regional standard.

Twenty Minute Bus Service and 2040 Design Types

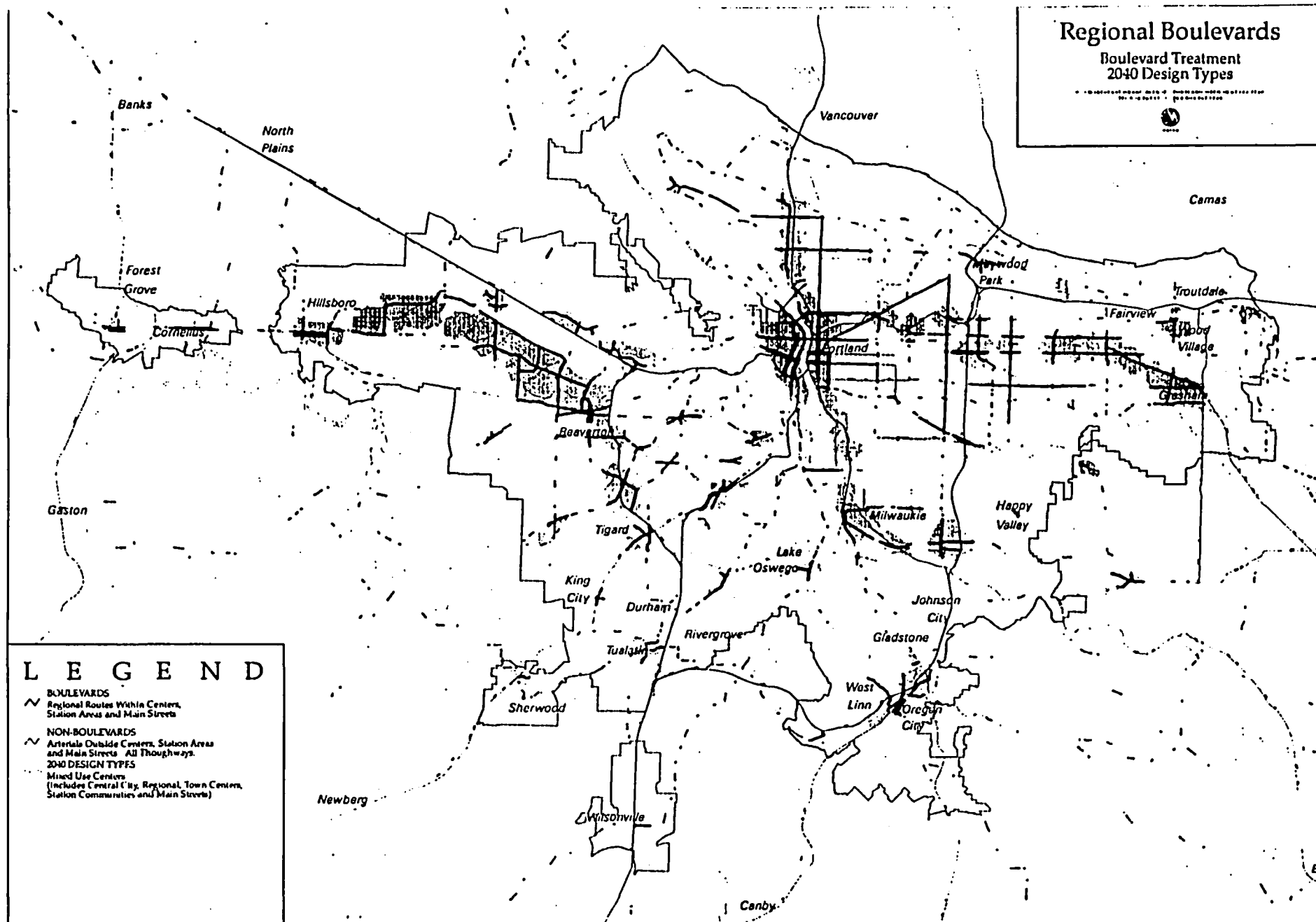
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[illegible]

Regional Boulevards

Boulevard Treatment
2040 Design Types

• Boulevard within center • Boulevard within station area • Boulevard within main street



LEGEND

- BOULEVARDS
 - Regional Routes Within Centers, Station Areas and Main Streets
- NON-BOULEVARDS
 - Arterials Outside Centers, Station Areas and Main Streets All Throughways
- 2040 DESIGN TYPES
 - Mixed Use Centers (Includes Central City, Regional Town Centers, Station Communities and Main Streets)

Appendix B: Metro Code 3.01 Concerning Urban Reserves and Expansion of the UGB

Adopted by the Metro Council by Ordinance 96-655E, March 6, 1997

Amendments to Metro Code 3.01

Title Section is amended as follows:

"URBAN GROWTH BOUNDARY AND URBAN RESERVE PROCEDURES

SECTIONS TITLE

- 3.01.005 Purpose**
- 3.01.010 Definitions**
- 3.01.012 Urban Reserves**
- 3.01.015 Legislative Amendment Procedures"**

Section 3.01.005(a), sentence is added at end as follows:

"... other than Goals 2 and 14. This chapter is also established to be used for the establishment and management of Urban Reserves, pursuant to OAR 660-21-000 to 660-21-100 and RUGGO Objective 22."

Section 3.01.005(c) is added as follows:

(c) The objectives of the Urban Reserves are to:

- (1) Identify sufficient land suitable for urbanization sufficient to accommodate the forecast needs for a 30 to 50 year interval, reevaluated at least every 15 years;
- (2) Limit the areas which are eligible to apply for inclusion to the Urban Growth Boundary consistent with ORS 197.298, and protect resource lands outside the urban reserve areas;
- (3) Protect lands designated as urban reserves for their eventual urbanization, and insure their efficient urbanization consistent with the 2040 Growth Concept, the RUGGOs and the Urban Growth Management Functional Plan;
- (4) Provide for coordination between cities, counties, school districts, and special districts for planning for the urban reserve areas;
- (5) Ensure a smooth transition to urban development by planning for general governance, public facilities, land uses, and planning for financing the capital needs of the urban development."

Section 3.01.010(z) is amended as follows:

"(z) "Urban reserve" means an area adjacent to the present UGB defined to be a priority location for any future UGB amendments when needed. Urban reserves are defined as the land likely to be needed including all developable land inside the current urban growth boundary, for a 30 to 50 year period."

Section 3.01.010 is amended to add an additional term and definition as follows:

"(e) 'First Tier Urban Reserves' means those urban reserves to be first urbanized because they can be most cost-effectively provided with urban services by affected cities and service districts as so designated and mapped in a Metro Council ordinance."

"(y) 'Special land need' means a specific type of identified land needed which complies with Goal 14, Factors 1 and 2 that cannot be reasonably accommodated on first tier urban reserve land."

Section 3.01.012 is added as follows:

"3.01.012 Urban Reserve Areas

(a) Purpose

The purpose of this section is to comply with ORS 197.298 by identifying lands designated urban reserve land by Metro as the first priority land for inclusion in the Metro Urban Growth Boundary.

(b) Amount of Land Required

- (1) The areas designated as urban reserves shall be sufficient to accommodate expected urban development for a 30 to 50 year period, including an estimate of all potential developable and redevelopable land in the urban area.
- (2) Metro shall estimate the capacity of the urban reserves consistent with the procedures for estimating capacity of the urban area as defined in Section 3.01.010.
- (3) The minimum residential density to be used in calculating the need for urban reserves, estimating the capacity of the areas designated as urban reserves and required in concept plans shall be at least 10 dwelling units per net developable acre.
- (4) Metro shall designate the amount of urban reserves estimated to accommodate the forecast need.
- (5) Metro may designate a portion of the land required for urban reserves in order to phase designation of urban reserves.

(c) Mapped Urban Reserves

- (1) Metro has designated as urban reserve areas those lands indicated on the 2040 Growth Concept map as part of the Regional Urban Growth Goals and Objectives.
- (2) Urban growth boundary amendments shall include only land designated as urban reserves unless designated urban reserve lands are inadequate to meet the need. If land designated as urban reserves is inadequate to meet the need, the priorities in ORS 197.298 shall be followed.

- (3) Within 1 year of Metro Council adoption of the urban reserve ordinance, the Metro Council shall modify the Metro 2040 Growth Concept to designate regional design types consistent with the Metro 2040 Growth Concept for all designated urban reserves.

(d) First Tier

First tier urban reserves shall be included in the Metro Urban Growth Boundary prior to other urban reserves unless a special land need is identified which cannot be reasonably accommodated on first tier urban reserves.

(e) Urban Reserve Plan Required

A conceptual land use plan and concept map which demonstrates compliance with the RUGGO and the 2040 Growth Concept design types and any applicable functional plan provisions shall be required for all major amendment applications and legislative amendments of the urban growth boundary including at least the following, when applicable:

- (1) Provision for either annexation to a city and any necessary service districts at the time of the final approval of the urban growth boundary amendment consistent with 3.01.065 or an applicable city-county planning area agreement which requires at least the following:

(A) City or county agreement to adopt comprehensive plan provisions for the lands added to the urban growth boundary which comply with all requirements of urban reserve plan conditions of the urban growth boundary approval;

(B) City and county agreement that lands added to the urban growth boundary shall be rezoned for urban development only upon annexation or agreement for delayed annexation to the city and any necessary service district identified in the approved Concept Plan or incorporation as a new city; and

(C) County agreement that, prior to annexation to the city and any necessary service districts, rural zoning that ensures a range of opportunities for the orderly, economic, and efficient provision of urban services when these lands are included in the urban growth boundary remains in place until city annexation and the adoption of urban zoning.

- (2) Notwithstanding (1) above, the Metro Council may approve a major or legislative amendment to the urban growth boundary if the proposed amendment is required to assist the region to comply with the 2040 Growth Concept or to assist the region, a city or county in demonstrating compliance with statute, rule, or statewide goal requirements for land within the urban growth boundary. These requirements include HB 2709, ORS 197.303, the statewide planning goals and Regional Urban Growth Goals and Objectives. An urban services agreement consistent with ORS 195.065 shall be required as a condition of approval for any amendment under this subsection.

- (3) The areas of Urban Reserve Study Areas #11, 14 and 65 are so geographically distant from existing city limits that annexation to a city is difficult to achieve. If the county and affected city and any

necessary service districts have signed an urban service agreement or an urban reserve agreement coordinating urban services for the area, then the requirements for annexation to a city in (1)(B) and (1)(C) above shall not apply.

- (4) Provision for residential densities of at least 10 dwelling units per net developable residential acre.
- (5) Demonstrable measures that will provide a diversity of housing stock that will fulfill needed housing requirements as defined by ORS 197.303. Measures may include, but are not limited to, implementation of recommendations in Title 7 of the Urban Growth Management Functional Plan.
- (6) Demonstration of how residential developments will include, without public subsidy, housing affordable to households with incomes at or below area median incomes for home ownership and at or below 80% of area median incomes for rental as defined by U.S. Department of Housing and Urban Development for the adjacent urban jurisdiction. Public subsidies shall not be interpreted to mean the following: density bonuses, streamlined permitting processes, extensions to the time at which systems development charges (SDCs) and other fees are collected, and other exercises of the regulatory and zoning powers.
- (7) Provision for sufficient commercial and industrial development for the needs of the area to be developed and the needs of adjacent land inside the urban growth boundary consistent with 2040 Growth Concept design types.
- (8) A conceptual transportation plan consistent with the Regional Transportation Plan, and consistent with protection of natural resources as required by Metro functional plans.
- (9) Identification, mapping and a funding strategy for protecting areas from development due to wildlife habitat protection, water quality enhancement and mitigation, and natural hazards mitigation. A natural resource protection plan to protect fish and wildlife habitat, water quality enhancement areas and natural hazard areas shall be completed as part of the comprehensive plan and zoning for lands added to the urban growth boundary prior to urban development. The plan shall include cost estimates to implement a strategy to fund resource protection.
- (10) A conceptual public facilities and services plan, including rough cost estimates for the provision of sewer, water, storm drainage, transportation, fire and police protection facilities and parks, including financing strategy for those costs.
- (11) A conceptual school plan which provides for the amount of land and improvements needed for school facilities. Estimates of the need shall be coordinated among affected school districts, the affected city or county, and affected special districts consistent with the procedures in ORS 195.110(3), (4) and (7).
- (12) An Urban Reserve Plan map showing, at least, the following, when applicable:

- (A) Major roadway connections and public facilities;
 - (B) Location of unbuildable lands including but not limited to steep slopes, wetlands, floodplains and riparian areas;
 - (C) General locations for commercial and industrial lands;
 - (D) General locations for single and multi-family housing;
 - (E) General locations for public open space, plazas and neighborhood centers; and
 - (F) General locations or alternative locations for any needed school, park or fire hall sites.
- (13) The urban reserve plan shall be coordinated among the city, county, school district and other service districts, including a dispute resolution process with an MPAC report and public hearing consistent with RUGGO Objective 5.3. The urban reserve plan shall be considered for local approval by the affected city or by the county, if subsection (3), above, applies in coordination with any affected service district and/or school district. Then the Metro Council shall consider final adoption of the plan.

Section 3.01.015(d) is added as follows:

"(d) Metro shall consult with the appropriate city, county, school and service districts to identify lands inside first tier urban reserves which are the most capable of being served by extension of service from existing service providers for the purpose of preparing concept plans in advance for any short term need for inclusion of additional lands in the urban growth boundary."

Section 3.01.015(d) is amended as follows:

"(e) Legislative amendment decisions shall be accompanied by findings explaining why the UGB amendment complies with applicable state law and statewide goals as interpreted by section 3.01.020 and subsequent appellate decisions and including applicable concept plans and maps demonstrating consistency with RUGGO including the 2040 Growth Concept and compliance with any applicable functional plan provisions."

Section 3.01.020(a) is amended as follows:

"The purpose of this section is to address ORS 197.298, Goals 2 and 14 of the statewide planning goals and RUGGO . . . Compliance with this section shall constitute compliance with ORS 197.298, statewide planning Goals 2 and 14 and the Regional Urban Growth Goals and Objectives."

Section 3.01.020(b), last sentence, is amended as follows:

"For legislative amendments, if need has been addressed, the district shall demonstrate that the priorities of ORS 197.298 have been followed and that the recommended site was better than alternative sites, balancing factors 3 through 7."

Section 3.01.025(a) is amended as follows:

"(a) All major amendments shall be solely upon lands designated in urban reserves, when designated consistent with 3.01.012. All major amendments shall demonstrate compliance with the following:

- (1) The criteria in section 3.01.030 of this Code as well as the procedures in OAR 660-18-000;
- (2) Notice of public hearings for major amendments as described in section 3.01.050;
- (3) Public hearings procedures as described in sections 3.01.055 through 3.01.065;
- (4) the urban reserve plan requirements in section 3.01.012(e); and
- (5) Final action on major amendments shall be taken as described in section 3.01.070."

Section 3.01.030(a) is amended as follows:

"The purpose of this section is to address ORS 197.298, Goals 2 and 14 of the statewide planning goals and RUGGO . . . and further define ORS 197.298, Goals 2 and 14 . . . compliance with ORS 197.298, statewide planning Goals 2 and 14 and the Regional Urban Growth Goals and Objectives."

Section 3.01.030(b) is amended by adding the following sentence prior to 3.01.030(b)(1):

"Demonstration that the priorities of ORS 197.298 have been followed is required in addition to the application of factors 3 through 7."

Section 3.01.040(b), (c) are added as follows:

"(b) The district shall attach the approved urban reserve plan and map required at 3.01.012(e) as conditions of approval to assure compliance of developed uses with the 2040 Growth Concept and any applicable functional plan provisions.

(c) The district may determine that certain conditions of approval are so important to inclusion of land into the urban growth boundary that if those conditions are not met that the urban growth boundary approval may be revoked automatically or by action of the district."

Section 3.01.065(f) is amended as follows:

"(f) When the council acts to approve in whole or in part a petition by requiring annexation to a city and/or service district(s) and Tri-Met and whenever a petition includes land outside the district:

- (1) Such action shall be by resolution expressing intent to amend the UGB if and when the affected property is annexed to the district within six months of the date of adoption of the Resolution.
- (2) The council shall take final action, as provided for in paragraphs (c) and (d) of this section, within 30 calendar days of notice that all required annexations to a city, service district(s) and the district have been approved."

Appendix C: Future Vision

I HEREBY CERTIFY THAT THE FOREGOING
IS A COMPLETE AND EXACT COPY OF THE
ORIGINAL THEREOF.

Guthy Ross
Clerk of the Metro Council

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ADOPTING
A FUTURE VISION FOR THE
REGION

) ORDINANCE NO. 95-604A
)
) Introduced by Councilor
) Susan McLain

WHEREAS, The voters of the Metro region adopted the 1992 Metro Charter in November, 1992; and

WHEREAS, The Charter provides for the creation of a Future Vision Commission and adoption of a Future Vision no later than July 1, 1995; and

WHEREAS, The Charter calls for the Future Vision to be "a conceptual statement that indicates population levels and settlement patterns that the region can accommodate within the carrying capacity of the land, water and air resources of the region, and its educational and economic resources, and that achieves a desired quality of life:" and

WHEREAS, The Charter further requires the Future Vision to be "a long-term, visionary outlook for at least a 50-year period" which is to address, "(1) use, restoration and preservation of regional land and natural resources for the benefit of present and future generations, (2) how and where to accommodate the population growth for the region while maintaining a desired quality of life for its residents, and (3) how to develop new communities and additions to the existing urban areas in well-planned ways;" and

WHEREAS, The Future Vision is not a regulatory document; and

WHEREAS, Resolution 93-1755, adopted on February 23, 1993, established the framework and appointing authorities for creating the Future Vision Commission; and

WHEREAS, Future Vision Commission members were appointed by adoption of Resolution 93-1801, by MPAC appointment, and by actions of the Governors of Oregon and Washington; and

WHEREAS, The Future Vision Commission met for over eighteen months, reviewed available materials, heard from many authorities, and commissioned four reports on jobs, carrying capacity, settlement patterns, and education; and

WHEREAS, The Future Vision Commission issued its final report on March 4, 1995, which deals with Charter-required matters as well as providing valuable suggestions for how to achieve the Vision; and

WHEREAS, The Future Vision is to be part of an ongoing regional planning process; and

WHEREAS, The Council and Future Vision Commission held a series of public hearings throughout the region to receive public testimony on the Commission's final report, in order to give the Council guidance in adopting the region's Future Vision; now, therefore,

THE METRO COUNCIL ORDAINS AS FOLLOWS:

1. Pursuant to Section 5(1) of the 1992 Metro Charter, the Future Vision for the region, attached as Exhibit A and including the Future Vision map, is adopted.

2. Ideas and suggestions from the Future Vision Commission for implementing the Future Vision and achieving its goals are attached as Exhibit B.


3. The final report of the Future Vision Commission, attached as Exhibit C, is accepted.

4. The Future Vision is not a regulatory document, and has no effect that would allow court or agency review of it. The Regional Framework Plan required by the Charter shall describe its relationship to the Future Vision. The Regional Framework Plan is not required by the Charter or by this ordinance to comply with or conform to the Future Vision.

5. The Future Vision shall be completely reviewed and revised no later than July 1, 2010, in a manner prescribed by ordinance and in conformance with the terms of the Metro Charter.

ADOPTED by the Metro Council this 15 day of June, 1995.

ATTEST:


Recording Secretary

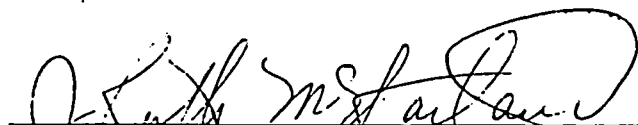

J. Ruth McFarland, Presiding Officer

EXHIBIT A

FUTURE VISION

Our ecological and economic region goes beyond Metro's boundaries and stretches from the Cascades to the Coast Range, and from Longview to Salem. Any vision for a territory as large and diverse as this must be regarded as both ambitious and a work-in-progress: it is a first step in developing policies, plans, and actions that serve our bi-state region and all its people.

While Metro recognizes that it has no control over surrounding jurisdictions and is not responsible for the provision of public safety and other social services, the ability to successfully manage growth within this region is dependent on and impacts each of these.

Future Vision is mandated by Metro's 1992 Charter. It is not a regulatory document; rather it is a standard against which to gauge progress toward maintaining a livable region. It is based on a number of core values essential to shaping our future. As a region:

- We value taking purposeful action to advance our aspirations for this region, realizing that we should act to meet our needs today in a manner that does not limit or eliminate the ability of future generations to meet their needs and enjoy this landscape we are privileged to inhabit.
- We value the greatest possible individual liberty in politics, economics, lifestyle, belief, and conscience, with the understanding that this liberty cannot be fully realized unless accompanied by shared commitments for community, civic involvement, and a healthy environment.
- We value our regional identity and sense of place, and celebrate the identity and accomplishments of our urban neighborhoods and suburban and rural communities.
- We value vibrant cities that are an inspiration and a crucial resource for commerce, cultural activities, politics, and community building.

- We value a healthy economy that provides stable family-wage jobs. We recognize that our economic well-being depends on unimpaired and sustainable natural ecosystems, and suitable social mechanisms to ensure dignity and equity for all, with compassion and adequate income for those in need.
- We value the conservation, restoration, and preservation of natural and historic landscapes.
- We value a life close to nature incorporated in the urban landscape.
- We value nature for its own sake, and recognize our responsibility as stewards of the region's natural resources.
- We value meeting the needs of our communities through grass-roots efforts in harmony with the collective interest of our regional community.
- We value participatory decision making which harnesses the creativity inherent in a wide range of views.
- We value a cultural atmosphere and public policies that will ensure that every child in every community enjoys the greatest possible opportunities to fulfill his or her potential in life; as a high priority, every child, regardless of income, has the opportunity to engage in the literary, visual, and performing arts in community centers.

REGIONAL VISION STATEMENT

EACH INDIVIDUAL:

As inhabitants of this bi-state region, we are committed to the development of each individual as a productive, effective member of society. This region must make clear and unambiguous commitments to each individual in order that we all may have a vibrant, healthy place to live. We seek the full participation of individuals in the prosperity of this region, accompanied by acceptance of their responsibility for stewardship of the community and region. Our vision statements for Each Individual are:

53 • CHILDREN - In 2045, the welfare of children is of critical importance to our well-being.
54 Creating and sustaining public and private initiatives that support family life are among
55 our highest priorities.

56 • EDUCATION - In 2045, education, in its broadest definition, stands as the core of our
57 commitment to each other. Life-long learning is the critical ingredient that enables the
58 residents of this region to meet the responsibilities of citizenship, to gain pleasure from a
59 rich cultural and social life, and to adapt to new ideas, new technologies, and changing
60 economic conditions. Our commitment to education is a commitment to equipping all
61 people with the means not only to survive, but to prosper.

62 • PARTICIPATION - In 2045, all residents, old and young, rich and poor, men and
63 women, minority and majority, are supported and encouraged to be well-informed and
64 active participants in the civic life of their communities and the bi-state region. Ours is a
65 region that thrives on interaction and engagement of its people to achieve community
66 objectives.

67
68 **OUR SOCIETY:**

69 The ability to work together is the hallmark of great communities and flourishing societies.
70 Our vision statements for Our Society are:

71 • VITAL COMMUNITIES - In 2045, communities throughout the bi-state region are
72 economically vital, socially healthy and responsive to the needs of their residents.
73 Government initiatives and services have been developed to empower individual
74 communities to actively meet the needs of their residents. The economic life of the
75 community is inseparable from its social and civic life.

76 • SAFETY - In 2045, personal safety within communities and throughout the region is
77 commonly expected as well as a shared responsibility involving citizens and all government
78 agencies. Our definition of personal safety extends from the elimination of prejudice to the

79 physical protection of life and property from criminal harm, to hazard mitigation and
80 preparation for and response to natural disasters.

81 • **ECONOMY** - In 2045, our bi-state regional economy is dynamic and diverse, with
82 urban and rural economies linked in a common frame. Planning and governmental action
83 have helped create conditions that support the development of family wage jobs in
84 accessible centers throughout the region.

85 • **CIVIC LIFE** - In 2045, citizens embrace responsibility for sustaining a rich, inclusive
86 civic life. Political leadership is valued and recognized for serving community life.

87 • **DIVERSITY** - In 2045, our communities are known for their openness and acceptance.
88 This region is distinguished by its ability to honor diversity in a manner that leads to civic
89 cohesion.

90 • **ROOTS** - In 2045, our history serves us well, with the lessons of the past remembered
91 and incorporated in our strategies for the future. Knowledge of our cultural history helps
92 ground social and public policy in the natural heritage we depend on and value.

93 **OUR PLACE:**

94 We are committed to preserving the physical landscape of the region, acknowledging the
95 settlement patterns that have developed within it, and supporting the economy that
96 continues to evolve. We live in a varied and beautiful landscape. Our place sits at the
97 confluence of great rivers—the Columbia, Lewis, Sandy, and the Willamette and its
98 tributaries, which dominate the landscape. This is a region of water, volcanic buttes, and
99 forest-clad mountains and hills. Our vision statements for Our Place are:

- 100 • **A LIFE IN NATURE** - In 2045, this region is recognized as a unique ecosystem, known
101 for the intelligent integration of urban and rural development which seeks to:
102 – improve air and water quality, and increase biodiversity;

103 – protect views of Mt. Hood, Mt. St. Helens, Mt. Rainier, Mt. Adams, Mt.
104 Jefferson, and other Cascade and coastal peaks;
105 – provide Greenspaces and parks within walking distance of every household;
106 – assure a close and supportive relationship among natural resources, landscape, the
107 built environment, and the economy of the region; and
108 – restore ecosystems, complemented by planning and development initiatives that
109 preserve the fruits of those labors.

110 • **RURAL LAND** - In 2045, rural land shapes our sense of place by keeping our cities
111 separate from one another, protecting natural resource lands and supporting viable farm
112 and forest resource enterprises, and keeping our citizens close to nature, farms, forests, and
113 other resource lands and activities.

114 • **DOWNTOWNS** - In 2045, downtown Portland continues to serve an important
115 defining role for the entire region. Historic urban centers such as Ridgefield, Camas,
116 Vancouver, Gresham, St. Helens, Beaverton, Hillsboro, Lake Oswego, Oregon City,
117 Molalla, Woodburn, and others throughout our bi-state region are an important part of
118 sub-regional identity. In addition, investment, both public and private, is focused in our
119 historic and our new urban centers throughout the region. This pattern of investment and
120 renewal continues to be an important part of our strategy for building and maintaining
121 healthy communities.

122 • **VARIETY IN OUR COMMUNITIES AND NEIGHBORHOODS** - In 2045, our
123 region is composed of numerous distinct communities. Each community provides a wide
124 variety of healthy, appealing, and affordable housing and neighborhood choices. They are
125 physically compact and have distinct identities and boundaries. Public space exists in every
126 community, and serves as the stage for a rich and productive civic dialogue.

127 • **WALKING** - In 2045, residents of this region can shop, play, and socialize by walking
128 or biking within their neighborhoods. Walking, biking, or using transit are attractive

129 alternatives for a wide range of trips within neighborhoods, between important regional
130 centers, and outside of the urban area. This region is known for the utility of its non-auto
131 transportation alternatives.

132 • LINKAGES - In 2045, goods, materials, and information move easily throughout the
133 bi-state region. Manufacturing, distribution, and office employment centers are linked to
134 the transportation and communication systems in a comprehensive and coordinated
135 manner.

136 • EQUITY - In 2045, the tradeoffs associated with growth and change have been fairly
137 distributed throughout the region. Our commitment to managing growth is matched by
138 an equal commitment to social equity for the communities of today and tomorrow. The
139 true environmental and social cost of new growth has been paid by those, both new to the
140 region and already present, receiving the benefits of that new growth.

141 • GROWTH MANAGEMENT - In 2045, growth in the region has occurred, but it has
142 been managed so our citizens have maintained or improved their quality of life. Our
143 objective has been and still is to live in great communities, not merely big ones. Our
144 desire for separate communities is reflected in the Future Vision Map which depicts
145 settlement patterns. Carrying capacity and sustainability concepts help measure and track
146 progress toward maintaining a desired quality of life but they can not be used to set
147 population limits. Our successes in balancing our region's growth with its livability come
148 from a commitment to ongoing reviews of our past achievements combined with
149 appropriate actions to maintain and enhance our quality of life. The Values and Vision
150 Statements herein should be used to guide the establishment of new communities.

151 SUGGESTIONS:

152 Clearly, Metro has a critical role to play as planner, convener, monitor, and leader.
153 However, as in the past, the success we achieve in the future will be a collaborative
154 accomplishment. We have an unparalleled opportunity to create an environment of

155 consensus and predictability in the region for what Metro's planning and policy making
156 ought to accomplish. The full report of the Future Vision Commission contains
157 suggestions for acting on each vision statement.

158 Perhaps the most critical implementing step is Metro's commitment to a continuing
159 dialogue with the citizens of our greater region to address 21st century problems and issues.
160 An annual review of the region will allow us to promote, lead, and engage citizens in an
161 ongoing discussion of our future. The relevant question is not "when" carrying capacity
162 will be exceeded, but "how" we will collectively restore, maintain, and enhance the
163 qualities of the region.

164 As a region, our aspiration is to match the spectacular nature of our landscape with an
165 equally spectacular and regular civic celebration of our sense of the region—truly our sense
166 of place. For it is only through the creation of a shared and far-reaching culture of this
167 place that our accomplishments will match our aspirations. Future Vision is a work in
168 progress – a challenge to future generations to think ahead and make decisions.

4

Appendix D: Parks, Open Space and Recreation

Metro has taken significant steps to establish a regional system of parks, natural areas, open spaces, trails and greenways. However, there are additional measures that can be taken to build on this progress.

- Metro needs to develop an adequate and stable funding base in order to better fulfill its responsibilities for assembling and managing significant components of the publicly owned portion of the Regional System. A long range funding needs analysis should be considered by the Metro Council. The Council may then begin policy discussions as to how best to address funding needs of the Regional System.
- Metro should work with other park providers to better define roles and responsibilities related to the protection and management of the regional system. Cooperation is essential for effective protection and management of the regional system.
- The Open Spaces Acquisition Refinement Process began to articulate specific protection objectives and boundaries for a subset of regionally significant natural areas and open spaces, and interconnecting trail, greenway, and wildlife corridors. This process must be completed for all priority areas identified in the *Metropolitan Greenspaces Master Plan* and will involve a variety of inventories and technical studies as identified in the Implications Section of this chapter.
- The *Urban Growth Management Functional Plan* began the process of developing performance standards to protect water quality in the region's rivers and streams and for floodplain management. A model zoning ordinance is being prepared to apply some standards to local comprehensive plans and implementing regulations. These will complement the effort to protect the Regional System. However, additional work is needed to assure healthy aquatic systems and compliance with state and federal water quality standards. The Watershed Management and Regional Water Quality Chapter of this Framework Plan should be reviewed for a discussion of these issues.
- The *Urban Growth Management Functional Plan* also calls for protection of Fish and Wildlife Habitat Conservation Areas. However, relevant provisions are referenced in the *Functional Plan* as recommendations to local governments, not as requirements. Much work also needs to be done to define the boundaries of Fish and Wildlife Habitat Conservation Areas and to develop performance standards for their protection. Among the required work projects is a Regional Goal 5 Inventory and Economic, Social, Environmental and Energy (ESEE) consequences analysis. There is a very direct relationship between this component of the *Functional Plan* and protection of the Regional System of Parks, Natural Areas, Open Spaces, Trails and Greenways.

In order to implement the policies listed in Chapter 3, the following actions will be included in future Metro programs and/or implemented through joint agreements between Metro and local parks, open space and recreational providers and/or through a Metro functional plan which may include recommendations and requirements for local implementation.

The following is a discussion of policy implementation and regulation issues related to the provision of parks, open spaces, and recreational facilities by Metro and local governments.

Inventory and Identification of the Regional System of Parks, Natural Areas, Open Spaces, Trails and Greenways- Policy 3.1, 3.1.1, 3.1.2, 3.1.3

Metro will lead the effort to inventory and identify regionally significant parks, natural areas, open spaces, trails and greenways. This inventory will be based on scientific and social data, and will result in the identification of areas that protect water quality, fish, wildlife, and botanical diversity, and provide opportunities for natural resource dependent recreation. To accomplish this Metro shall:

1. Update the regional natural areas inventory and mapping project every five to ten years, including field verification and data collection as resources allow.
2. Use local park master plans and comprehensive land use plans to assist in the inventory process.
3. Identify corridors that provide or have the potential to provide connections between sites for wildlife and people
4. Inventory surplus government lands and tax-foreclosed properties within each jurisdiction on a regular basis and evaluate their potential for inclusion in the Regional System of Parks, Natural Areas, Open Spaces, Trails and Greenways, or local park systems.
5. Identify portions of the region deficient in natural areas and identify opportunities for major restoration programs in these deficient areas. Criteria to be used in assessing restoration potential include:

Scientific Criteria

- Feasibility of ecological restoration
- Connectivity potential
- Sustainability of ecosystem relative to adjacent land use
- Significance of contribution to other beneficial environmental functions (i.e., water quantity/quality, floodplain protection)

Social Criteria

- Public accessibility.
- Linkages to regional and local trails systems
- Community support for projects
- Consistency with land use plans
- Ownership

Local government cooperation will be needed to help Metro identify and inventory the regional system of parks, natural areas, open spaces, trails and greenways. It is recommended that local Governments:

1. Assist in identifying corridors to link the Regional System of Parks, Natural Areas, Open Spaces, Trails and Greenways.
2. Assist in the development and application of criteria to determine Regional Significance of existing locally owned parks, natural areas, trails and greenways.

Protection of a Regional System of Parks, Natural Areas, Open Spaces, Trails and Greenways- Policy 3.2, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8

Metro will protect the regional system by adopting a functional plan and by using existing and new tools. Metro shall:

- Adopt a functional plan which:
 - identifies and delineates the components of a regional system of interconnected Parks, Natural Areas, Open Spaces, Trails and Greenways for wildlife and people (the "Regional System"). Both scientific and social criteria will be considered in selecting components.
 - identifies and delineates natural corridors which link components of the regional system.
 - provides guidance to local governments to achieve basic regulatory protection of privately owned components of the Regional System. Subject to the Oregon Forest Practice Statutes, an Urban Forest Practices Ordinance should be considered as a strategy which could protect natural resources values while allowing sustained harvest from privately owned components of the regional system.
- Include a regional trails component in the Regional Transportation Plan.
- Work with local governments, citizens, and landowners to protect and acquire components of the regional system through a variety of strategies including:
 - Development and implementation of programs that support purchase of land in fee simple or conservation easement interest, encourage gifts and dedication of land, enable transfer of ownership or management authority

including but not limited to surplus and tax foreclosed properties, mitigation projects, reclaimed and restored sites.

- Advocate for state and federal funding support.
- Develop and distribute educational materials and provide opportunities for owners of components of the regional system to learn about and pursue appropriate land management practices and stewardship on a voluntary basis. Provide technical assistance related to natural resource management issues as financial and staff resources allow
- Develop and implement incentives which encourage protection of natural resources on components of the regional system including restoration and enhancement grants, public recognition, tax reduction options and transfer of development rights.
- Advocate for the protection, restoration and enhancement of regionally significant natural, cultural and recreational resources at the local, state and federal level.
- From time-to-time convene focus groups to generate and/or update urban designs and best management practices that protect components of the regional system.

To protect the regional system, local government will be encouraged to acknowledge Metro's functional plan and local Governments shall:

- Acknowledge the regional system by amending local comprehensive plans and related land use ordinances.
- Seek to avoid fragmentation of components of the regional system by transportation and utility rights of way and easements.

Local Governments are encouraged to:

- Identify and establish local systems of parks, natural areas, open spaces and trails which connect neighborhoods to components of the regional system.
- Assist with the identification of components of the regional system.
- Participate in acquisition, education and incentive efforts.
- Assist and coordinate land dedications through local development processes.

Local Governments and Metro should:

- Encourage and/or initiate an effort to revive, update, invigorate and implement the vision of the Willamette River Greenway.

Management of Publicly-Owned Portions of the Regional System of Parks, Natural Areas, Open Spaces, Trails and Greenways. Policy 3.3, 3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.3.5.

Metro plans to acquire and manage the regional system of parks, natural areas, open spaces, trails, and greenways. To manage the regional system, Metro will need to prepare master plans/ management plans to balance protection and provide recreational and educational opportunities for citizens. To accomplish these goals Metro shall:

- Select and prioritize, with the assistance of local governments and citizens, components of the Regional System appropriate for acquisition.
 - Criteria which will be considered in natural area site selection include: habitat value, contributions to water quality protection, unique natural features, relative rarity of ecosystem, size, restoration potential, linkage to other components of the regional system, scenic resources, public accessibility, recreation potential, education potential, public support, partnership potential, cultural resource value, imminent loss of opportunity.
 - Criteria which will be considered in trail selection include: inclusion in local comprehensive plans and parks master plans, potential to create a loop trail, linkage among components of the Regional System and to inter-regional trails, closing gaps in the Regional System, length and continuity of trail, value to wildlife, local support, imminent loss of opportunity, abandoned rail corridors, access to river routes.
- Provide local governments the opportunity to acquire components of the Regional System with their financial resources.
- Provide local governments and other governments agencies the opportunity to transfer ownership and/or management responsibility of components of the Regional system to Metro.
- Develop and adopt master/management plans to guide development, operation, maintenance and other related activities at Metro owned or managed components of the Regional System prior to opening for formal public use. Master/Management plans shall seek to balance the protection and enhancement of natural resource values with the provision of facilities and programs for public use and enjoyment. The *State Comprehensive Outdoor Recreation Plan* shall be considered in the development of master/management plans.
- Provide, primarily, natural resource-dependent recreation and education opportunities at components of the Regional System. Examples of natural resource-dependent recreation and education include:
 - hiking, walking, jogging
 - biking, mountain biking
 - picnicking (group/family)
 - motorized boating, water skiing
 - non-motorized boating (canoe, raft, kayak, etc.)

- angling
- wildlife viewing
- camping (group/family)
- photography
- golf
- cultural/environmental education and interpretive programs

Examples of potential facilities include:

- trails (surfaced and natural)
- picnic areas (including shelters)
- roads/parking
- sanitation facilities
- water, electric, and other utilities
- boat ramps/boat rental/marina
- accessible angling docks
- wildlife viewing blinds
- campgrounds
- golf courses
- related maintenance, support and public safety facilities
- nature centers/public information kiosks
- historic structures
- Determine the funding needs, required funding levels, size, timing and source of funding to support Metro managed components of the Regional System. A stable funding source should be identified and implemented to supplement user fee and entrepreneurial resources and to support acquisition, restoration, planning, development, operation, maintenance, incentives, and educational programs.
- Encourage and pursue gifts of land, cash, other assets, services, labor, etc. to support the protection, acquisition, development, operation and maintenance of components of the Regional System. The creation of a regional parks and greenspaces foundation should be pursued to facilitate this effort.
- Pursue public and private grants and advocate for the creation and funding of grant and aid programs for local and regional parks at the state and federal level to supplement local and regional investments.
- Provide financial assistance to local governments and other appropriate organizations for acquisition, restoration and development of local systems of parks, natural areas, open space, greenways and trails and related programs that support or compliment the Regional System, as financial resources allow.

Local Governments shall:

- Determine the propriety of continued ownership and management of components of the Regional System or the acquisition of additional privately owned components of the Regional System with local financial resources.
- Develop and adopt master/management plans to guide development, operation, maintenance and other related activities at local government managed components of the Regional System prior to opening for formal public use. Master/Management plans shall seek to balance the protection and enhancement of natural resource values with the provision of facilities and programs for public use and enjoyment. The *State Comprehensive Outdoor Recreation Plan* shall be considered in the development of master/management plans.
- Provide, primarily, natural resource-dependent recreation and education opportunities at local government owned and managed components of the Regional System.
- Determine the funding needs and levels as well as size, timing and source of funding mechanisms which support components of the Regional System owned and managed by local governments.
- Consider partnerships and cooperative efforts with Metro to enhance protection, acquisition, planning, development, operations and maintenance efficiencies, management consistency, funding equity and public use/enjoyment of components of the Regional System.

The Provision of Community and Neighborhood Parks, Open Spaces, Trails and Recreation Programs. Policy 3.5, 3.5.1, 3.5.2.

Metro recognizes local governments and park and recreational districts as the primary provider of community parks, neighborhood parks, recreational centers, sports fields and associated recreational programs and locally significant open space, trails and greenways for their citizens. Local Governments and park and recreation districts are encouraged to:

- Develop, adopt, and implement Master Plans for local systems of community parks, neighborhood parks, open spaces, greenways, recreation centers, sports fields and associated recreation programs which:
 - are responsive to citizen needs and desires
 - result in the provision of a park, trail, sports field, recreation center or open space within one half of one mile of all residents.
 - consider the State Comprehensive Outdoor Recreation Plan (SCORP)
 - link neighborhoods with the regional system
- Pursue, secure and appropriate sufficient funds to implement programs to plan, acquire, develop, operate and maintain local systems of parks, open space, greenways, recreation centers, sports fields and associated recreation programs.

- Require new developments to protect important natural resources and dedicate lands to provide recreational opportunities consistent with local system master plans.
- Design park and recreation facilities in such a way as to facilitate their security and policing.
- Work cooperatively with school districts to fulfill recreation needs for such facilities as sports fields, indoor basketball, volleyball, and other courts and facilities, swimming pools, and joint use of facilities for recreation, day care and community center programs.
- Encourage or require private open space and recreational facilities in high density residential projects, mixed use projects and major employment complexes to meet a portion of the open space and recreational needs of residents, employees and visitors.
- Encourage water districts, utility companies and other public agencies to provide for appropriate recreational uses of their respective properties and right-of-ways.

Metro will create a parks deficiency map, and provide technical assistance to local cooperators. Subject to financial and staff resource availability and as requested, Metro shall:

- Generate and provide information related to park deficient areas.
- Provide technical advice to local park providers related to the protection, restoration or enhancement of natural resources at parks, open spaces, trails or greenways.
- Provide supplemental financial resources for acquisition and development of local park projects which support or complement the Regional System.
- Provide grants for restoration and environmental education projects.

The Participation of Citizens in Environmental Education, Planning and Stewardship Activities. Policy 3.6, 3.6.1, 3.6.2.

Citizens play a key role in Metro's role in protection and management of the Regional System of Parks, Natural Areas, Open Spaces, Trails and Greenways. To facilitate public participation, Metro shall:

- Provide opportunities for public involvement in issues related to the selection, acquisition, development and management of the regional system.
- Implement a volunteer services plan to encourage individuals, groups, and businesses to participate in the restoration, enhancement, operations and maintenance of resources, facilities, programs and events.
- Appoint and staff a Regional Parks and Greenspaces Advisory Committee composed of citizens from throughout the region.
- Develop, promote and deliver programs which enhance citizens' understanding, appreciation, use and enjoyment of natural, cultural and recreational resources.

- Host special events which enhance public use and enjoyment of regional system components.

Utilize a variety of media to convey information to citizens regarding the regional system, and associated facilities, benefits, programs and events.

Metro encourages local Governments and park and recreation districts to involve citizens in the planning, protection and management of the local park systems. They are encouraged to:

- Provide ongoing opportunities for public information sharing and citizen involvement in development and implementation of local system master plans, facility operations and recreational programming.

Local Governments and Metro should:

- Work together to assure that citizens are aware of the benefits of parks and recreation, and recognized as comparable in importance to public safety, education, sanitation, water supply, land use and transportation services.

Appendix E: Water Supply

In order to implement the regional aspects of the Regional Water Supply Plan, the Metro Council may consider adopting requirements consistent with, but not necessarily limited to elements of the Regional Water Supply System.

Requirements that could be considered by the Metro Council could include:

- Water Conservation requirements
- Land Use regulations for protection of regionally significant well fields or underground storage facilities
- Regulations concerning the sequencing of regionally significant new supply and transmission lines

Appendix F: Watershed Management and Water Quality

Requirements to protect regionally significant watershed and water quality will be completed as a functional plan in order to protect regionally significant Goal 5 resources.

These requirements have yet to be developed.

Appendix G: Natural Hazards

Requirements to protect regionally significant features from natural disasters will be completed as a functional plan.

These requirements have yet to be developed.

Appendix H: Model Codes

As mandated by its Charter, Metro is developing model codes. These land use zone codes are for use by cities and counties of the region, but are not required. They are intended to show ways to implement elements of the Regional Framework Plan, especially the Growth Concept and the Urban Growth Management Functional Plan. The model codes will be available in a workbook format and include the following:

- Mixed Use Zone
- Generic Single-Family Residential Zone
- Generic Multi-Family Zone
- Generic Commercial Zone
- Generic Employment Zone
- Generic Industrial Zone
- Land Division Code

For each of the zones, a description of applicable Metro requirements will be included as well as purpose and intent ideas, suggestions for permitted and conditional uses and potential development standards, emphasizing clear and objective standards.

These codes are not available at this time, but are expected to be in draft form by June, 1997.

Glossary

Glossary

Accessibility. The amount of time required to reach a given location or service by any mode of travel.

Access Management. The principles, laws and techniques used to control access off and onto streets, roads and highways from roads and driveways. One of the primary purposes of controlling access is to reduce conflicts between motor vehicles, pedestrians and bicyclists. Examples of access management include limiting or consolidating driveways, selectively prohibiting left turn movements at and between intersections and using physical controls such as signals and raised medians.

Air Quality Conformity. This term refers to the Clean Air Act Amendments of 1990 which require the metropolitan region to use computer modeling to document that regionally significant transportation projects, if built, would result in (1) automotive emissions lower than those estimated to have occurred in 1990; (2) lower emissions than would result without building the project; and (3) total emissions lower than the "mobile source budget" adopted in the regional air quality maintenance plan.

Alternative Transportation Mode. This term refers to all passenger modes of travel except for single occupancy vehicle, including bicycling, walking, public transportation, carpooling and vanpooling.

Advanced Traffic Management System (ATMS). This term refers to traffic management techniques that use computer processing and communications technologies to optimize performance of motor vehicle, freight and public transportation systems. ATMS is a subset of Intelligent Transportation System (ITS) technologies and must be addressed as one of the sixteen ISTEA planning factors.

Americans With Disabilities Act (ADA) of 1990. Civil rights legislation enacted by the U.S. Congress that mandates the development of a plan to address discrimination and equal opportunity for disabled persons in employment, transportation, public accommodation, public services and telecommunications. Tri-Met's ADA transportation plan outlined the requirements of the ADA as applied to Tri-Met services, the deficiencies of the existing services when compared to the requirements of the new Act and the remedial measures necessary to bring Tri-Met and the region into compliance with the Act. Metro, as

the region's Metropolitan Planning Organization (MPO) is required to review Tri-Met's ADA Paratransit Plan annually and certify that the plan conforms to the Regional Transportation Plan. Without this certification, Tri-Met cannot be found to be in compliance with the ADA. ADA also affects the design of pedestrian facilities being constructed by local governments.

Areas and Activities of Metropolitan Concern. A program, area or activity, having significant impact upon the orderly and responsible development of the metropolitan area that can benefit from a coordinated multi-jurisdictional response.

Beneficial Use Standards. Under Oregon law, specific uses of water within a drainage basin deemed to be important to the ecology of that basin as well as to the needs of local communities are designated as "beneficial uses." Hence, "beneficial use standards" are adopted to preserve water quality or quantity necessary to sustain the identified beneficial uses.

Bicycle. A vehicle having two tandem wheels, a minimum of 14" in diameter, propelled solely by human power, upon which a person or persons may ride. A three-wheeled adult tricycle is considered a bicycle. In Oregon, a bicycle is legally defined as a vehicle. Bicyclists have the same right to the roadways and must obey the same traffic laws as the operators of other vehicles.

Bicycle Facilities. A general term denoting improvements and provisions made to accommodate or encourage bicycling, including parking facilities, all bikeways and shared roadways not specifically designated for bicycle use.

Bicycle Network. A system of connected bikeways that provide access to and from local and regional destinations and to adjacent bicycle networks.

Bike Lane. A portion of a roadway that has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

Bikeway. A bikeway is created when a road has the appropriate design treatment for bicyclists, based on motor vehicle traffic volumes and speeds. On-road bikeways include shared roadway, shoulder bikeway, bike lane or bicycle boulevard design treatments. Another type of bikeway design treatment, the multi-use path, is separated from the roadway.

Capacity. The maximum number of vehicles (vehicle capacity) or passengers (person capacity) that can pass over a given section of roadway or transit line in one or both directions during a given period of time under prevailing roadway and traffic conditions.

Center City. The downtown and adjacent portions of the city of Portland. See the Growth Concept map and text.

Citizen Advisory Committee (CAC). Selected for a specific issue, project, or process, a group of citizens volunteer and are appointed by Metro to represent citizen interests. The RTP citizen advisory committee reviews regional transportation issues.

Clean Air Act Amendments of 1990. Amendments to the Clean Air Act which specify that no transportation project, whether federally or locally funded, may interfere with attainment or maintenance of federal air quality standards. With respect to transportation planning, this requirement means that the Federal Highway Administration and the Federal Transit Administration must affirm that all regionally significant transportation projects must be identified in the Metro Transportation Improvement Program and must be demonstrated to conform with the 1982 Oregon State (Air Quality) Implementation Plan (SIP). Note: The SIP is currently being amended to show Portland-area attainment of national air quality standards and methods adopted to maintain the standards for a 20-year period. EPA approval of the SIP amendment is expected in late 1997.

Community. For the purposes of the RTP, this term refers to informal subareas of the region, and may include one or more incorporated areas and adjacent unincorporated areas that share transportation facilities or other urban infrastructure. For example, references to the east Multnomah County community usually includes the cities of Gresham, Troutdale, Fairview and Wood Village, and unincorporated areas that abut these jurisdictions (see "Regional").

Congestion Management System (CMS). The CMS is one of the six management systems required by ISTEA. The CMS is to provide "information on transportation system performance and alternative strategies to alleviate congestion and enhance mobility." A key provision of CMS is that consideration must be given to a variety of demand reduction and operational management strategies as alternatives to increases in single occupant vehicle capacity when addressing deficiencies. This includes methods to monitor and evaluate performance, identify alternative actions, assess and implement cost-effective actions and evaluate the effectiveness of implemented actions.

Congestion Pricing. A transportation management tool which applies market pricing principles to roadway use. This tool involves the use of user surcharges or tolls on congested facilities during peak traffic periods. The theory of peak period pricing suggests that charging drivers per mile of travel during the congested times of the day will relieve traffic congestion by discouraging some vehicle trips and shifting others to alternative modes, facilities, destinations or times of travel.

Corridors. While some corridors may be continuous, narrow bands of higher intensity development along arterial roads, others may be more "nodal", that is, a series of smaller centers at major intersections or other locations along the arterial

which have high quality pedestrian environments, good connections to adjacent neighborhoods and good transit service. So long as the average target densities and uses are allowed and encouraged along the corridor, many different development patterns - nodal or linear - may meet the corridor objective .

Density Bonus. This term refers to allowing developers to build at higher densities than stated in local zoning code. This incentive is designed to promote more compact development, reduce trip lengths and promote alternative modes of travel.

Economic Opportunities Analysis. An "economic opportunities analysis" is a strategic assessment of the likely trends for growth of local economies in the state consistent with OAR 660-09-015. Such an analysis is critical for economic planning and for ensuring that the land supply in an urban area will meet long-term employment growth needs.

Employee Commute Options (ECO) Rule. The ECO Rule is part of House Bill 2214 which was adopted by the 1992 Legislature. The Rule directs the Department of Environmental Quality to institute an employee trip reduction program. The Rule is designed to reduce 10 percent of commuter trips for all businesses that employ 50 or more persons at a single site.

Employment Areas Areas of mixed employment that include various types of manufacturing, distribution and warehousing uses, commercial and retail development as well as some residential development. Retail uses should primarily serve the needs of the people working or living in the immediate employment area. Exceptions to this general policy can be made only for certain areas indicated in a functional plan.

Exception. An "exception" is taken for land when either commitments for use, current uses, or other reasons make it impossible to meet the requirements of one or a number of the statewide planning goals. Hence, lands "excepted" from statewide planning goals 3 (Agricultural Lands) and 4 (Forest Lands) have been determined to be unable to comply with the strict resource protection requirements of those goals and are thereby able to be used for other than rural resource production purposes. Lands not excepted from statewide planning goals 3 and 4 are to be used for agricultural or forest product purposes, and other, adjacent uses must support their continued resource productivity.

Exclusive Farm Use. Land zoned primarily for farming and restricting many uses that are incompatible with farming, such as rural housing. Some portions of rural reserves also may be zoned as exclusive farm use.

Fair Share A proportionate amount by local jurisdiction. Used in the context of affordable housing in this document. A "Fair share" means that each city and

county within the region working with Metro to establish local and regional policies which will provide the opportunity within each jurisdiction for accommodating a portion of the region's need for affordable housing.

Family Wage Job. A permanent job with an annual income greater than or equal to the average annual covered wage in the region. The most current average annual covered wage information from the Oregon Employment Division shall be used to determine the family wage job rate for the region or for counties within the region.

Fiscal Tax Equity. The process by which inter-jurisdictional fiscal disparities can be addressed through a partial redistribution of the revenue gained from economic wealth, particularly the increment gained through economic growth.

Freight Intermodal Facility. An intercity facility where freight is transferred between two or more modes (e.g., truck to rail, rail to ship, truck to air, etc.)

Freight Mobility. The efficient movement of goods from point of origin to destination.

Functional Plan. A limited purpose multi-jurisdictional plan for an area or activity having significant district-wide impact upon the orderly and responsible development of the metropolitan area that serves as a guideline for local comprehensive plans consistent with ORS 268.390.

Greater Metropolitan Region. Defined as the greater area surrounding and including Metro's jurisdictional area, including parts of Multnomah, Clackamas and Washington counties as well as urban areas in Marion, Columbia and Yamhill counties (see "Metropolitan Region").

Growth Concept. A concept for the long-term growth management of our region, stating the preferred form of the regional growth and development, including where and how much the UGB should be expanded, what densities should characterize different areas, and which areas should be protected as open space.

High Capacity Transit. Transit routes that may be either a road designated for frequent bus service or for a light-rail line.

High Occupancy Vehicle (HOV). This term refers to vehicles that are carrying two or more persons, including the driver. An HOV could be a transit bus, vanpool, carpool or any other vehicle that meets the minimum occupancy requirements of the specific facility. In practice, only vehicles with two or three or more persons would be able to use a designated "HOV" travel lane.

Housing Affordability. The availability of housing such that no more than - 30 percent (an index derived from federal, state and local housing agencies) of the

monthly income of the household need be spent on shelter.

Industrial Areas. An area set aside for industrial activities. Supporting commercial and related uses may be allowed, provided they are intended to serve the primary industrial users. Residential development shall not be considered a supporting use, nor shall retail users whose market area is substantially larger than the industrial area be considered supporting uses.

Infill. New development on a parcel or parcels of less than one contiguous acre located within the UGB.

Infrastructure. Roads, water systems, sewage systems, systems for storm drainage, telecommunications and energy transmission and distribution systems, bridges, transportation facilities, parks, schools and public facilities developed to support the functioning of the developed portions of the environment. Areas of the undeveloped portions of the environment such as floodplains, riparian and wetland zones, groundwater recharge and discharge areas and Greenspaces that provide important functions related to maintaining the region's air and water quality, reduce the need for infrastructure expenses and contribute to the region's quality of life.

Inner Neighborhoods. Areas in Portland and the older cities that are primarily residential, close to employment and shopping areas, and have slightly smaller lot sizes and higher population densities than in outer neighborhoods

Intermodal The connection of one type of transportation mode with another

Intermodal Facility. A transportation element that accommodates and interconnects different modes of transportation and serves the statewide, interstate and international movement of people and goods. *See also passenger intermodal facility and freight intermodal facility definitions.*

Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. The federal highway/public transportation funding reauthorization which among other features funds the national highway system and gives states and local governments more flexibility in making transportation decisions. The Act places significant emphasis on broadening public participation in the transportation planning process to include key stakeholders, including the business community, community groups, transit operators, other governmental agencies and those who have been traditionally underserved by the transportation system. Among other things, the Act requires the metropolitan area planning process to consider such issues as land use planning, energy conservation, intermodal connectivity and enhancement of transit service. Finally, the Act integrates transportation planning with achievement of the air quality conformity requirements embodied in the Clean Air Act Amendments of 1990 and State air quality plans.

Jobs Housing Balance. The relationship between the number, type, mix and wages of existing and anticipated jobs balanced with housing costs and availability so that non-auto trips are optimized in every part of the region.

Joint Policy Advisory Committee on Transportation (JPACT). A 17-member committee that consists of elected officials from area cities and counties as well as leaders from public agencies in the region with an interest in transportation. This committee's role is to evaluate transportation needs and coordinate transportation decisions for the region, and give recommendations to the Metro Council.

Key or Critical Public Facilities and Services. Basic facilities that are primarily planned for by local government but which also may be provided by private enterprise and are essential to the support of more intensive development, including transportation, water supply, sewage, parks, schools and solid waste disposal.

Land Conservation and Development Commission (LCDC). The 7-member directorship of Oregon's statewide planning program. The LCDC is responsible for approving comprehensive land use plans promulgating regulations for each of the statewide planning goals.

Local Comprehensive Plan. A generalized, coordinated land use map and policy statement of the governing body of a city or county that inter-relates all functional and natural systems and activities related to the use of land, consistent with state law.

Main Streets. Neighborhood shopping areas along a main street or at an intersection, sometimes having a unique character that draws people from outside the area. NW 23rd Avenue and SE Hawthorne Boulevard are current examples of main streets.

Major Amendment. A proposal made to the Metro Council for expansion of the UGB of 20 acres or more, consistent with the provisions of the Metro code.

Metro Committee for Citizen Involvement (MCCI). A committee composed of citizen representatives from the Tri-Counties area, to "advise and recommend actions to the Metro Council on matters pertaining to citizen involvement."

Metro Council. A committee composed of 7 members elected from districts throughout the metropolitan region (urban areas of Clackamas, Multnomah and Washington counties). The Council approves Metro policies, including growth management and transportation plans, projects and programs recommended by Metro Policy Advisory Committee (MPAC - see below) and the Joint Policy Advisory Committee on Transportation (JPACT - see above).

Metro Policy Advisory Committee (MPAC). A committee -established by the Metro Charter and composed of local elected officials (including representatives from Clark County, WA and the State of Oregon), MPAC is responsible for recommending to the Metro Council adoption of or amendment to any element of the Charter-mandated Regional Framework Plan.

Metropolitan Housing Rule. A rule (OAR 660, Division 7) adopted by the Land Conservation and Development Commission to assure opportunity for the provision of adequate numbers of needed housing units and the efficient use of land within the Metro UGB. This rule establishes minimum overall net residential densities for all cities and counties within the UGB, and specifies that 50 percent of the land set aside for new residential development be zoned for multifamily housing.

Metropolitan Planning Organization (MPO). An individual agency designated by the state governor in each federally recognized urbanized area to coordinate transportation planning for that metropolitan region. Metro (see above) is that agency for Clackamas, Washington and Multnomah Counties; for Clark County, Washington, that agency is the Southwest Washington Regional Transportation Council (SWRTC, formally the Intergovernmental Resource Center - see below).

Metropolitan Region. Defined as the area included within Metro's jurisdictional boundary, including parts of Multnomah, Clackamas and Washington counties (see "Greater Metropolitan Region").

Metropolitan Transportation Improvement Program (MTIP). A staged, multi-year, intermodal program of transportation projects which is consistent with the metropolitan transportation plan.

Mobility. The ability to move people and goods from place to place, or the potential for movement. Mobility reflects the spatial structure of the transportation network and the level and quality of its service. Mobility is determined by such characteristics as road capacity and design speed.

Motor Vehicle Level of Service (LOS). A qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A level of service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort, convenience and safety. An LOS rating of "A" through "F" describes the traffic flow on streets and highways and at intersections. The following table describes general traffic flow characteristics for each level of service on a street or highway:

<u>LOS</u>	<u>Traffic Flow Characteristics</u>
A	Virtually free flow; completely unimpeded
B	Stable flow with slight delays; reasonably unimpeded
C	Stable flow with delays; less freedom to maneuver
D	High density but stable flow
E	Operating conditions at or near capacity; unstable flow
F	Forced flow, breakdown conditions
Greater than F	Demand exceeds roadway capacity, limiting volume than can be carried and forcing excess demand onto parallel routes and extending the peak period

Source: 1985. Highway Capacity Manual (A through F descriptions)
Metro (>F Description)

Multi-use Path. A path that is physically separated from motor vehicle traffic by an open space or barrier and is either within the highway right-of-way or within an independent right-of-way, used by bicyclists, pedestrians, joggers, skaters and other non-motorized travelers.

Neighbor City. Nearby incorporated cities with separate urban areas from the Metro urban area, but connected to the metropolitan area by major highways. Neighbor cities include Sandy, Estacada, Canby, Newberg, North Plains and Scappoose.

Neighborhood Centers. Retail and service development that surrounds major MAX stations and other major intersections, extending out for one-quarter to one-half mile.

Open Space. Publicly and privately -owned areas of land, including parks, natural areas and areas of very low density development inside the UGB.

Oregon Bicycle and Pedestrian Plan. An element of the Oregon Transportation Plan, this plan offers the general principles and policies that ODOT follows to provide bikeways and walkways along state highways. This plan also provides guidance to cities and counties, as well as other organizations and private citizens, in establishing bicycle and pedestrian facilities on local transportation systems.

Oregon Statewide Planning Goals. The 19 goals which provide a foundation for the state's land use planning program. The planning goals can be grouped into four broad categories: land use, resource management, economic development, and citizen involvement. Locally adopted comprehensive plans and regional transportation plans must be consistent with the statewide planning goals.

Oregon Transportation Plan (OTP). The State's official statewide, intermodal transportation plan that will set priorities and state policy in Oregon for the next 40 years. The plan, developed by the Oregon Department of Transportation

through the statewide transportation planning process, responds to federal ISTEA requirements (see above) and Oregon's Transportation Planning Rule (TPR - see below).

Outer Neighborhoods. Areas in the outlying cities that are primarily residential, farther from employment and shopping areas, and have larger lot sizes and lower population densities than inner neighborhoods.

Park-and-Ride. A mode of travel, usually associated with movements between work and home, that involves use of a private auto on one portion of the trip and a transit vehicle (i.e., a bus or a light rail vehicle) on another portion of the trip. Thus, a park-and-ride trip could consist of an auto trip from home to a parking lot, and transfer at that point to a bus in order to complete the trip to work.

Parking Cash-Out. This term refers to a transportation demand management strategy where the market value of a parking space is offered to an employee by the employer. The employee can either spend the money for a parking space, or pocket it and then use an alternative mode to travel to work. Measures such as parking cash-out provide disincentives for commuting by single occupancy vehicles.

Passenger Intermodal Facility. The hub for various statewide, national and international passenger modes and transfer points between modes (e.g., airport, bus and train stations).

Pedestrian. A person on foot, in a wheelchair or walking a bicycle.

Pedestrian Facility. A facility provided for the benefit of pedestrian travel, including walkways, crosswalks, signs, signals, illumination and benches.

Pedestrian Scale. An urban development pattern where walking is a safe, convenient and interesting travel mode. It is an area where walking is at least as attractive as any other mode to all destinations within the area. The following elements are not cited as requirements, but illustrate examples of pedestrian scale: continuous, smooth and wide walking surfaces; easily visible from streets and buildings and safe for walking; minimal points where high speed automobile traffic and pedestrians mix; frequent crossings; storefronts, trees, bollards, on-street parking, awnings, outdoor seating, signs, doorways and lighting designed to serve those on foot; well integrated into the transit system and having uses which cater to people on foot.

Persons Per Acre. This is a term expressing the intensity of building development by combining residents per net acre and employees per net acre.

Planning activities Planning activities cited in the RUGGO are not regulatory

but contain implementation ideas for future study in various stages of development that may or may not lead to RUGGO amendments, new functional plans, functional plan amendments, or regional framework plan elements. Planning activities for any given year will be subject to Metro Executive Officer budget recommendations and Metro Council budget adoption.

Public Transportation. This term refers to both publicly and privately funded transportation serving the general public, including fixed-route bus and rail service, inter-city passenger bus and rail service, dial-a-ride and demand responsive services, client transport services and commuter/rideshare programs. For the purposes of the RTP, school buses and taxi subsidy programs are not included in this definition.

Regional. For the purposes of the RTP, this term refers to large subareas of the region, or the entire region, and usually includes many incorporated areas and adjacent unincorporated areas that share major transportation facilities or other urban infrastructure (see "Community").

Regional Centers. Areas of mixed residential and commercial use that serve hundreds of thousands of people and are easily accessible by different types of transit. Examples include traditional centers such as downtown Gresham and new centers such as Clackamas Town Center.

Regional Framework Plan. Required of Metro under the Metro Charter, the Regional Framework Plan must address nine specific growth management and land use planning issues (including transportation), with the consultation and advice of MPAC (see above). To encourage regional uniformity, the regional framework plan shall also contain model terminology, standards and procedures for local land use decision making that may be adopted by local governments.

Regional Transportation Plan (RTP). The official intermodal transportation plan that is developed and adopted through the metropolitan transportation planning process for the metropolitan planning area.

Regional Urban Growth Goals and Objectives (RUGGOs). An urban growth policy framework that represents the starting point for the agency's long-range regional planning program.

Right-of-Way (ROW). This term refers to publicly-owned land, property or interest therein, usually in a strip, within which the entire road facility (including travel lanes, medians, sidewalks, shoulders, planting areas, bikeways and utility easements) must reside. The right-of-way is usually defined in feet and is acquired for or devoted to multi-modal transportation purposes including bicycle, pedestrian, public transportation and vehicular travel.

Rural Area. Those areas located outside the Metro Urban Growth Boundary (UGB).

Rural Reserves. Areas that are a combination of public and private lands outside the UGB, used primarily for farms and forestry. They are protected from development by very low-density zoning and serve as buffers between urban areas.

Shared Roadway. A type of bikeway where bicyclists and motor vehicles share a travel lane.

Sidewalk. A walkway separated from the roadway with a curb, constructed of a durable, hard and smooth surface, designed for preferential or exclusive use by pedestrians.

Single-occupancy vehicle (SOV). This term means private passenger vehicles carrying one occupant.

State Implementation Plan. A plan for ensuring that all parts of Oregon remain in compliance with Federal air quality standards.

State Transportation Improvement Program (STIP). A federally required document that allocates transportation funds to a staged, multi-year, statewide, intermodal program of transportation projects - consistent with the Statewide transportation plan and planning processes and metropolitan plans, TIPs and processes. The metropolitan TIP must be included in the STIP without change.

Station Communities That area generally within a 1/4- to 1/2-mile radius of light rail stations or other high capacity transit which is planned as a multi-modal community of mixed uses and substantial pedestrian accessibility improvements.

Stewardship A planning and management approach that considers environmental impacts and public benefits of actions as well as public and private dollar costs.

Subregion. An area of analysis used by Metro centered on each regional center and used for analyzing jobs/housing balance.

Technical Advisory Committee (TAC). A group of technical staff from government agencies participating in the project. The TAC is responsible for producing the base technical information that will ultimately be used by local decision-makers to complete the project purpose.

Telecommute. A transportation demand management strategy whereby an individual substitutes working at home for commuting to a work site on either a part-time or full-time basis.

Town Centers. Areas of mixed residential and commercial use that serve tens of thousands of people. Examples include the downtowns of Forest Grove and Lake Oswego.

Traffic. The number of motor vehicles in a given location at a given point in time.

Traffic Calming. A transportation system management technique that aims to prevent inappropriate through-traffic and reduce motor vehicle travel speeds on a particular roadway. Traditionally, this technique has been applied to local residential streets and collectors and may include speed bumps, curb extensions, planted median strips or rounds and narrowed travel lanes.

Transit. For purposes of the RTP, this term refers to publicly-funded and managed transportation services and programs within the urban area, including light rail, regional rapid bus, frequent bus, primary bus, secondary bus, mini-bus, paratransit and park-and-ride.

Transit Level of Service. The comfort, safety, convenience and utility of transportation service, measured differently for various types of transportation systems.

Transit-Oriented Development. A mix of residential, retail and office uses and a supporting network of roads, bicycle and pedestrian ways focused on a major transit stop designed to support a high level of transit use. Key features include: a mixed use center and high residential density.

Transportation Demand Management (TDM). Actions, such as ridesharing and vanpool programs, the use of alternative modes, and trip-reduction ordinances, which are designed to change travel behavior in order to improve performance of transportation facilities and to reduce need for additional road capacity.

Transportation Disadvantaged/Persons Potentially Underserved by the Transportation System. Those individuals who have difficulty in obtaining transportation because of their age, income, physical or mental disability.

Transportation Management Area (TMA). As defined in federal regulations, this term refers to “an urbanized area with population over 200,000” and “applies to the entire metropolitan planning area.” All locations must meet certain standards and non-attainment TMA’s must meet additional planning requirements.

Transportation Planning Rule (TPR). The implementing rule of statewide land use planning goal (#12) dealing with transportation, as adopted by the State Land Conservation and Development Commission (LCDC - see above). Among its many provisions, the Rule includes requirements to preserve rural lands, reduce vehicle miles traveled (VMT) per capita by 20% in the next 30 years, reduce parking spaces and to improve alternative transportation systems.

Transportation Policy Alternatives Committee (TPAC). Senior staff-level policy committee which reports and makes policy recommendations to JPACT (see above). TPAC's membership includes technical staff from the same governments and agencies as JPACT, plus representatives of the Federal Highway Administration and the Southwest Washington Regional Transportation Council (SWRTC - see above); there are also six citizen representatives appointed by the Metro Council (see above).

Transportation System Management (TSM). Strategies and techniques for increasing the efficiency, safety, capacity or level of service of a transportation facility without major new capital improvements. This may include signal improvements, intersection channelization, access management, HOV lanes, ramp metering, incident response, targeted traffic enforcement and programs that smooth transit operations.

Transportation System Plan (TSP). A plan for one or more transportation facilities that are planned, developed, operated and maintained in a coordinated manner to supply continuity of movement between modes, and within and between geographic and jurisdictional areas.

Tri-Met. Tri-County Metropolitan Transportation District, which is the transit agency for most of Clackamas, Multnomah and Washington Counties.

Urban Area. Those areas located within the Metro Urban Growth Boundary (UGB).

Urban Form. The net result of efforts to preserve environmental quality, coordinate the development of jobs, housing, and public services and facilities, and inter-relate the benefits and consequences of growth in one part of the region with the benefits and consequences of growth in another. Urban form, therefore, describes an overall framework within which regional urban growth management can occur. Clearly stating objectives for urban form and pursuing them comprehensively provides the focal strategy for rising to the challenges posed by the growth trends present in the region today.

Urban Growth Boundary. A boundary which identifies urban and urbanizable lands needed during the 20-year planning period to be planned and serviced to support urban development densities, and which separates urban and urbanizable

lands from rural land.

Urban Growth Management Functional Plan (Functional Plan) - A regional functional plan with requirements binding on cities and counties in the Metro region, as mandated by Metro's Regional Framework Plan. The Functional Plan addresses such issues as accommodation of projected regional population and job growth, regional parking management, water quality conservation, retail in employment and industrial areas and accessibility on the regional transportation system. All cities and counties in the Metro region shall adopt changes to local comprehensive plans and zoning codes to address these issues within 24 months after the adoption of the Functional Plan ordinance by the Metro Council.

Urban Reserve Area. An area adjacent to the present UGB defined to be a priority location for any future UGB amendments when needed. Urban reserves are intended to provide cities, counties, other service providers, and both urban and rural land owners with a greater degree of certainty regarding future regional urban form. Whereas the UGB describes an area needed to accommodate the urban growth forecasted over a 20-year period, the urban reserves plus the area inside the UGB estimate the area capable of accommodating the growth expected for 50 years.

Walkway. A hard-surfaced transportation facility built for use by pedestrians, including persons using wheelchairs. Walkways include sidewalks, paths and paved shoulders.

Wide Outside Lane. A wider than normal curbside travel lane that is provided for ease of bicycle operation where there is insufficient room for a bike lane or shoulder bikeway.

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To obtain copies of documents listed here, contact Metro's Growth Management Services Department at (503) 797-1562.

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BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF APPROVING GENERAL)	RESOLUTION NO.
POLICIES RELATED TO THE GRANTING OF)	
EASEMENTS, RIGHT OF WAYS, AND LEASES)	Introduced by
AND LICENSES FOR NON-PARK USES)	Mike Burton, Executive
THROUGH THE REGIONAL PARKS)	Officer
AND GREENSPACES)	

WHEREAS, Metro currently owns and manages more than 6,000 acres of regional parks, open spaces, natural areas, and recreational facilities; and

WHEREAS, additional lands are being acquired through the Openspace, Parks, and Streams Bond Measure, approved by voters in May of 1995; and

WHEREAS, the primary management objectives for these properties are to provide opportunities for natural resource dependent recreation, protection of fish, wildlife, and native plant habitat and maintenance and/or enhancement of water quality; and

WHEREAS, Metro will be approached with proposals to utilize regional parks, open spaces, natural areas, and recreational facilities property for utility, transportation, and other non-park purposes; and

WHEREAS, these uses may have the capacity to negatively impact the primary management objectives of Metro Regional Parks and Greenspaces properties; and

WHEREAS, it would be in Metro's best interest to provide for the orderly evaluation and consideration of proposals to utilize portions of Metro Regional Parks and Greenspaces properties for utility, transportation and other non-park uses; NOW THEREFORE,

BE IT RESOLVED, that the Metro Council hereby adopts the policy attached as Exhibit "A" for any and all requests related to formal proposals for the use of Metro Regional Parks and Greenspaces properties for the purposes noted therein.

ADOPTED by the Metro Council this _____ day of _____, 1997.

Jon Kvistad, Presiding Officer

ATTEST:

Approved as to Form:

Recording Secretary

Daniel B. Cooper, General Counsel

REGIONAL PARKS AND GREENSPACES STAFF REPORT

IN CONSIDERATION OF RESOLUTION NO. FOR THE PURPOSE OF APPROVING GENERAL POLICIES RELATED TO GRANTING OF EASEMENTS, RIGHTS OF WAY, AND LEASES AND LICENSES FOR NON-PARK USES IN PROPERTIES MANAGED BY THE REGIONAL PARKS AND GREENSPACES DEPARTMENT.

Date: June 26, 1997

Presented by:
Charles Ciecko, Director
Regional Parks and Greenspaces

FACTUAL BACKGROUND AND ANALYSIS

Metro through its Regional Parks and Greenspaces Department, currently owns and manages over 6,000 acres of regional parks, open spaces, natural areas, and recreational facilities. The primary management objectives for these lands is the provision of natural resource dependent recreation opportunities; protection of fish, wildlife and native plant habitat and the maintenance and/or enhancement of water quality.

From time to time, the Regional Parks and Greenspaces Department is approached with proposals to utilize portions of properties for non-park purposes, such as utilities, transportation components, cell phone towers etc. Currently, there is no policy to guide the review, analysis or authorization of uses which are unrelated to the primary management objectives.

The purpose of the proposed resolution is to create policy which will guide staff in responding to proposals for non-park uses.

Highlights of the proposed policy include:

- Formal review and approval of proposals by the Regional Parks and Greenspaces Advisory Committee, Regional Facilities Committee and full Council.
- Requires development of non-park uses outside of Regional Parks and Greenspace properties whenever feasible except when determined that the proposal use can be accommodated without significant impact.
- Requires full mitigation of all unavoidable impacts
- Requires reimbursement of all costs associated with review, analyses and authorization for use.
- Requires receipt of not less than fair market value for all non-park uses.
- Requires full indemnification for Metro and insurance, if appropriate.
- Establishes limitations on exceptions.
- Establishes process for timely review, analysis and resolution of all proposals.

Budget Impact

The proposed policy requires receipt of not less than fair market value for non-park uses and reimbursement of all costs incurred by Metro thereby eliminating the potential of subsidizing uses which are inconsistent with the primary management objectives of Regional Parks and Greenspaces properties.

A Regional Parks and Greenspaces staff member will be present to answer any questions by Council regarding this policy.

Executive Officer's Recommendation:

The Executive Officer recommends adoption of Resolution No.

Exhibit "A"

METRO POLICY RELATED TO THE GRANTING OF EASEMENTS, RIGHTS OF WAY, LEASES AND LICENSES FOR NON-PARK USES

Regarding requests for easements, rights of way, leases and licenses for non-park uses in Metro owned or managed regional parks, natural areas or recreational facilities, it is Metro's policy to:

- 1) Provide for formal review and approval of all proposed easements, rights of way, leases and licenses for non-park uses by the Regional Parks and Greenspaces Advisory Committee, the Regional Facilities Committee and the full Council.
- 2) Prohibit the development of utilities, transportation projects and other non-park uses within corridors or on sites which are located inside of Metro owned or managed regional parks, natural areas, and recreational facilities except as provided herein.
- 3) Reject proposals for utility easements, transportation rights of way leases and licenses for non-park uses which would result in significant, unavoidable impacts to natural resources, cultural resources, recreational facilities, recreational opportunities or their operation and management.
- 4) Accommodate utility easements, transportation rights of way or other non-park uses when the Regional Parks and Greenspaces Department (the Department) determines that a proposed easement, right of way or non-park use can be accommodated without significant impact to natural resources, cultural resources, recreational facilities, recreational opportunities or their operation and management; and that the impacts can be minimized and mitigated.
- 5) Require full mitigation, as determined by the Department, of all unavoidable impacts to natural resources, recreational facilities, recreational opportunities or their operation and management associated with the granting of easements, rights of way, leases or licenses to use Metro owned or managed regional parks, natural areas or recreational facilities for non-park uses.
- 6) Limit rights conveyed by easements, rights of way, leases and licenses for non-park uses to the minimum necessary to reasonably accomplish the purpose of any proposal.
- 7) Limit the term of easements, rights of way, leases and licenses to the minimum necessary to accomplish the objectives of any proposal.
- 8) Require "reversion", "non-transferable" and "removal and restoration" clauses in all easements, rights of way, leases and licenses.

9) Fully recover all costs (including staff time) associated with processing, reviewing, analyzing, negotiating, approving, conveying or assuring compliance with the terms of any easement, right of way, lease or license for a non-park use..

10) Receive no less than fair market value compensation for all easements, rights of way, leases, or licenses for non-park uses. Compensation may include, at the discretion of the Department, periodic fees or considerations other than monetary.

11) Require full indemnification from the easement, right of way, lease or license holder for all costs, damages, expenses, fines or losses related to the use of the easement, right of way, lease or license. Metro may also require appropriate insurance coverage and/or environmental assurances if deemed necessary by the Office of General Counsel.

12) Limit the exceptions to this policy to: grave sales, utilities or transportation projects which are included in approved master/management plans for Metro regional parks, natural areas and recreational facilities; projects designed specifically for the benefit of a Metro regional park, natural area, or recreational facility and approved by the Council; or interim use leases as noted in the Open Spaces Implementation Work Plan.

13) Provide for the timely review and analysis of proposals for non-park uses by adhering to the following process:

a) The applicant shall submit a detailed proposal to the Department which includes all relevant information including but not limited to: purpose, size, components, location, existing conditions, proposed project schedule and phasing, and an analysis of other alternatives which avoid the Metro owned or managed regional park, natural area or recreational facility which are considered infeasible by the applicant. Cost alone shall not constitute infeasibility.

b) Upon receipt of the detailed proposal, the Department shall determine if additional information is required for a thorough review and analysis of the proposal. Deficiencies shall be conveyed to the applicant for correction.

c) Upon determination that the necessary information is complete, the Department shall review and analyze all available and relevant material and determine if alternative alignments or sites located outside of the Metro owned or managed regional park, natural area, or recreational facility are feasible.

d) If outside alternatives are not feasible, the Department shall determine if the proposal can be accommodated without significant impact to park resources, facilities or their operation and management. Proposals which cannot be accommodated without significant impacts shall be rejected. If the Department determines that a proposal could be accommodated without significant impacts, staff shall initiate negotiations with the applicant to resolve all issues related to exact location, legal requirements, terms of the agreement, mitigation requirements, fair market value, site restoration, cultural resources, and any other issue relevant to a specific proposal or park, natural area or recreational

facility. The Department shall endeavor to complete negotiations in a timely and business-like fashion.

e) Upon completion of negotiations, the proposed agreement, in the appropriate format, shall be forwarded for review and approval as noted in item "1" above. In no event shall construction of a project commence prior to formal approval of a proposal.

f) Upon completion of all Metro tasks and responsibilities or at intervals determined by the Department, and regardless of Metro Council action related to a proposed easement, right of way lease or license for a non-park use, the applicant shall be invoiced for all expenses or the outstanding balance on expenses incurred by Metro.