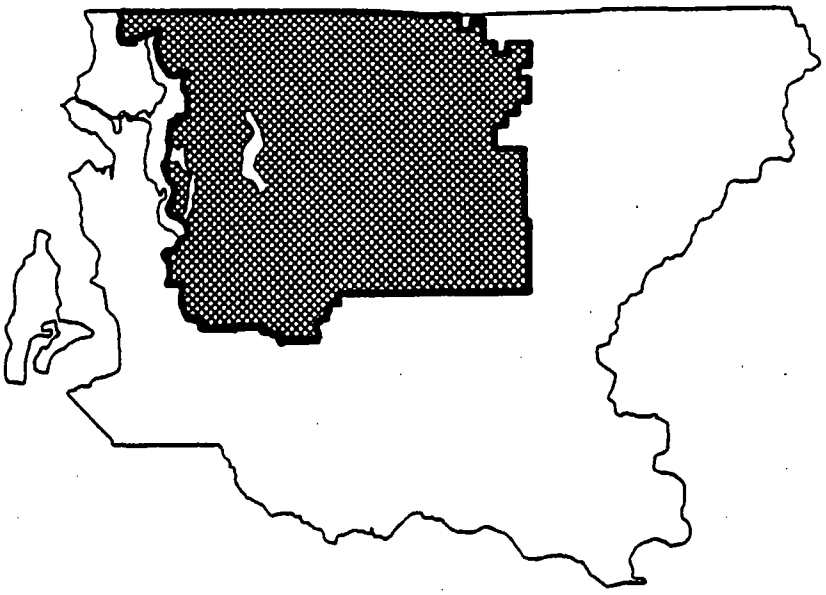
1996

EAST KING COUNTY

COORDINATED WATER SYSTEM PLAN

UPDATE



APPROVED

NOVEMBER 14, 1996

EAST KING COUNTY REGIONAL *Water* ASSOCIATION

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November 14, 1996

Key to Understanding the CWSP Update

The 1996 East King County Coordinated Water System Plan (CWSP) Update looked at seven specific issues:

1. Water demand forecasts;
2. Boundaries among the utilities;
3. Regional water supply options;
4. Conservation programs;
5. Minimum design standards for water systems;
6. Requirements of E2SSB 5448 which amended RCW 70.116, 70.119, and 70.119A; and
7. Connection among the 1990 Growth Management Act, the 1994 King County Comprehensive Plan, and the CWSP water demand forecasts.

Unless discussed in this 1996 CWSP Update, the other sections of the 1989 East King County Coordinated Water System Plan remain operative.

Sincerely,

Holly Kean
Executive Director

WATER UTILITY COORDINATING COMMITTEE (WUCC) MEMBERSHIP

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Trails End

John Phillips
Union Hill Water Assn.

Dennis Rash
Wilderness Rim Maintenance Assn.

Roger Armstrong
K.C. Water District #123

Tom Fitzpatrick
King County

Burnell Holm
Maplewood Addition Coop.

Carolyn Weitz
Mobil Home Wonderland

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Shorewood Apartments

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State Dept. of Health

Donald Hansen
Twenty-Three 800 Tiger Mountain

Tom Rutledge
Upper Preston Water Association

Commissioner Gwenn Maxfield
Bob Bandarra
Woodinville Water District

EAST KING COUNTY REGIONAL WATER ASSOCIATION

Holly Kean
Executive Director

Base Population Forecast

avg annual demand

Year	New Demand (MGD)	Old Demand (MGD)
1994	72.0 (actual)	72
2000	76.2	82
2010	82.4	98
2020	90.6	120
2030	98.8	144
2040	107.7	168
2050	117.5	N/A

The updated forecast has decreased substantially compared to the forecast in the 1989 East King County Coordinated Water System Plan. The main reason for the change is the population forecast provided by the PSRC. The PSRC population forecast used in the 1989 CWSP grew at an average of 1.8 percent between 1994 and 2040. The new PSRC forecast used for the 1996 water demand forecast grows at an average annual rate of 0.9 percent over the same period of time. The difference between the two population forecasts is 0.9 percent per year.

Small changes in growth rates can cause great changes when calculated over 50 years because small changes compound dramatically over a long period. The roughly 1 percent difference in the average annual growth rate between the two population forecasts results in more than a 50 percent difference in the two forecasts by the year 2040. Figure 1 demonstrates this phenomenon. Assuming a 1 MGD demand in 1994 at two different levels a year for 50 years (1.86% and .88%), the contrast is dramatic.

The PSRC attributes the significantly lower growth rate to slower economic growth in the area and King County's Comprehensive Plan which minimizes growth outside the urban growth boundaries. In the PSRC forecast, King County is projected to have the lowest growth rate of all of the counties in the organization.

Three forecasts were done: base; low; and high. They are portrayed on Figure 1. The base forecast (Table 3) represents the best estimate of where water demands will be in the future. The high forecast assumes that population increases past 2020 grow at the same rate as is projected by the PSRC between 2010 and 2020, but with a maximum grow rate of one percent a year. The high forecast also assumes average usage remains at the 1994 level without additional savings from conservation or price elasticity. The low forecast projects usage to decrease from the base case due to additional conservation and the impact of higher rates. It should be noted, however, that large rate increases such as 40 to 50 percent would dramatically reduce water usage but also seriously jeopardize the ability of a purveyor to efficiently and properly run and maintain the water system.

why?

Table 1
List of Forecasted Utilities (Utility Name)

Ames Lake Water Association
Bellevue
Bothell
Cedar River Water & Sewer District
Coal Creek Water District
Duvall
Fall City
Issaquah
Kirkland
Mercer Island
NE Sammamish Sewer & Water District
North Shore Utility District
Redmond
Renton
Sammamish Plateau Water & Sewer District
Sallal Water Association
Shoreline Water District
Snoqualmie
Soos Creek Water & Sewer District
Union Hill Water Association
Water District #83
Water District #90
Water District #119
Woodinville

Table 2
List of Grouped Utilities Forecasted as "Remainder" (Utility Name)

Avon Villa Trailer Park
Beaux Arts
Campton Water Supply
Carnation
Carnation Research Farms
Doore Don Water systems
Echo Glen Children's Center
Edgehill Water Association
Four Lakes Water System
Heathercrest Water System
Lake Margaret Water System
Loclomon Subdivision
Maplewood Addition Coop
Mercercrest Water System
Mirrormont Services, Inc.
Mobil Home Wonderland
Mount Si Mobile Home Estates
North Bend
Overdale Park Water
Riverbend Homesites
Riverbend Mobile Home Park
Shorewood Apartments
Spring Glen Water Association
Trails End Maintenance Association
Twenty-Three 800 Tiger Mountain Road Water Association
Upper Preston Water Users Association
Water District #1
Water District #17
Water District #117
Water District #123
Wilderness Rim Maintenance Association

WATER DEMAND FORECAST UPDATE

Introduction

Economic and Engineering Services, Inc. (EES) was retained to update the water demand forecasts for the East King County Critical Water Supply Service Area. The last forecast was done in 1988 by EES for the same geographic area.

Methodology

This water demand forecast provides demands for individual water purveyors for which 1994 actual water sales were available. The larger purveyors are listed in Table 1. A group forecast was done for the smaller purveyors for which there were no actual water sales figures in 1994. Combined as if one water purveyor, they are not expected to grow or expand their water use significantly. They are listed in Table 2.

Water demands are a function of average consumption per person and the number of people in the service area. The forecast models examine the number of people and the average usage for each water purveyor separately. It then combines these elements to determine the water demand forecast for each water purveyor.

The components of the updated forecast are:

- Estimate the 1994 population for each purveyor
- Determine the 1994 average usage per person for each purveyor
- Develop a population forecast for each purveyor
- Multiply the population by the average use per person to get the total water sales for each purveyor before conservation
- Subtract conservation and price elasticity impacts to obtain water sales
- Add 10% losses to get individual purveyor purchases
- Sum the water purchases for each purveyor to get the total water demand forecast for all purveyors in the East King County Critical Water Supply Service Area

The first step in the water demand forecast was to determine the actual 1994 population for each water purveyor. The Puget Sound Regional Council (PSRC) provides historical and forecast population data by Forecast Area Zones. This data was matched to individual water purveyors to obtain the 1994 population.

The next step was to determine the 1994 use per person for each water purveyor. For those purveyors whose 1994 consumption was known (Table 1), the actual water sales were divided by the 1994 population to obtain the use per customer. Use per person for the purveyors listed in Table 2 was assumed to be at the same level as for those in Table 1. The use per person before accounting for conservation was determined to remain at the 1994 level throughout the forecast period.

The population forecasts through 2020 were obtained from the PSRC's official forecast and matched to each water purveyor. After 2020, population was forecast to grow at the same rate as the PSRC period 2010 to 2020, but with a maximum growth rate of one percent a year. Future growth may change this rate if King County, for example, re-designates current rural areas to urban areas to meet an increased demand for land.

The use per customer forecast and the population forecast were then multiplied to obtain the total water sales before conservation for each water purveyor.

Price impacts and conservation are included in the forecast: 1) price response; 2) plumbing code savings; and 3) additional conservation programs. For the base case, it was assumed that real rates would increase by up to 25 percent over the forecast period. A price elasticity of 0.2 was assumed resulting in a decrease in the consumption of up to 5 percent.

Savings from the 1994 level due to the State plumbing code changes were also determined. Because of the new codes, savings can be realized from the use of low-flow toilets, showerheads, and faucets. Savings were estimated per person per year. This savings assumes that a certain percentage of existing homes have already purchased the more efficient fixtures. All of the new additions to the housing stock after 1994 were forecast to demand water at a lower rate because of the mandatory installation of the more efficient fixtures. The existing 1994 population was forecast to change existing fixtures over time. By the year 2020, all consumption would occur at the lower rate. Additional conservation was not assumed to occur in the base case.

Water sales after conservation were determined by subtracting conservation savings from the water sales forecast. To determine the actual water purchases, losses of 10 percent were added to the water sales after the conservation forecast. Losses include a variety of water not accounted for in activities such as fire fighting, street cleaning, system flushing, and leaks within a purveyors's system. This figure is 5 percent less than the one used in 1988. Purveyors have made a concerted effort to tighten up their distribution systems.

The detailed forecasts for the individual purveyors listed in Table 1 appear in Appendix A. There may be some difference between the EES forecast for those purveyors and what is stated in their individual water comprehensive plans. However, the variation is not significant.

Updated Forecast

The individual purveyor forecasts are combined into a total forecast for the East King County Critical Water Supply Service Area. The base forecast is:

Table 3
East King County Water Demand Forecast (CCF) including losses
Base Case Summary

Year	Ames Lake	Bellevue	Bothell	Cedar River	Coal Creek	Duvall	Fall City	Issaquah	KCWD 83
1994	85,091	7,514,565	674,693	770,990	1,044,746	168,215	123,206	711,675	145,510
2000	101,606	7,626,635	693,604	797,823	1,124,016	199,969	152,144	804,802	143,943
2010	110,762	7,761,639	713,281	817,827	1,215,974	226,259	188,856	929,096	137,296
2020	144,842	8,245,658	745,677	888,372	1,307,367	258,725	208,161	1,042,309	139,002
2030	159,996	8,890,389	792,012	981,315	1,428,679	285,793	229,939	1,151,357	144,208
2040	176,735	9,585,532	841,226	1,083,983	1,561,247	315,694	253,996	1,271,815	149,610
2050	195,225	10,335,029	893,498	1,197,391	1,706,116	348,722	280,570	1,404,875	155,213
AAGR									
1994-2000	3.00%	0.25%	0.46%	0.57%	1.23%	2.92%	3.58%	2.07%	-0.18%
1994-2050	1.49%	0.57%	0.50%	0.79%	0.88%	1.31%	1.48%	1.22%	0.12%

Year	KCWD 90	KCWD 119	Kirkland	Mercer Is	Northeast Samammish	NS Utility District	Redmond	Renton	Remainder
1994	657,073	98,469	1,946,976	1,251,129	423,691	3,057,207	2,977,032	3,010,241	856,226
2000	677,769	113,581	1,982,788	1,245,514	458,600	3,098,565	3,255,788	3,082,841	965,458
2010	711,366	124,541	2,121,896	1,194,045	499,913	3,058,654	3,749,866	3,393,377	936,015
2020	768,205	145,333	2,286,629	1,187,493	555,823	3,232,803	4,259,271	3,826,408	1,037,515
2030	846,813	160,538	2,513,345	1,202,837	555,823	3,481,362	4,704,885	4,226,735	1,146,062
2040	933,464	177,334	2,762,540	1,218,380	555,823	3,749,033	5,197,120	4,668,945	1,265,965
2050	1,028,983	195,887	3,036,443	1,234,123	555,823	4,037,284	5,740,854	5,157,420	1,398,413
AAGR									
1994-2000	0.52%	2.41%	0.30%	-0.07%	1.33%	0.22%	1.50%	0.40%	2.02%
1994-2050	0.80%	1.24%	0.80%	-0.02%	0.49%	0.50%	1.18%	0.97%	0.88%

Year	Sallal	Samammish Plateau	Shoreline	Snoqualmie	Soos Creek	Union Hill	Woodinville	Total (CCF)	Total (MGD)
1994	241,119	1,556,726	1,154,944	169,732	2,065,658	359,104	2,204,250	33,268,267	68.18
2000	258,212	1,828,896	1,139,178	200,537	2,177,196	442,620	2,356,150	34,928,235	71.58
2010	280,581	2,111,831	1,089,735	250,303	2,219,922	495,021	2,505,400	36,843,457	75.50
2020	282,923	2,440,821	1,096,804	274,867	2,546,456	664,368	2,893,429	40,479,260	82.95
2030	288,309	2,696,185	1,134,584	303,624	2,812,872	733,875	3,196,146	44,067,686	90.31
2040	293,799	2,978,265	1,173,666	335,390	3,107,161	810,655	3,530,534	47,997,911	98.36
2050	299,393	3,289,858	1,214,094	370,479	3,432,238	895,467	3,899,906	52,303,304	107.19
AAGR									
1994-2000	1.15%	2.72%	-0.23%	2.82%	0.88%	3.55%	1.12%	0.81%	0.81%
1994-2050	0.39%	1.35%	0.09%	1.40%	0.91%	1.65%	1.02%	0.81%	0.81%

Figure 1

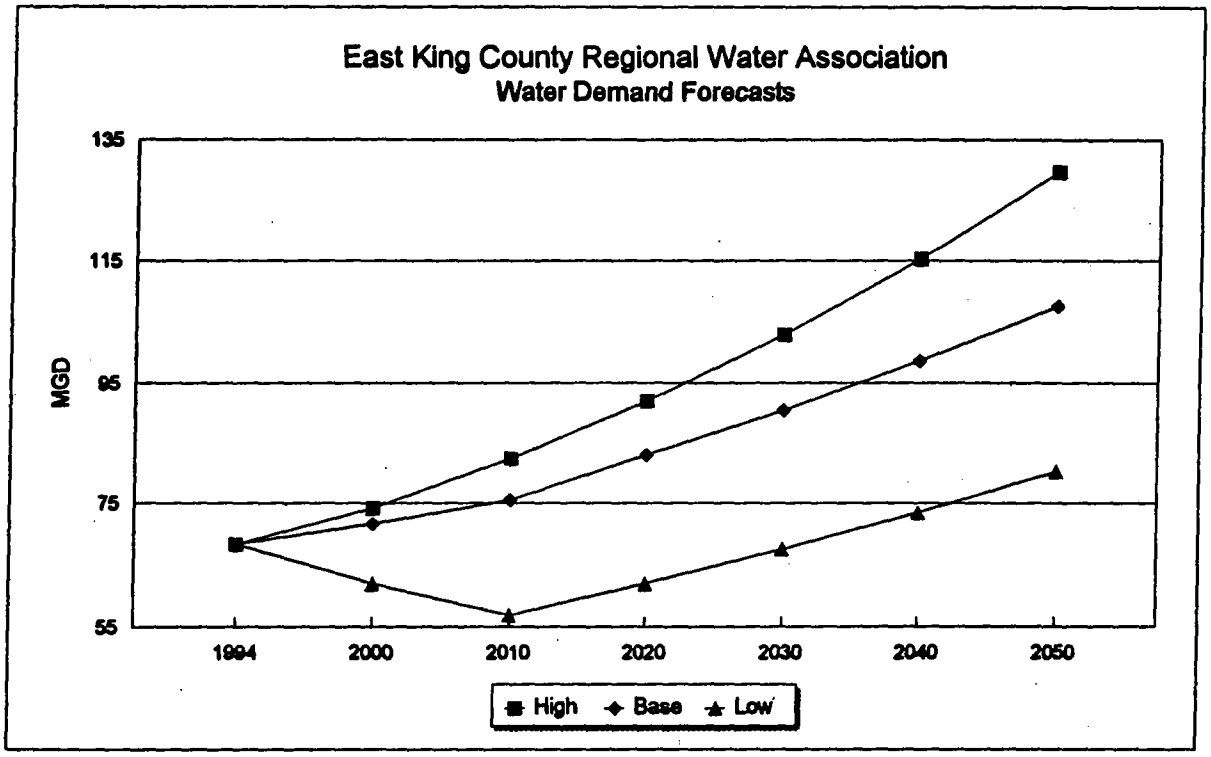
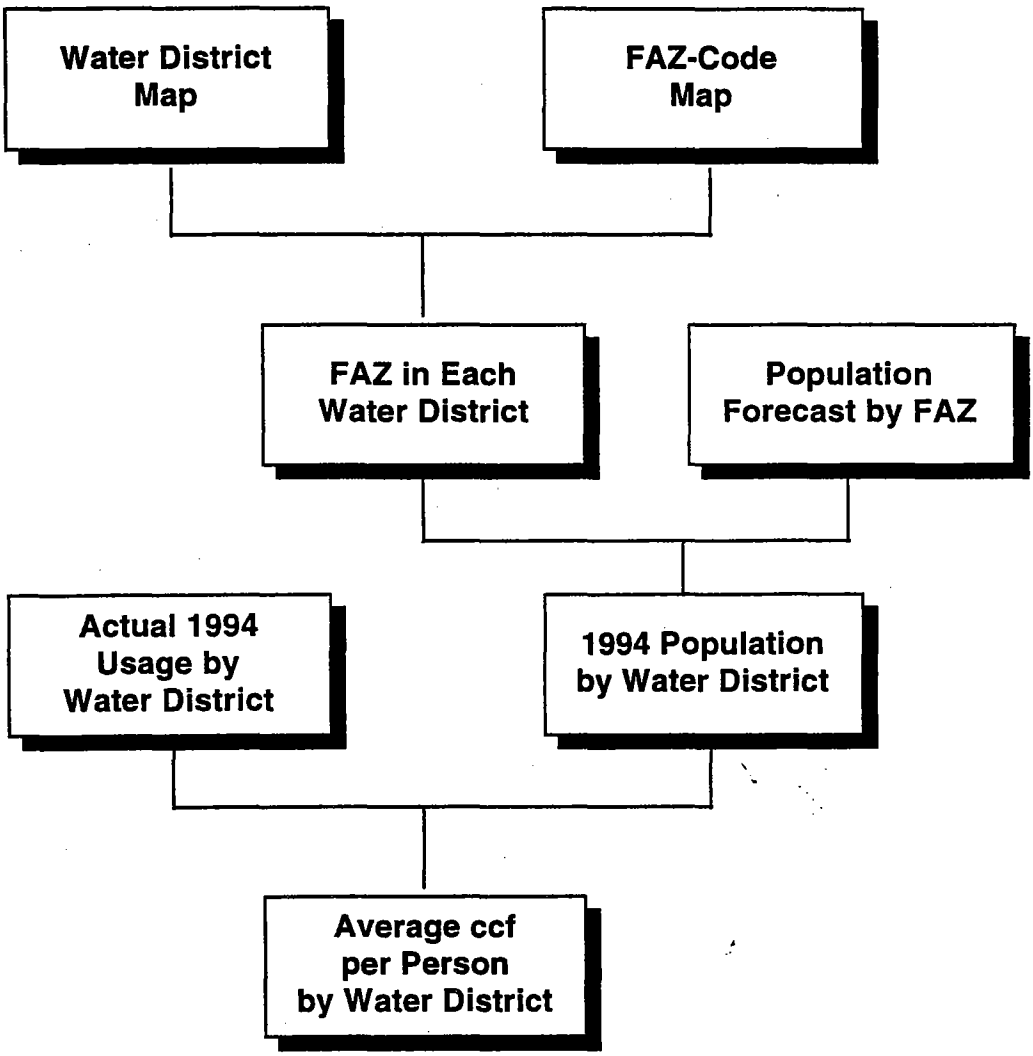


Table 4
Scenario Analysis

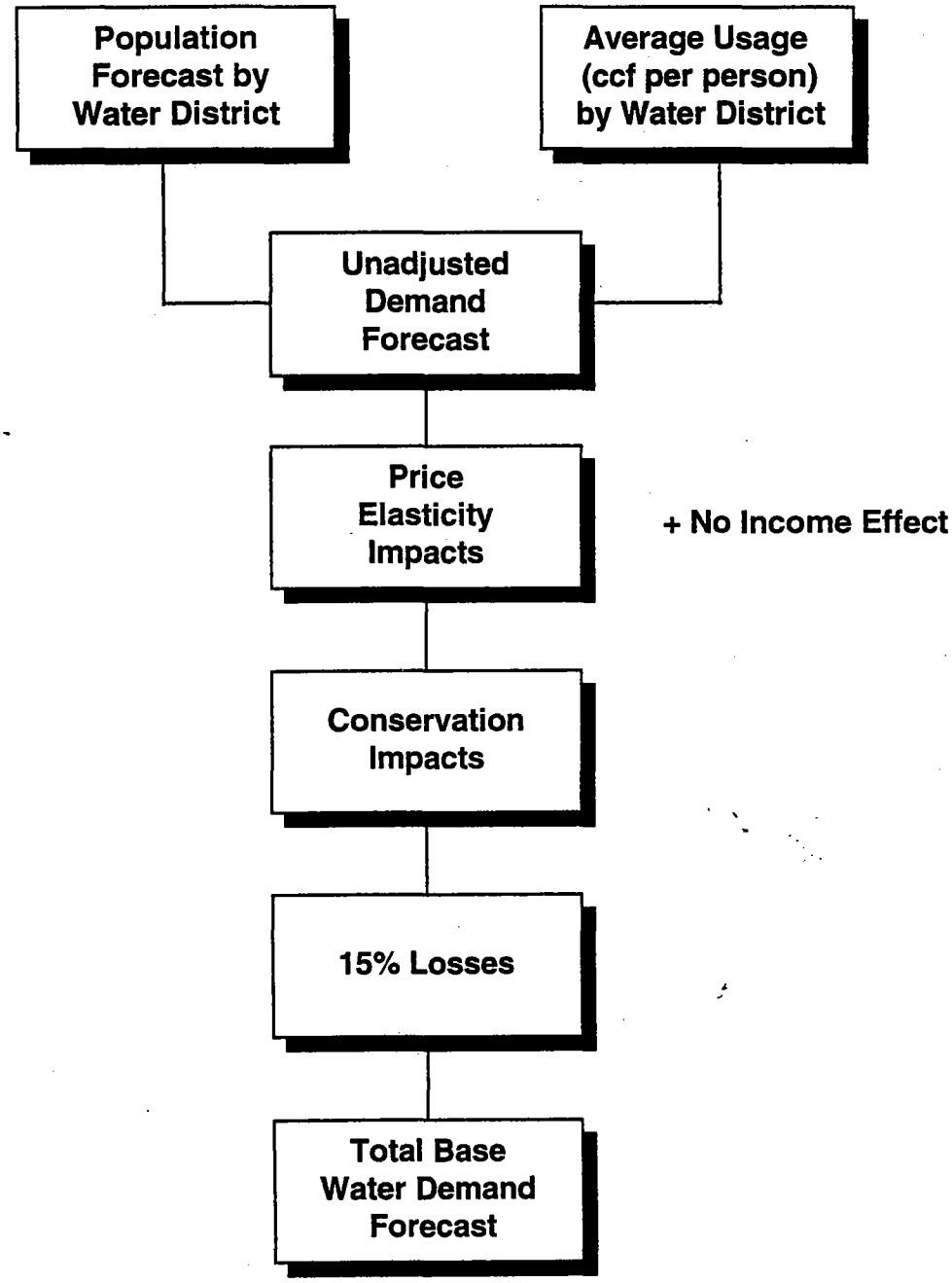
	Base	Growth Rate %	Low	Growth Rate %	% From Base	High	Growth Rate %	% From Base
1994	68.18		68.18		0.00%	68.18		0.00%
2000	71.58	0.81%	61.73	-1.64%	-13.76%	74.14	1.41%	3.57%
2010	75.50	0.64%	56.82	-1.13%	-24.75%	82.41	1.19%	9.14%
2020	82.95	0.76%	61.83	-0.37%	-25.46%	91.98	1.16%	10.88%
2030	90.43	0.79%	67.41	-0.03%	-25.46%	102.90	1.15%	13.79%
2040	98.61	0.81%	73.51	0.16%	-25.46%	115.39	1.15%	17.01%
2050	107.58	0.82%	80.19	0.29%	-25.46%	129.72	1.16%	20.58%

22% increase in base 1994-2020

Methodology



Methodology (cont'd)



Results

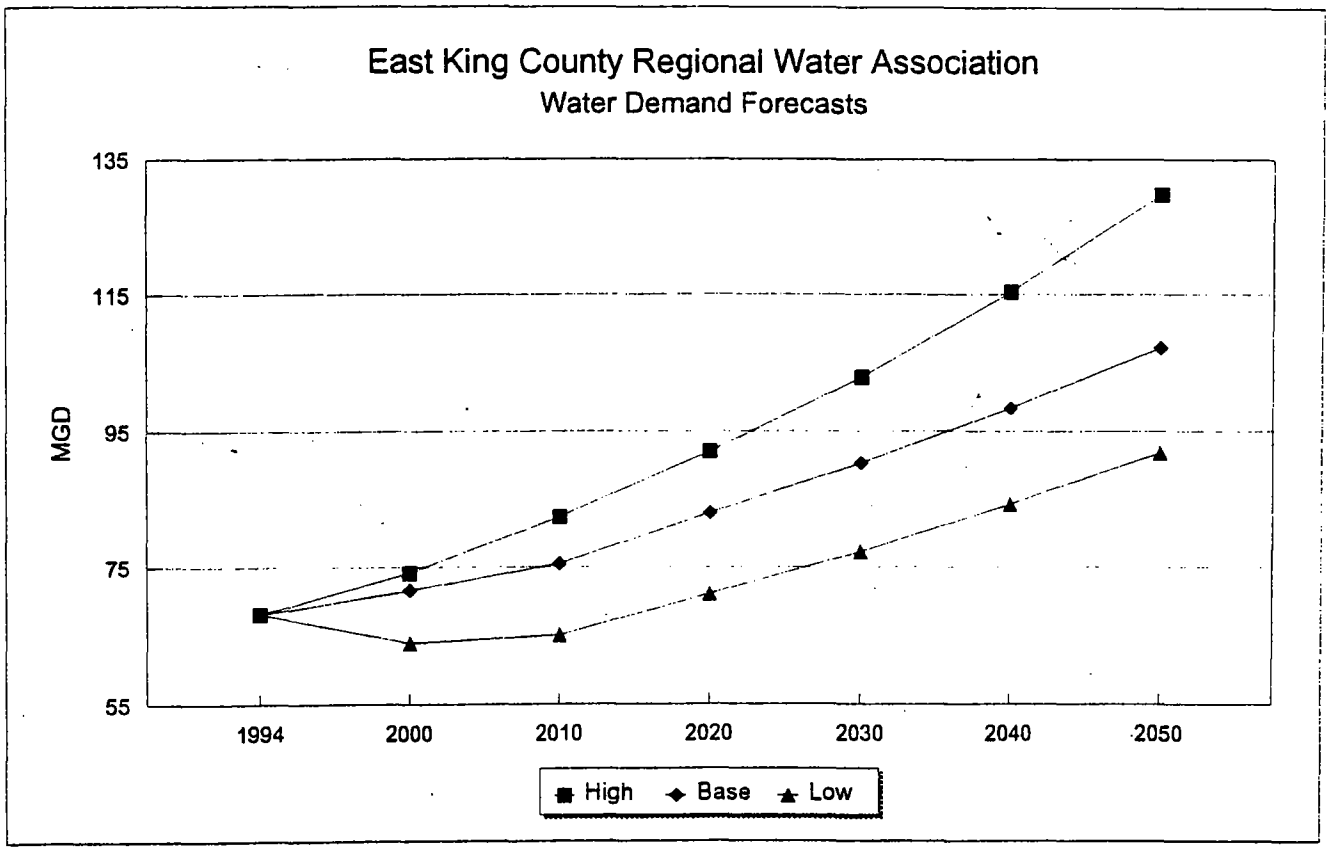
❑ New vs. Old Forecast

why are these numbers different from those given earlier

Year	New Forecast (MGD)	Old 1988 Forecast (MGD)
1994	68.2 (actual)	72
2000	71.6	82
2010	75.5	98
2020	83.0	120
2030	90.3	144
2040	98.4	168
2050	107.2	N/A

❑ Base vs. High and Low

Figure 1



BOUNDARIES AMONG UTILITIES

There were changes to the boundaries of some of the utilities. Most of them were based on technical considerations. The only substantial change is with the City of Issaquah. The city drew up the southern boundary to coincide with its corporate boundaries. The city does not believe it has the water supply to serve the larger area. There are no disputes among utilities about individual service territories.

A new map of the boundaries will be produced. It will be available through the offices of the East King County Regional Water Association:

Bellefield Office Park
1309-114th Avenue S.E., Suite 300
Bellevue, WA. 98004

(206) 455-8366
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The map is a depiction of the utility service areas. If a map of the precise legal boundaries is needed, the relevant utility should be contacted.

SUPPLY OPTIONS UPDATE

1989 Coordinated Water System Plan Options

The 1989 East King County Coordinated Water System Plan evaluated these potential new sources:

- Cedar River No. 1

  This would involve the installation of permanent pumping facilities on Chester Morse Lake to access water stored below the natural outlet. This could add an additional supply of up to 40 MGD.

- Cedar River No. 2

  A 58 foot earthen dam would be constructed at the outlet of Chester Morse Lake immediately upstream of the existing control structure. Storage of spring runoff and other surplus water would create a reservoir of 109,000 acre-feet. Stored waters would be released through a hydroelectric plant at the base of the dam to flow down the Cedar River to Landsburg for municipal supply. The yield is estimated at 65 MGD.

- Walsh Lake

  The project would involve the construction of a 40 foot high earthen dam across the outlet stream to impound about 14,000 acre-feet of water to augment instream flows downstream of Landsburg. The stored water would be released during the summer months at a point near Landsburg and conveyed by pipeline to the Cedar River immediately below the Landsburg Dam. The yield is estimated at 30 MGD.

- North Fork Tolt River

  An 8 foot high diversion structure would be constructed on the North Fork Tolt River at river mile 5.9 to carry water from this point to the existing South Fork Tolt River regulating basin. An addition to the planned Tolt water filtration plant would be built in the vicinity of the regulating basin for treatment of both the North and South Fork waters. The additional supply produced is highly dependent on unresolved instream flow requirements, but could range between 17 and 50 MGD.

- Main Stem Snoqualmie

  A pumping plant would be constructed on the river near the Town of Duvall and adjacent to the existing Tolt River pipeline crossing of the Snoqualmie River. A water trans-

mission line would follow the existing Tolt pipeline right-of-way and discharge into the South Fork Tolt regulating basin. An addition to the planned Tolt water filtration plan would be needed to treat the water from both the Snoqualmie and Tolt sources. An additional 18 MGD would result, with 8 MGD coming from the Snoqualmie Main Stem and 10 MGD from the increased drawdown of the South Fork Tolt Reservoir. A water right would be needed.

- North Fork Snoqualmie High Dam

  This option involves the development of a combined hydropower and water supply project on the North Fork of the Snoqualmie River. A 200 foot high dam would be constructed. The yield is estimated at 90 MGD.

- North Fork Snoqualmie Run-of-River

  This second option does not include a high dam. The diversion point would be moved upstream where a 16 foot diversion facility would be constructed. The configuration of the water transmission system would be the same as the high dam option. The yield is estimated at 66 MGD. A water right would be needed.

- Skagit River

  A pumping plant located on the Skagit River near the Town of Sedro Wooley would transmit water to Woodinville. A design capacity of 200 MGD was chosen. It is assumed this source would serve an area greater than East King County. A water right would be needed.

- Sultan River

  There is a surplus of water in the Sultan Basin which could be available for use on a declining basis as it is assumed that the water will be needed in the basin after 2020. The amount of water would not be known until after successful negotiations with the City of Everett and the Snohomish PUD are completed.

- Issaquah Well Field

  A total yield of 12 MGD would be pumped into the regional water system. A water right would be needed.

Current Analysis of 1989 Supply Options

All water supply projects proposed in the 1989 East King County Coordinated Water System Plan and the new options proposed in this updated version would raise environmental and water rights issues. Extensive investigation and consulation with all interested parties would be required. The City of Tacoma's Pipeline 5 is the

exception as the water right has been granted and negotiations among interested parties have been completed.

Since the current water supply plan was adopted, the Seattle Water Department has concentrated most of its efforts on (1) securing existing yield through negotiations and joint studies such as the Cedar Habitat Conservation Plan; (2) long-term conservation programs; and (3) the Tacoma-Seattle intertie development.

The North Fork Snoqualmie High Dam was not granted a permit by the Federal Energy Regulatory Commission (FERC). The current thinking is that the construction of dams will be quite difficult, if not impossible, because of the environmental problems.

The Issaquah Aquifer is no longer considered a regional water source because of the potential for hydraulic continuity with Issaquah Creek and its tributaries and the concern about groundwater contamination from surface sources. It should, however, still be considered a subregional source.

The remaining supply options from the 1989 CWSP can continue to be regarded as potential sources of new supply.

New Supply Options

The following supply options are added:

- Seattle Water Department/Tacoma Utilities Department Intertie

  The City of Tacoma has a water right to draw 65 MGD from a second diversion from the Green River. Unlike its first diversion from the river, the Pipeline 5 water right must meet instream flow conditions set by the Department of Ecology in consultation with the Muckelshoot Indian Tribe for the Green River. Tacoma also seeks permission from the Army Corps of Engineers to raise the water level in Howard Hansen Dam to maximize the potential of the second water right. An intertie could be built from a point within the City of Auburn to Lake Youngs to increase the Seattle Water Department's supply to itself and its wholesale purveyors. Utilities in south King County entered into an agreement with the City of Tacoma for 15 MGD from this new supply. Negotiations continue among the three parties. The issues are the cost to each party and the amount of water to be received over what period of time.

- Snoqualmie Aquifer

  Groundwater supplies on the Middle Fork of the Snoqualmie River have the capacity to provide an additional 20 MGD to the regional water supply. This has been verified by drilling and pump tests. Time domain electromagnetic (TDEM) soundings indicate another 20 MGD would be available where the North

Fork of the river joins the confluence. TDEM tests also show the North Fork area has a potential for another 5 MGD, bringing the total yield to between 40 and 45 MGD. A water right is being pursued by the East King County Regional Water Association with the Seattle Water Department as its partner.

- Lake Youngs Drawdown

  The Seattle Water Department is looking at the feasibility of using storage at Lake Youngs reservoir once the Cedar River filtration plan is built.

- Lake Washington

  Water could be drawn from Lake Washington, treated, filtered, and piped to customers. A water right would be needed. This option is being pursued by the Shoreline Water District.

- Lake Washington Reuse

  Treated wastewater would be discharged into Lake Washington and an equivalent amount would be drawn from the lake, treated, filtered, and piped to customers. A water right might be needed.

- Change in Hiram Chittenden Lock Operation

  Secondarily treated wastewater from the West Point Treatment Plant in Magnolia would be substituted for potable water to run the lock operations.

- Acquire Major Unused Industrial Water Rights

  The Weyerhaeuser Company has a 36 MGD water right for a pulp mill within the City of Everett which has ceased operations. An option is to purchase a portion of that right. An estimated yield could be 22 MGD. It is expected that the Department of Ecology will be involved in the final transaction.

- Tolt River Filtration Plant

  A filtration plant will be constructed on the South Fork of the Tolt River to assure compliance with water quality regulations and to correct the persistent turbidity problems. It is estimated that an additional 9 MGD will be available as a new source of supply.

The Forecast Division of the State Office of Financial Management estimates the current population of the state to be 5.5 million. It is expected to rise to 7 million by the year 2015, an increase of 1.5 million or 30 percent. Another 500,000 people are expected to be added by the year 2020.

King County is expected to increase its population by 20 percent. As a contrast,the neighboring counties of Pierce and Snohomish are expected to increase their populations by 31 percent and 49 percent respectively.

The 1989 East King County Coordinated Water System Plan estimated the firm water yield for the East King County Critical Water Supply Service Area was 77 million gallons a day (MGD). In 1996, that figure has not changed because no new water rights of any significant quantity have been granted by the Department of Ecology. The department has not granted any water rights of significance since 1991.

The 1994 actual water use was estimated at 72 MGD. The Eastside utilities are getting very close to an equilibrium between supply and demand. By the year 2000, the demand will be 76.2 MGD. It is expected that the Tolt River Filtration Plant will be on line in that year. Although the plant is being built to assure compliance with federal and state water quality regulations and to correct persistent turbidity problems, it is estimated that an additional 9 MGD will be available as a new source of supply. By the year 2020, the demand is estimated to be almost 91 MGD. It is expected that the Snoqualmie Aquifer Project, producing up to 45 MGD, and the Seattle/Tacoma Intertie Project, producing 15 to 25 MGD, will be constructed between the years 2005 to 2010.

However, there is no guarantee that all of these projects will be built. It is expected that the Tolt River Filtration Plant will be constructed on schedule. The Seattle Water Department is soliciting bids from interested parties.

The City of Tacoma has a water right for a second diversion from the Green River. It also has the necessary permits from King County for the installation of the pipeline. Most of the 33 mile pipeline will traverse the county. The permit from the Army Corps of Engineers is expected momentarily. The Tacoma and Seattle Water Departments, with the Seattle Purveyors Committee, have been discussing an intertie between the two systems. A third party to these discussions has been the South King County Regional Water Association. The main issues of discussion have centered around the price and amount of the water delivered to each of the parties. The negotiations continue but it is not known when and if they will be successfully completed.

The East King County Critical Water Supply Service Area and, indeed, all of King County no longer enjoy a surplus of water. Many utilities are at or near the capacity of their systems. For this reason, it is extremely important that King County, as the

land use authority for unincorporated King County, establish a close, collaborative relationship with the East King County utilities. It is critical that King County and the other local jurisdictions ascertain the supply capacity of the utilities before adopting countywide planning policies. King County and the other local jurisdictions need to support the utilities in implementing the following supply options.

Recommendation:

The Water Utility Coordinating Committee suggests that King County develop reliable procedures so it can monitor the water available to the utilities serving in unincorporated King County. This does not have to be a complicated system. It can be done through the Utilities Technical Review Committee (UTRC) which already has a public rule that all utilities must inform the Chair of the UTRC whenever the conditions of water availability, as identified in the King County Comprehensive Plan, have significantly changed in all or part of their planning areas. To the UTRC,"significant change" means that a water utility's projected supply has changed from being either greater than or less than projected demand through the year 2000 as shown in Tables 1 and 2 of Appendix A of the King County Comprehensive Plan. If the figures published in the Comprehensive Plan are not reasonable or reliable, utilities have the responsibility to inform King County. The UTRC should also track the schedule of construction for new water supply projects which are anticipated to add new water supply.

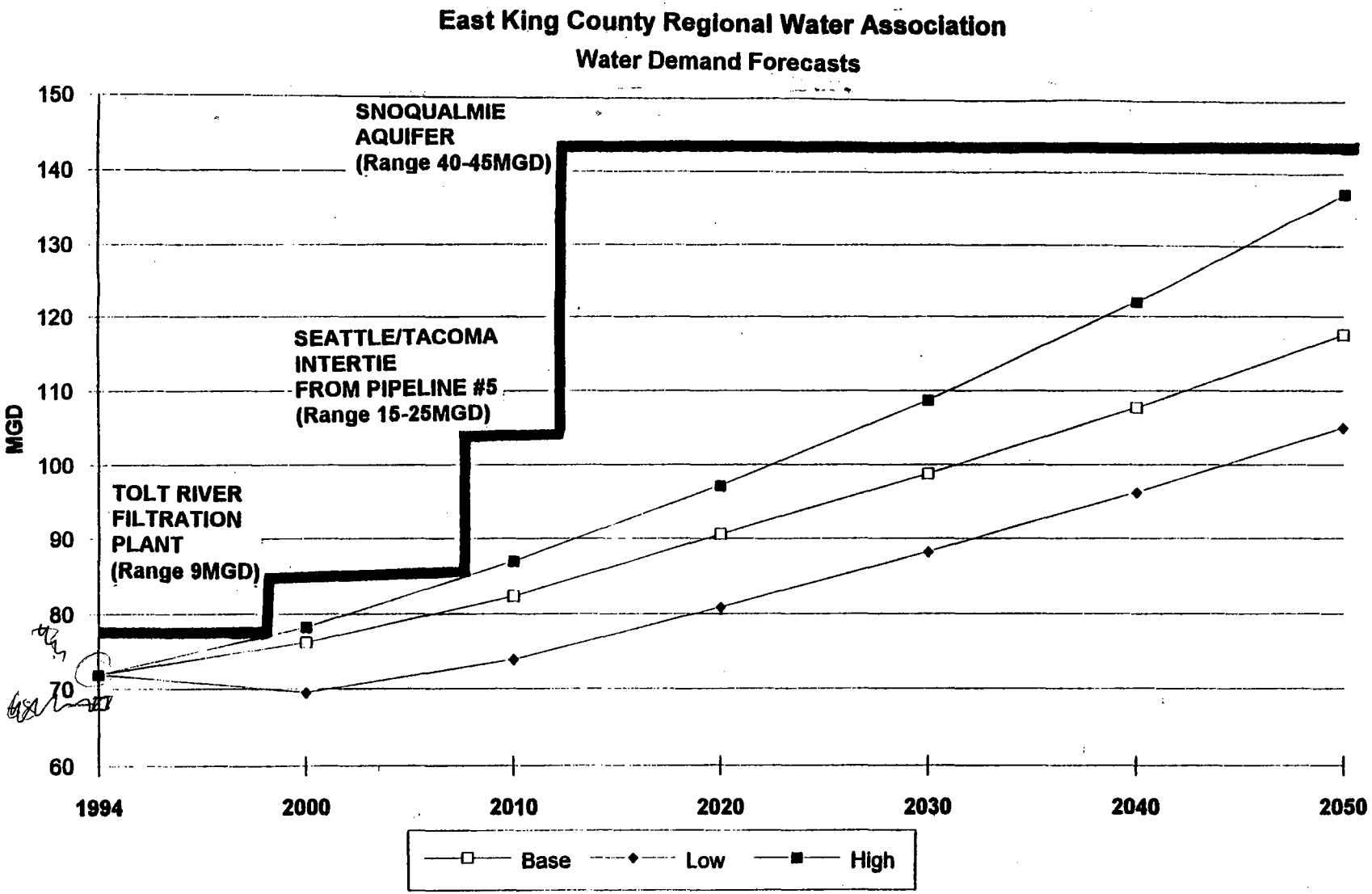
SCHEDULE

Project	On-line	Yield	Capital Cost *
Tolt River Filtration Plant	2000	9 MGD	91.5 million
Seattle/Tacoma Intertie**	2005-2010	15-25 MGD	65 million
Snoqualmie Aquifer***	2005-2010	40-45 MGD 64 - 79	80 to 113 million 236.5 - 269.5

*These are initial capital costs only. The figures do not portray levelized costs which include initial capital costs, present value of future capital costs, annual O & M costs, and present value of future O & M costs.

**The total initial capital cost, including the construction of Pipeline 5 and the intertie to the Seattle system, is $195 million.

***The initial capital costs depend upon which of the three routes is chosen for the delivery of water.


East King County Regional Water Association
Water Demand Forecasts
MGD
150
140
130
120
110
100
90
80
70
60
SNOQUALMIE
AQUIFER
(Range 40-45MGD)
SEATTLE/TACOMA
INTERTIE
FROM PIPELINE #5
(Range 15-25MGD)
TOLT RIVER
FILTRATION
PLANT
(Range 9MGD)
1994
2000
2010
2020
2030
2040
2050
Base
Low
High

CONSERVATION PROGRAM

The slate of conservation programs in the 1989 East King County Regional Water Plan was reviewed. The list still presents the East King County water systems with good options to choose when planning their own conservation programs.

The recommended programs are consistent with the "Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs", a document based on State law directing the Departments of Ecology and Health to encourage water use efficiency. The East King County CWSP Update conservation program is not prescriptive. It should be used as a guide to design an effective conservation program which can supplement the requirements of the State guidelines.

A. Public Outreach

1. School Outreach

a. Elementary Schools
b. Middle/Junior High Schools
c. Senior High Schools

East King County water systems should continue to work both regionally and locally with school districts to implement student programs about conservation. The goal is to develop on-going programs which instruct students in the importance of water conservation and how to conserve water at school and home.

d. Teachers' Continuing Education Workshops

East King County water systems should work regionally to continue to hold Teachers' Continuing Education Workshops about how to incorporate water conservation into learning activities in the classroom. Teachers attending the workshops would receive Continuing Education Units as an incentive to participate.

e. Teachers' Newsletter

East King County water systems should work together to develop and distribute, on a regular basis, a Teachers' Newsletter as a means of promoting upcoming water conservation events and activities and to inform them about the availability of water conservation printed materials, videos, and other worthwhile programs.

2. General Public Outreach

a. Marketing Campaigns

East King County water systems should continue to work locally and regionally to develop and implement seasonal and annual campaigns which emphasize the need to conserve water. The purveyors should work with partners whenever possible to expand the area of coverage and leverage the amount of available funds.

b. Program and Project Promotion

East King County water systems should promote conservation programs and projects through such strategies as public service announcements, radio ad campaigns, newsletters, water efficient demonstration gardens, "Water-Wise" gardening tips on TV shows, lawn watering calendars,and partnerships with the private sector and electrical utilities.

c. Speakers Bureau

East King County water systems should continue to provide speakers on water conservation at both public and private forums. They should actively work to spread the conservation message.

d. Theme Shows, Fairs, and Community Events

East King County water systems should continue to actively participate in local and regional theme shows, fairs, parades, and community events to promote conservation.

e. Green Industry Partnerships

East King County water systems should pursue opportunities to develop partnerships with nurseries, landscape professionals, and other green industry firms to promote water efficient landscaping, gardening, and irrigation systems to reduce the summer peak water use. It is also important not to alienate this segment of the industry as decisions by local utilities can affect the amount and way they do business. The green industry is an important ally to help utilities educate the public about the wise use of water.

f. Other Partnerships

East King County water systems should work with the building and development communities to offer options for the purchase of water-efficient residences. The

program could be modeled after the electrical promotional program for "Good Sense$ Homes." Another avenue has been and can continue to be the distribution of brochures about indoor and outdoor water conservation through the Boards of Realtors and the Puget Sound Multiple Listings.

B. Technical Programs

1. Retrofit Programs

a. Single Family Residential
b. Multi-family Residential
c. Commercial/Industrial

East King County water systems should continue to develop and implement, where cost-effective, water-efficient retrofit programs for toilets, faucets, and showerheads. The purveyors should form partnerships with electrical utilities, where possible, to increase the program coverage.

2. Financial Incentive Programs

a. Single Family Residential
b. Multi-family residential
c. Commercial/Industrial

East King County systems should develop, when cost effective, rebate and financial assistance programs for the installation of water-efficient technology, equipment, and fixtures on a regional and local level.

3. Research Studies

a. Market Research

East King County water systems should continue to conduct market research to measure customer awareness, attitudes, and involvement in water conservation to help identify program effectiveness and chart a future course.

b. Water Efficient Appliances

East King County water systems should support and, to the degree possible, participate in national and regional studies of water efficient appliances in order to develop national standards for them and to educate the public about the benefits of purchasing these appliances.

c. Indoor and Outdoor Water Use

East King County water systems should continue to participate in technical studies about customer indoor and outdoor water use practices in order to develop

programs and projects which increase efficient use.

4. Water Use Data Base and Reporting Program

East King County water systems should develop an automated and standardized method of tracking water consumption data to satisfy State data collection and reporting requirements, to analyze changes in water consumption, and to gauge the effect of conservation programs and projects.

5. Leak Detection

East King County water systems should implement distribution system leak detection programs. These programs should be repeated periodically to ensure that water lost due to undetected system leakage is minimized. The utilities should consider offering leak detection assistance to customers to help reduce the amount of water wasted due to leaks in their systems and fixtures.

6. Water Bill Consumption History

East King County should show the customers' historical water use on their bills. This is routinely done by many utilities and should not be an expensive item after the initial programming.

7. Water Audits

East King County water systems should develop indoor and outdoor water audit programs to assist customers in identifying appropriate water demands compared to actual consumption and implementing methods to reduce water consumption.

C. Local Government Partnership

East King County water systems should work with their local governments to explore ways to reduce water consumption through the adoption of water-efficient landscape codes for commerical and residential construction.

D. Policy Direction

East King County water systems should support the following items on a local and regional basis:

- The development and implementation of all water conservation programs outlined in the CWSP Update which are cost effective according to the methodology contained in the State's "Guidelines and Requirements for Public Water Systems Regarding Water

Use Reporting, Demand Forecasting Methodology, and Conservation Programs."

- The installation and maintenance of water meters on all supply and service connections.
- The passage of legislation for more water-efficient plumbing fixtures and appliances and standards for water reuse and recycling.
- The development of water-efficient landscaping codes and standards for the installation of irrigation systems.
- The implementation of rate structures which encourage conservation.
- The application of the King County "Best Management Practices for Golf Courses" for water efficiency.
- The development of Water Shortage Contingency Plans which outline voluntary and mandatory water use restrictions during times of water shortage.
- The continued work on standards for water reuse and recycling.
- The review of the efficacy and cost-effectiveness of conservation programs
- The use of public review processes to assist in designing the most effective water conservation programs and promotional campaigns.

CWSP UPDATE CONSERVATION PLAN

OUTLINE

A. Public Outreach

1. School Outreach

a. Elementary Schools
b. Middle/Junior High Schools
c. Senior High Schools
d. Teacher Continuing Education Workshops
e. Teachers' Newsletter

2. General Public Outreach

a. Marketing Campaigns
b. Program and Project Promotions
c. Speaker's Bureau
d. Theme Shows, Fairs, and Community Events
e. Green Industry Partnerships
f. Other Partnerships

B. Technical Programs

1. Retrofit Programs

a. Single Family Toilet Kits, Showerheads, and Aerators
b. Multi-family Toilet Kits, Showerheads, and Aerators
c. Commercial/Industrial Toilets, Showerheads, and Aerators

2. Financial Incentive Programs

a. Single family Toilet Rebates
b. Multi-family Toilet Rebates
c. Commercial/Industrial Water Efficient Technology and Equipment Rebates and Financial Assistance

3. Research Studies

a. Market Research Studies
b. Water Efficient Appliances
c. Outdoor Water Use

4. Water Use Data Base and Reporting Program

5. Leak Detection

6. Water Bill Showing Water Consumption History

C. Local Government Partnership

D. Policy

1. Require Meters on all Supplies and Services

2. Plumbing Code Update for Water-efficient Fixtures and Appliances

3. Standards for Water Reuse and Recycled Water

4. Development of Water-efficient Irrigation Systems and Standards for Installation

5. Rate Structures Which Encourage Conservation

6. Application of King County "Best Management Practices for Golf Courses" for Water Efficiency and Conservation

7. Water Shortage Contingency Plans Outlining Voluntary and Mandatory restrictions

8. Review of Efficacy and Cost-effectiveness of Conservation Programs, Projects, and Audits

9. Use of Public Review to Design Effective Water Conservation Programs and Promotional Campaigns

MINIMUM DESIGN AND PERFORMANCE STANDARDS

1. INTRODUCTION

This section of the East King County Coordinated Water System Plan (CWSP) 1996 Update provides a set of minimum performance and design standards and incorporates specifications, where applicable, for new and existing water utilities which are planning to install new capital facilities in King County. Subsection 3 describes the manner in which the specifications can be applied to water utility planning and construction. Since other legally constituted standards which are more stringent are not superseded, the primary, existing, and applicable standards are listed and incorporated by reference in Subsection 4. The design standards are described in Subsection 5.

2. PURPOSE

The purpose of these standards is to set a base level of utility planning, design, and construction for public water utilities. Uniformity and consistency in standards will, in the long term, reduce costs to consumers as systems intertie and/or consolidate. Reliability of the water supply will also be improved.

Subject to certain exceptions, each utility, including municipalities, is to adopt design and performance standards as part of its water system plan. It is intended that a utility may adopt the minimum standards described herein or may adopt higher standards.

3. APPLICATION OF STANDARDS

A. Existing Water Systems

Existing water systems are not required to apply these minimum standards for repair or replacement of existing facilities unless the replacement is associated with providing expanded service due to new development. Adherence to these standards for the repair of facilities is encouraged to provide better public water service throughout the County. When system replacement occurs, the design should be based on the utility's long-term water system planning performance standards.

B. City Water Systems

The minimum design standards described herein do not apply to cities insofar as service within municipal boundaries is concerned. However, it is expected that cities will adopt, or have adopted, design standards at least equal to those in this chapter. If cities extend new water service to customers outside of the city limits, the design standards adopted by the municipality for service outside the city must at least meet the minimum standards described in this document.

C. Water System Plans and Applicable Land Use Plans

The planning and operations of new and expanding utilities must be consistent with the King County Comprehensive Plan, subarea or neighborhood land use plans, and growth targets. Utilities should use the growth targets adopted by jurisdictions in compliance with the Growth Management Act whenever possible.

It is the responsibility of all utilities to inform the Chair of the King County Utilities Technical Review Committee (UTRC) whenever the conditions of water availability as identified in the King County Comprehensive Plan have significantly changed all or a part of their planning area. The UTRC has defined the term "significant change" as meaning the projected supply of water has changed from being either greater than or less than the projected demand by 2000 as shown on Tables 1 and 2 of Appendix A to the King County Comprehensive Plan.

The water system plans of utilities should be consistent with the requirements contained in the King County Code, Chapter 13.24 and the administrative rules of the UTRC.

The King County Comprehensive Plan allows water service to rural areas by Group A and B systems under specific circumstances. This has been done with the understanding that water service can be provided directly or through satellite management. The service to rural areas is intended to provide professionally managed water service to maintain public health standards and to reduce the proliferation of small water systems which is consistent with RCW 70.116, the Public Water System Coordination Act. Either direct service or satellite management of systems in rural areas does not provide justification for any increase in the land use densities approved for these areas.

The King County Code exempts all building lots of 35,000 square feet or larger outside of Urban Growth Areas from fire flow requirements. However, utilities may provide

fire flow to these lots, if requested. The fire flow systems must meet all applicable county and state standards.

4. STANDARDS INCORPORATED BY REFERENCE

The existing standards listed below, or as may be modified by the appropriate authorities, are hereby incorporated by reference. Priority for application of these standards is in the order listed, but the most stringent applies. Except as otherwise superseded by the County standards described herein, these standards will apply to water system design, installation, modification, and operation.

- Rules and Regulations of the State Board of Health Regarding Public Water Systems:
  Group A Public Water Systems (Chapter 246-290 WAC)
  Group B Public Water Systems (Chapter 246-291 WAC)

- Applicable County rules, regulations, ordinances, and standards.

- The material and construction specifications as required by the latest edition of the Uniform Plumbing Code.

The following are other reasonable standards which may be considered by utilities in the development of their systems.

- Standard Specifications for Road, Bridge, and Municipal Construction, as published by the Washington State Department of Transportation/American Public Works Association (DOT/APWA), latest edition.

- Standards of the American Water Works Association.

5. MINIMUM STANDARDS

A. General Provisions

(1) Source Development

New sources must be designed to meet the Department of Ecology (Ecology), the Department of Health (DOH), and the Seattle-King County Department of Public Health (SKCDPH) regulations and design guidelines. These include: Chapter 173-160 WAC, "Minimum Standards for Construction and Maintenance of Water Wells", as administered by the Department of Ecology; Chapters 246-290/291 WAC, "Rules and Regulations of the State Board of Health Regarding Public Water Systems", as administered by DOH; and "King County Board of Health, Title 12" as administered by the SKCPH.

All test and production wells must be drilled in accordance with detailed drilling and testing specifications which have either been prepared by or received prior approval of the designated utility, if the well is to be used for a public water supply. These specifications may be less stringent than those identified in the references cited in the above paragraph.

(2) Water Rights

Water rights must be obtained in accordance with Ecology regulations and procedures. Copies of water right documents, correspondence, and other records are to be maintained on file with the purveyor and in the name of the purveyor.

(3) Water Quality

Water quality must be proven to conform with DOH criteria specified in Chapters 246-290/291 WAC and/or any additional requirements contained in the King County Board of Health, Title 12.

(4) Hydrostatic Pressure Test

A hydrostatic pressure leakage test will be conducted on all newly constructed water mains, fire lines, fire hydrant leads and stubouts in accordance with DOT/APWA Section 7-11.3(11) or AWWA C-600 specifications unless otherwise specified by the designated utility.

(5) Disinfection and Bacteriological Testing

All pipe, reservoirs, and appurtenances shall be flushed and disinfected in accordance with the standards of DOH, AWWA C651-92, C652-92, C653-87, and C654-87 or DOT/APWA Section 7-11.3(12) unless otherwise specified by the designated utility.

(6) Auxiliary Power

All source and booster pumping facilities required for primary supply in an emergency shall be equipped with auxiliary power unless a redundant power supply source is provided. Where pumping is to a storage facility which is sized to permit down time for mobilization of a portable standby power unit, pigtail outlets and a manual transfer switching device are adequate. If the pigtail outlet approach is taken, the purveyor must provide a portable power unit. Where adequate gravity standby storage has been provided, no auxiliary power is required for

pumping facilities. An adequately sized engine driven pumping device is an acceptable method to meet this requirement. Adequacy of facilities will be determined by the utility through its water comprehensive plan.

(7) Utility Interties

Planning for specific locations, sizes, and alignment of major lines shall consider emergency interties with adjacent water utilities.

(8) Flow Measurement

All service lines shall be installed so that each residential, commercial, and industrial structure will have a separate metered service for domestic water received from the utility. This requirement may be waived by the utility; but, at a minimum, any new service will have a box for meter drop installation. If approved by the utility, domestic water consumption may be measured by a master meter for service to a complex, under single ownership, and where water utility line subdivision is impractical. Service lines providing fire flow may be required by the utility to be equipped with a fire detection check.

All new groundwater sources shall be provided with a device for measurement of depth to water and a meter for determining flow rate and total production. Installation of these devices is also recommended for existing groundwater sources. All new sources for which water treatment is included shall be provided with flow measurement.

(9) Cross Connection Control

Where the possibility of contamination of potable water exists, water services shall be equipped with appropriate cross connection control devices in accordance with Chapters 246-290/291 WAC. The utility and/or the County cross connection control program shall determine the need, size, kind, and location of the device.

B. Specific Provisions

(1) Pressure Requirement

Water systems shall be designed to provide an adequate quantity of water at a positive pressure of at least 30 psi under maximum instantaneous demand

(MID) flow conditions measured at any customer's water meter or at the property line if no meter exists. If fire flow is to be provided, the distribution system shall be designed to provide the required fire flow at a pressure of at least 20 psi during peak design flow conditions according to the standards set forth in WAC 246-290-230(5).

(2) Pipe Sizing and Materials

Water main size shall be adequate to deliver required fire flow and to maintain the pressure requirement defined above with a water velocity of not more than 10 feet per second. All water mains shall meet applicable engineering and health standards adopted by the State of Washington or the water purveyor, including Chapters 246-290/291 and 246-293 WAC.

All water mains subject to King County Code 17.08, which may serve fire hydrants, shall be a minimum of 8 inches nominal diameter for dead end mains and 6 inches nominal diameter for circulating mains. Hydrant leads less than 50 feet in length may be 6 inches in diameter. In a dead end cul-de-sac, mains sized for only domestic flow may be installed from the last hydrant to remaining residences.

All pipe material for new water systems shall be constructed with "lead-free" materials. The lead content for joint compound materials (solder and flux) used for pipe installation shall be less than 0.2 percent in order to be considered "lead-free." The lead content for all installed pipe shall be less than 8 percent in order to be considered "lead-free."

(3) Isolation Valving

Valving shall be installed in a configuration which permits isolation of lines. A valve is not required for short block lines of less than 100 feet. Valves should be installed at intersections with normal maximum spacing at 500 feet in commercial, industrial, and multiple-family districts, 800 feet in residential districts, and 1/4 mile in arterial mains.

(4) Air and Air-Vacuum Relief Valves

Air or combined air-vacuum relief valves shall be installed at appropriate points of high elevation in the system. All piping shall be sloped to permit escape of any entrained air. Combination air

release/air vacuum valves shall have a rated operating pressure of 300 psi.

(5) Blow-off Assembly

A blow-off assembly or fire hydrant shall be installed on all dead end runs and at designated points of low elevation to provide a way for adequate flushing of the distribution system. The blow-off assembly shall be installed in the utility right-of-way, except where a written access and construction easement is provided for the water utility. In no case shall the location be such that there is a possibility of back-siphonage into the distribution system. The blow-off assembly shall be sized to achieve a flow velocity of 2-1/2 feet per second.

(6) Storage

Storage requirements are based upon three components:

- Equalizing Storage, required to supplement production from water sources during high demand periods,
- Standby Storage, required as backup supply in case the largest source is out of service, and
- Fire Storage, required in order to deliver the level of fire flow service identified in the utility's approved plan (see "Fire Flow Requirements listed in #12) for the required duration.

As a minimum, sizing of storage facilities shall be adequate to provide for equalizing storage, plus the larger standby or fire storage requirements. Equalizing and standby storage volumes shall generally be determined using "Sizing Guidelines for Public Water Supplies", DOH, or system specific information generated through past operating experience. Minimum fire storage volumes shall be determined using the fire flow and duration requirements of the County Fire Marshall or the respective municipal ordinance. Siting of storage facilities should consider locations which provide gravity flow. In some cases, the system hydraulics may require additional storage.

(7) General Facility Placement

All piping, pumping, source, storage, and other

facilities shall be located on public rights-of-way or dedicated utility easements. Utility easements must be a minimum of 15 feet in width, and pipes shall be installed no closer than 5 feet from the easement's edge. Exceptions to this minimum easement may be approved by the operating water utility. Unrestricted access shall be provided to all public water system lines and their appurtenances and public fire hydrants that are maintained by public agencies or utilities.

Group B water systems in undesignated service areas should consider future interties with Group A systems when determining the location of their distribution network.

The location of utilities shall be in accordance with the standards and guidelines established by King County or the appropriate City criteria. Where existing utilities or storm drains are in place, new utilities shall conform to these standards as nearly as practicable and yet be compatible with the existing installations. Where practical, there shall be at least 3 feet horizontal separation from other utilities.

(8) Pipe Cover

The depth of trenching, installation of pipes, and backfill shall be such as to give a minimum cover of 36 inches over the top of the pipe from finished grade unless unusual site constraints exist which justify less cover. This standard shall apply to all transmission and distribution piping and to service piping within the right-of-way unless specifically designed for an above ground installation.

(9) Water Line and Sewer Separation Distances

Transmission and distribution water piping shall be separated at least 10 feet horizontally from existing wastewater gravity or force mains. The bottom of the water main shall be 18 inches above the top of the sewer. Where local conditions prevent such horizontal and/or vertical separation, closer spacing is permissible where design and construction meet the special requirements of Section 2.4 of Ecology's Criteria for Sewage Works Design as revised October, 1985.

Separation distances between water piping and any portion of an on-site sewage system shall meet the requirements of the SKCBH Rules and Regulations.

(10) Fire Hydrants

Fire hydrants within cities shall adhere to the specific design criteria and standards utilized by the City Fire Department. Fire hydrants within unincorporated areas of the County shall comply with the minimum design criteria set forth in King County Code 17.08. (King County is encouraged to address standardization of pipe threads in future revisions of this Code.)

(11) Fire Hydrant Location Installation Criteria

The location of fire hydrants within cities shall be located and/or installed as specified by the design standards of the city. Fire hydrants within the unincorporated areas of the County shall comply with the minimum location/installation criteria set forth in King County Code 17.08. In all circumstances, these standards shall not be less stringent than the placement requirements prescribed in WAC 246-293.

(12) Fire Flow Requirements

The actual fire flow to be provided to a proposed development will be determined by the County Fire Marshall or City Fire Department. The location of hydrants and fire flow storage requirements will be based on the designated level of service identified during the water system planning process or the rated flow and duration for public water supply for fire protection, whichever is greater. The Fire Marshall shall consider the availability of water service based upon a phased improvement plan within the utility's water system plan and shall specify the fire flow requirements in conjunction with the utility, confirming the availability of water service. All water systems providing fire flow should be designed to deliver water supply to the services which require fire flow with a minimum rated flow of 1,000 gpm in urban areas and 500 gpm is rural areas. The Fire Marshall will determine the duration required for fire protection. The minimum pipe size will be based on these standards.

(13) Maintenance of Fire Protection Facilities

A written operational agreement which identifies responsibilities for maintenance and testing of fire protection facilities should be negotiated between the fire department or district and the water utility. No standardized agreement is recommended. The terms of an agreement between a department or

district and a water utility should be tailored to their specific circumstances.

6. WAIVER PROCESS

A waiver process exists for circumstances where the minimum design and performance standards create undue hardship. Outside designated service areas, a waiver may be obtained through the Appeals Process described in Section XI of the 1989 East King County Coordinated Water System Plan. In this instance, a waiver can only be granted to Group B systems located in rural areas where fire flow is not required.

Within designated service areas, the designated purveyor has the sole authority to allow the installation of facilities for remote systems which conform with DOH standards but are less stringent than the East King County Minimum Design/Performance Standards. In this instance, lesser standards can only be granted to new systems with four or fewer service connections and where fire flow is not required. The acceptance of lesser standards should be noted on the Certificate of Water Availability by the designated utility and in its service area contract with the applicant. It is anticipated that this waiver will be utilized primarily when the proximity of a smaller system will benefit from larger, nearby facilities planned for future installation by the designated utility.

7. STANDARDS REVIEW SUBCOMMITTEE

A Standards Review Subcommittee shall be established by the Water Utility Coordinating Committee (WUCC) and shall convene at least annually to review these standards and their implementation. The Subcommittee shall seek input from the King County Fire Marshall, the City fire departments, and King County fire protection districts in matters related to fire protection standards. Recommendations of the Standards Review Committee shall be submitted to the WUCC and, if revisions are approved, they shall be forwarded to the Metropolitan King County Council for adoption.

8. SEVERABILITY

If any provision of these standards or their application is found to be invalid, the remainder of the standards and their implementation are not affected.

REQUIREMENTS OF SENATE BILL 5448

Governor Mike Lowry signed into law the requirements of Senate Bill 5448 on May 16, 1995. The bill amended various state laws pertaining to water. This chapter highlights some of the more important aspects of the new law.

- Satellite Management

No new public water system may be approved or created unless it is owned or operated by a satellite system management agency established under RCW 70.116.134 and the satellite system management system complies with the financial viability requirements of the department. If a satellite management system is not available and it is determined that the new system will have sufficient management and financial resources to provide safe and reliable water service, it can be constructed. However, the approval of any new system that is not owned by a satellite system management agency shall be conditioned upon future management or ownership by a satellite system management agency, if the management or ownership can be made with reasonable economy and efficiency, or upon periodic review of the system's operational history to determine its ability to meet the Department of Health's financial viability and operating requirements. Both the Department of Health and the Seattle/King County Health Department will enforce these requirements.

Any entity or person operating a satellite system management agency must do so according to the standards in Chapter 246-295 WAC. This applies to agencies operating both inside or outside of service area boundaries claimed by water purveyors. It is recommended that purveyors incorporate these standards into their individual water comprehensive plans.

- Timely and Reasonable Water Service

State law states that no other purveyor shall establish a public water system within the area covered by a Coordinated Water System Plan unless the local legislative authority determines that the existing purveyors are unable to provide the service in a timely and reasonable manner. An existing purveyor is unable to provide the service in a timely manner if the water cannot be provided to the applicant for water within 120 days unless specified otherwise by the local legislative authority. If such a determination is made, the local legislative authority shall require the new public water system to be constructed in accordance with the construction standards and specifications of the East King County Coordinated Water System Plan. The service area boundaries of the plan for the affected purveyors will be revised to reflect the decision of the local legislative authority.

Disputes stemming from claims of untimely and/or unreasonable conditions of service usually arise when a developer wishes to receive service from an existing utility where it is not presently

providing service. The changes required in SB 5448 remove the Department of Health from the process of determining timeliness and reasonableness of service and places it with the local legislative authority. The department, however, has developed interim criteria for making decisions regarding reasonable service conditions in a document entitled "Interim Criteria for Making Timely and Reasonably Decisions." Final criteria will be issued. The department will also establish criteria for when the 120 day period for providing timely service will commence.

The 1989 CWSP laid out an appeal process which will not change. The items of appeal remain the same:

- Interpretation and applicability of water utility service area boundaries.
- Proposed schedule for providing service.
- Conditions of service, excluding published rates and fees.
- Annexation provisions imposed as a condition of service; provided, however, existing authorities of City government are not altered by the CWSP, except when an interlocal agreement exists between a city and the County or as are specificially authorized by Chapter 70.116 RCW.
- Established minimum design standards.

The WUCC will continue to provide a forum for negotiation when these issues of appeal arise. Within 45 days, the WUCC will provide a written report to the King County Utilities Technical Review Committee (UTRC) or its successor agency which states the conditions of the agreement reached by the parties, or where no agreement was reached, a statement of findings and recommendations for disposition of the issues.

RCW 70.116.060(5) contains the legal authority for local government to establish dispute resolution processes. It states:

> (5) The affected legislative authority may develop and utilitize a mechanism for addressing disputes that arise in the implementation of the coordinated water system plan after the plan has been approved by the secretary.

That function is now being performed by the King County UTRC which derives its authority from KCC 13.24 and the UTRC rules and administrative procedures. The county is encouraged to make certain that the UTRC's or its successor agency's process facilitates any appeals.

- Failing Water Systems

RCW 43.70.195 states that the local legislative authority will take over the management of failing water systems if no purveyor is willing to take on the responsibility. It is recommended that King County have procedures in place to handle future receiverships of failing water systems. Work was begun by the county in 1994 to formulate these procedures. It is contained in Appendix B.

- The WUCC recommends that the County adopt or refine the draft work begun in 1994 entitled "King County Action Plan for the Receivership of Failed Water Systems" (April, 1994) as the policy and procedure to address receivership actions for which it is responsible by State law.

GROWTH MANAGEMENT ACT, KING COUNTY COMPREHENSIVE PLAN, WATER DEMAND FORECASTS, AND NEW SUPPLY

WATER DEMAND FORECASTS

The purpose of developing water demand forecasts for the East King County Critical Water Supply Service Area is to provide a framework so that water utility system improvements and new sources of supply can be anticipated and planned for on a timely basis. Water utilities routinely monitor and update water demand forecasts so their customers can enjoy a sufficient supply of water of high quality at a reasonable price.

Water demand forecasts are updated every five to ten years. They are not done in a vaccuum. A number of critical ingredients go into the mix of a demand forecast. Individual utilities review population forecasts issued by the State, cities, King County, or the Puget Sound Regional Council, customer billing records, historical information, flow meter records, and the types of users to determine the next generation of demand forecasts. The categories of water users are typically divided into residential, commercial, industrial, public facilities, and non-revenue water. The utilities must also take into consideration the peaking and maximum instantaneous demands of their customers and system.

Of the mix, population growth is the single most influential factor in water demand forecasting. Utilities coordinate closely with local land use jurisdictions to make certain their capital and comprehensive plans are consistent with local land use policies and regulations. The placement of new growth is also critical so new facilities can be built at the right time in the correct locations.

Water utilities often work from two sets of forecasts: short and long term. The short term forecasts can help with the upgrading and sizing of new facilities within individual utility systems. The long term forecasts quantify the future water supply needs and shape the more complex long range capital programs.

Utilities often plan on a 50 year cycle for new supplies because of the extensive amount of time it takes to secure water rights and other necessary permits, conduct environmental studies, comply with the land use regulations of local jurisdictions, negotiate easements on rights-of way, and arrange for the financing of large capital expenditures. New supplies are sized for future uses, 50 years for example, so the public does not have to pay unnecessary costs for new facilities because the planning horizon was too short or the decisions makers were too timid in defending their new supply needs.

The methodology used in preparing this most current forecast is consistent with the water demand forecasting methods for regional water system plans specified by the Washington State Departments of

Ecology and Health in their publication entitled Conservation Planning Requirements: Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs - Dated March, 1994.

GROWTH MANAGEMENT ACT

Since 1990, the placement of growth has been guided by the Washington State Growth Management Act. The Legislature found that uncoordinated and unplanned growth and the lack of common goals enunciating the public's interest in the conservation and wise use of the state's lands posed a threat to the environment, sustainable economic development, and the high quality of life enjoyed by the residents of Washington State. It was found to be in the public interest that citizens, communities, local governments, and the private sector coordinate and communicate with one another in comprehensive land use planning. This collective realization was the first important step in the development of rational policies to manage growth in Washington State.

Of the thirteen goals stated in the Growth Management Act, the following are pertinent to water supply planning:

- Urban growth — Encourage development in urban areas where adequate public facilities and services exist or can be provided in an efficient manner.
- Reduce sprawl — Reduce the inappropriate conversion of undeveloped land into sprawling, low density development.
- Economic Development — Encourage economic develpment throughout the state that is consistent with adopted comprehensive plans, promotes economic opportunity for all citizens of the state, especially for unemployed and disadvantaged persons, and encourage growth in areas experiencing insufficient economic growth, all within the capabilities of the state's natural resources, public services, and public facilities.
- Property Rights — Private property shall not be taken for public use without just compensation having been made.
- Permits — Applications for both state and local government permits should be processed in a timely and fair manner to ensure predictability.
- Natural Resources Industries — Maintain and enhance the natural resource based industries, including productive timber, agriculture, and fisheries. Encourage conservation of productive forest lands and

productive agricultural lands and discourage incompatible uses.

- **Open Space Recreation** — Encourage the retention of open space and development of recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and the development of parks.

- **Environment** — Protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water.

- **Citizen Participation** — Encourage the involvement of citizens in the planning process and ensure coordination between communities and jurisdictions to reconcile conflicts.

- **Public Facilities and Services** — Ensure that those public facilities and services necessary to support development shall be adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards.

All urban cities and counties are required to develop and adopt comprehensive plans and regulations to implement the Growth Management Act. Planning is to be done on a 20 year cycle using population forecasts compiled by the State Office of Financial Management or other agencies such as the Puget Sound Regional Council. To promote compatible planning efforts, the Growth Management Act requires comprehensive plans to address specific issues such as land use, transportation, natural environment, facilities and services, utilities, housing, the natural environment, and economic development.

The Growth Management Act ensures coordination by requiring that cities and counties construct a framework of policies to guide the development of each jurisdiction's comprehensive plan. The King County Countywide Planning Policies, agreed upon by the elected officials of the Metropolitan King County Council, the Surburban Cities, and the City of Seattle, define the countywide vision. The Countywide Planning Policies form the template for planning in 20 year increments for cities and counties.

The population data used in preparing the forecast of future water demand for East King County is consistent with King County's Growth Management Plan.

KING COUNTY COMPREHENSIVE PLAN

Even before the planning requirements of the Growth Management Act, King County, from the late 1970's, made a distinction between urban and rural services and land uses and buttressed these land use decisions by controlling the placement of water and sewer service in rural areas. The wisdom at the time was that the provision of such services was costly and put too much pressure on the larger lot patterns of the rural community. Sewers are still not allowed in rural areas, except for towns and cities. However, the philosophy about water service to rural areas has changed.

Washington State has the unfortunate distinction of having over 60,000 water systems. Most of them are small, rural community-run systems which usually are not properly and consistently managed, maintained, tested, or financed. Many of these systems will feel the financial and managerial weight of the federal Safe Drinking Water Act which applies to all water systems containing fifteen or more connections. The Legislature, in 1989, passed a law which said that if such systems fail and no other professionally managed utility is willing to assume responsibility for the failing systems, the local legislative authority will have to step in. The reasoning behind this decision was the local legislative authority approved the development in the first place.

In 1994, King County made the connection between the proliferation of these small systems and their rural land use policies. After significant debate among King County's elected officials, the policy was changed.

Those locations in rural King County which meet the criteria of Countywide Planning Policy CO-15 are included by individual utilities into their service areas in both the utility's water comprehensive plan and the East King County Coordinated Water System Plan. This has been done with the understanding that service to these small systems can be provided by the larger utilities either through direct service or satellite management. Service to these small systems is not a justification for increasing the densities of the rural areas. The object is to provide professional management and maintenance to the small systems and to reduce their proliferation according to the Public Water Coordination Act of 1977 (RCW 70.116).

The following two policies from the King County Comprehensive Plan are important guidelines for utilities to follow when developing their comprehensive and capital plans:

F-302 All new Group A public water systems should be operated by a certified water system operator. If the area for a new public water system is included in the planning area of an existing water purveyor as identified in a Coordinated Water System Plan, the water system should be operated by the purveyor through either satellite management or direct service. Rates charged for

satellite system management should be consistent with policies included in the comprehensive water system plan of the purveyor.

F-303 In the Rural Area, private wells and Group B water systems are permissible. Group A water systems may also be allowed, if they meet the following criteria:

a. Water systems existing as of the effective date of this Plan have quality or quantity problems that threaten public health and can best be solved by Group A service; or

b. The area has been assigned to a water purveyor through a King County-adopted Coordinated Water System Plan; prior to approval of the new system or system extension, the maximum number of connections has been specified based on the number of previously platted lots and the zoning approved for the total Rural Area being served; and Group A service is financially feasible at the resulting density.

NEW SUPPLY REQUIREMENTS

The King County region will need additional water supply in place by the next decade. Although the purveyors take water conservation very seriously, this region will not be able to live off of conserved water alone. The population keeps increasing within the ranks of those who now live here and from new people moving to this area. Our strong economy is a magnet drawing new people and businesses.

The planning and development of a new water supply is a complex process involving water purveyors, the State, local governments, the Tribes, environmental groups, financial institutions, and the general citizenry. There is no quick fix or easy solution.

The water resources of Washington State belong to all of its citizens. The resources are administered by the Department of Ecology. If the current trend of denying new water right applications prevails, the citizens of the state will have to get used to a new way of using water. This will mean less water for each user in the state. Citizens will have to decide how they wish to handle the every-changing balance of the environment and fish habitat and the additional water supply required by an increasing population.

Water utilities, unless they are cities, do not make land use policy. They follow the lead of the local legislative authority. However, utilities are charged with anticipating the future water needs of their respective service areas. Because water is no longer in a plentiful supply, the water demand forecasts must be closely coordinated with the local land use authority. The 20 year planning horizons of the Growth Management Act make that cooperation even more critical.

APPENDIX A

Appendix A

Ames Lake (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Cons %	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	2,609	29.6	77,355	0		77,355	11,603	88,958
2000	3,298	29.6	97,790	4,639	4.7	93,151	13,973	107,124
2010	3,847	29.6	114,055	9,941	8.7	104,114	15,617	119,731
2020	5,158	29.6	152,907	16,645	10.9	136,262	20,439	156,701
2030	5,697	29.6	168,904	18,386	10.9	150,518	22,578	173,096
2040	6,293	29.6	186,575	20,310	10.9	166,266	24,940	191,205
2050	6,952	29.6	206,095	22,435	10.9	183,661	27,549	211,210
AAGR								
1994-2000	3.98%	0.00%	3.98%	ERR		3.15%	3.15%	3.15%
1994-2050	1.77%	0.00%	1.77%	ERR		1.56%	1.56%	1.56%

Bellevue (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	109,237	62.3	6,803,475	0	6,803,475	1,020,521	7,823,996
2000	114,481	62.3	7,130,082	168,440	6,961,642	1,044,246	8,005,888
2010	122,453	62.3	7,626,590	371,520	7,255,070	1,088,261	8,343,331
2020	132,028	62.3	8,222,917	512,266	7,710,650	1,156,598	8,867,248
2030	142,351	62.3	8,865,870	552,321	8,313,549	1,247,032	9,560,581
2040	153,481	62.3	9,559,096	595,507	8,963,589	1,344,538	10,308,127
2050	165,482	62.3	10,306,525	642,070	9,664,456	1,449,668	11,114,124
AAGR							
1994-2000	0.78%	0.00%	0.78%	ERR	0.38%	0.38%	0.38%
1994-2050	0.74%	0.00%	0.74%	ERR	0.63%	0.63%	0.63%

Bothell (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	10,763	62.5	672,350	0	672,350	100,853	773,203
2000	11,444	62.5	714,921	17,179	697,742	104,661	802,404
2010	12,392	62.5	774,105	37,919	736,185	110,428	846,613
2020	13,162	62.5	822,206	51,117	771,089	115,663	886,752
2030	13,980	62.5	873,296	54,293	819,003	122,850	941,853
2040	14,848	62.5	927,561	57,667	869,894	130,484	1,000,378
2050	15,771	62.5	985,197	61,250	923,947	138,592	1,062,539
AAGR							
1994-2000	1.03%	0.00%	1.03%	ERR	0.62%	0.62%	0.62%
1994-2050	0.68%	0.00%	0.68%	ERR	0.57%	0.57%	0.57%

Cedar River (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	14,713	47.5	699,217	0	699,217	104,883	804,100
2000	15,797	47.5	750,693	21,164 2.8	729,528	109,429	838,958
2010	17,117	47.5	813,428	47,407 5.8	766,022	114,903	880,925
2020	18,949	47.5	900,495	67,928 7.5	832,567	124,885	957,452
2030	20,931	47.5	994,707	75,035 7.5	919,672	137,951	1,057,622
2040	23,121	47.5	1,098,775	82,885 7.5	1,015,890	152,383	1,168,273
2050	25,540	47.5	1,213,731	91,557 7.5	1,122,174	168,326	1,290,500
AAGR							
1994-2000	1.19%	0.00%	1.19%	ERR	0.71%	0.71%	0.71%
1994-2050	0.99%	0.00%	0.99%	ERR	0.85%	0.85%	0.85%

Coal Creek (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	18,805	50.8	955,357	0	955,357	143,304	1,098,661
2000	21,002	50.8	1,066,965	30,480 2.9	1,036,484	155,473	1,191,957
2010	23,984	50.8	1,218,474	69,719 5.7	1,148,756	172,313	1,321,069
2020	26,210	50.8	1,331,538	95,677 7.2	1,235,861	185,379	1,421,240
2030	28,642	50.8	1,455,092	104,555	1,350,537	202,581	1,553,118
2040	31,300	50.8	1,590,111	114,257	1,475,855	221,378	1,697,233
2050	34,204	50.8	1,737,659	124,859 7.2	1,612,800	241,920	1,854,720
AAGR							
1994-2000	1.86%	0.00%	1.86%	ERR	1.37%	1.37%	1.37%
1994-2050	1.07%	0.00%	1.07%	ERR	0.94%	0.94%	0.94%

Duvall (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	3,316	45.7	151,581	0	151,581	22,737	174,318
2000	4,116	45.7	188,123	6,460 3.4	181,663	27,249	208,913
2010	4,919	45.7	224,856	14,311 6.4	210,545	31,582	242,126
2020	5,712	45.7	261,113	20,271 7.8	240,842	36,126	276,968
2030	6,310	45.7	288,431	22,392	266,039	39,906	305,945
2040	6,970	45.7	318,607	24,734	293,873	44,081	337,954
2050	7,699	45.7	351,940	27,322 7.8	324,618	48,693	373,311
AAGR							
1994-2000	3.67%	0.00%	3.67%	ERR	3.06%	3.06%	3.06%
1994-2050	1.52%	0.00%	1.52%	ERR	1.37%	1.37%	1.37%

Fall City (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	1,574	71.2	112,005	0	112,005	16,801	128,806
2000	2,014	71.2	143,335	3,875	2.7 139,460	20,919	160,379
2010	2,620	71.2	186,417	9,137	177,280	26,592	203,872
2020	2,913	71.2	207,275	11,819	195,456	29,318	224,774
2030	3,218	71.2	228,960	13,056	215,904	32,386	248,290
2040	3,554	71.2	252,915	14,422	238,493	35,774	274,267
2050	3,926	71.2	279,375	15,931	5.7 263,444	39,517	302,961
AAGR							
1994-2000	4.20%	0.00%	4.20%	ERR	3.72%	3.72%	3.72%
1994-2050	1.65%	0.00%	1.65%	ERR	1.54%	1.54%	1.54%

Issaquah (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	13,046	49.6	646,977	0	646,977	97,047	744,024
2000	15,349	49.6	761,176	23,449	3.1 737,727	110,659	848,386
2010	18,712	49.6	927,951	55,480	872,471	130,871	1,003,342
2020	21,304	49.6	1,056,500	77,252	979,249	146,887	1,126,136
2030	23,533	49.6	1,167,033	85,334	1,081,700	162,255	1,243,955
2040	25,995	49.6	1,289,131	94,262	1,194,869	179,230	1,374,100
2050	28,714	49.6	1,424,003	104,124	7.3 1,319,879	197,982	1,517,861
AAGR							
1994-2000	2.75%	0.00%	2.75%	ERR	2.21%	2.21%	2.21%
1994-2050	1.42%	0.00%	1.42%	ERR	1.28%	1.28%	1.28%

KCWD 83 (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	3,175	46.0	146,191	0	146,191	21,929	168,120
2000	3,260	46.0	150,083	4,031	2.7 146,052	21,908	167,959
2010	3,297	46.0	151,800	8,711	143,089	21,463	164,553
2020	3,421	46.0	157,486	12,161	145,325	21,799	167,123
2030	3,549	46.0	163,385	12,617	150,768	22,615	173,383
2040	3,682	46.0	169,504	13,089	156,415	23,462	179,877
2050	3,820	46.0	175,853	13,580	7.7 162,273	24,341	186,614
AAGR							
1994-2000	0.44%	0.00%	0.44%	ERR	-0.02%	-0.02%	-0.02%
1994-2050	0.33%	0.00%	0.33%	ERR	0.19%	0.19%	0.19%

KCWD 90 (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	13,873	54.5	755,466	0	755,466	113,320	868,786
2000	14,873	54.5	809,882	21,123 2.6	788,760	118,314	907,074
2010	16,555	54.5	901,480	48,484	852,996	127,949	980,945
2020	18,249	54.5	993,725	67,948	925,777	138,867	1,064,643
2030	20,116	54.5	1,095,410	74,901	1,020,509	153,076	1,173,585
2040	22,175	54.5	1,207,500	82,566	1,124,934	168,740	1,293,674
2050	24,444	54.5	1,331,059	91,014 6.8	1,240,045	186,007	1,426,052
AAGR							
1994-2000	1.17%	0.00%	1.17%	ERR	0.72%	0.72%	0.72%
1994-2050	1.02%	0.00%	1.02%	ERR	0.89%	0.89%	0.89%

KCWD 119 (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	1,869	47.9	89,517	0	89,517	13,428	102,945
2000	2,246	47.9	107,583	3,467 3.2	104,116	15,617	119,733
2010	2,600	47.9	124,522	7,567	116,955	17,543	134,498
2020	3,083	47.9	147,623	11,073	136,550	20,482	157,032
2030	3,405	47.9	163,067	12,231	150,836	22,625	173,461
2040	3,761	47.9	180,128	13,511	166,617	24,993	191,609
2050	4,155	47.9	198,973	14,925 7.5	184,049	27,607	211,656
AAGR							
1994-2000	3.11%	0.00%	3.11%	ERR	2.55%	2.55%	2.55%
1994-2050	1.44%	0.00%	1.44%	ERR	1.30%	1.30%	1.30%

Kirkland (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	39,813	44.5	1,769,708	0	1,769,708	265,456	2,035,164
2000	42,088	44.5	1,870,837	53,615 2.9	1,817,222	272,583	2,089,805
2010	47,758	44.5	2,122,888	130,513	1,992,376	298,856	2,291,232
2020	52,493	44.5	2,333,370	184,954	2,148,416	322,262	2,470,679
2030	57,698	44.5	2,564,721	203,292	2,361,429	354,214	2,715,644
2040	63,419	44.5	2,819,010	223,448	2,595,562	389,334	2,984,896
2050	69,707	44.5	3,098,511	245,602 7.9	2,852,909	427,936	3,280,845
AAGR							
1994-2000	0.93%	0.00%	0.93%	ERR	0.44%	0.44%	0.44%
1994-2050	1.01%	0.00%	1.01%	ERR	0.86%	0.86%	0.86%

Mercer Island (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	20,803	54.6	1,136,552	0	1,136,552	170,483	1,307,035
2000	21,407	54.6	1,169,577	28,780 2.5	1,140,797	171,120	1,311,917
2010	21,615	54.6	1,180,928	60,831	1,120,097	168,014	1,288,111
2020	21,894	54.6	1,196,187	81,601	1,114,586	167,188	1,281,774
2030	22,177	54.6	1,211,644	82,655	1,128,989	169,348	1,298,337
2040	22,464	54.6	1,227,301	83,723	1,143,577	171,537	1,315,114
2050	22,754	54.6	1,243,159	84,805 6.8	1,158,354	173,753	1,332,107
AAGR							
1994-2000	0.48%	0.00%	0.48%	ERR	0.06%	0.06%	0.06%
1994-2050	0.16%	0.00%	0.16%	ERR	0.03%	0.03%	0.03%

NE Samammish (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	8,808	43.7	385,174	0	385,174	57,776	442,950
2000	9,927	43.7	434,108	13,726 3.2	420,382	63,057	483,439
2010	11,466	43.7	501,387	31,879	469,508	70,426	539,934
2020	12,987	43.7	567,900	45,569	522,331	78,350	600,680
2030	14,345	43.7	627,315	50,337	576,978	86,547	663,525
2040	15,846	43.7	692,946	55,603	637,343	95,601	732,944
2050	17,504	43.7	765,443	61,420 8.0	704,023	105,603	809,626
AAGR							
1994-2000	2.01%	0.00%	2.01%	ERR	1.47%	1.47%	1.47%
1994-2050	1.23%	0.00%	1.23%	ERR	1.08%	1.08%	1.08%

Northshore Utility District (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	54,318	47.5	2,577,817	0	2,577,817	386,673	2,964,490
2000	57,002	47.5	2,705,205	73,876 2.7	2,631,329	394,699	3,026,029
2010	59,361	47.5	2,817,159	161,208	2,655,951	398,393	3,054,344
2020	63,925	47.5	3,033,761	229,077	2,804,684	420,703	3,225,387
2030	68,840	47.5	3,267,017	246,690	3,020,327	453,049	3,473,376
2040	74,133	47.5	3,518,207	265,657	3,252,550	487,883	3,740,433
2050	79,833	47.5	3,788,710	286,082 7.6	3,502,628	525,394	4,028,022
AAGR							
1994-2000	0.81%	0.00%	0.81%	ERR	0.34%	0.34%	0.34%
1994-2050	0.69%	0.00%	0.69%	ERR	0.55%	0.55%	0.55%

Redmond (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	42,858	63.6	2,726,090	0	2,726,090	408,914	3,135,004
2000	48,506	63.6	3,085,337	79,000 2.6	3,006,337	450,951	3,457,287
2010	58,727	63.6	3,735,444	188,771	3,546,672	532,001	4,078,673
2020	67,510	63.6	4,294,089	263,727	4,030,362	604,554	4,634,917
2030	74,573	63.6	4,743,346	291,318	4,452,027	667,804	5,119,832
2040	82,375	63.6	5,239,605	321,797	4,917,808	737,671	5,655,479
2050	90,993	63.6	5,787,783	355,464 6.1	5,432,320	814,848	6,247,167
AAGR							
1994-2000	2.08%	0.00%	2.08%	ERR	1.64%	1.64%	1.64%
1994-2050	1.35%	0.00%	1.35%	ERR	1.24%	1.24%	1.24%

Renton (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	45,304	60.4	2,736,583	0	2,736,583	410,487	3,147,070
2000	47,945	60.4	2,896,106	70,354 2.4	2,825,752	423,863	3,249,615
2010	55,560	60.4	3,356,093	170,522	3,185,571	477,836	3,663,406
2020	63,535	60.4	3,837,818	244,131	3,593,688	539,053	4,132,741
2030	70,182	60.4	4,239,339	269,672	3,969,667	595,450	4,565,117
2040	77,525	60.4	4,682,868	297,886	4,384,982	657,747	5,042,729
2050	85,636	60.4	5,172,799	329,051 6.4	4,843,748	726,562	5,570,310
AAGR							
1994-2000	0.95%	0.00%	0.95%	ERR	0.54%	0.54%	0.54%
1994-2050	1.14%	0.00%	1.14%	ERR	1.02%	1.02%	1.02%

Remainder (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	14,279	55.0	785,772	0	785,772	117,866	903,638
2000	16,719	55.0	920,018	26,495 2.9	893,523	134,028	1,027,552
2010	17,036	55.0	937,507	50,088	887,419	133,113	1,020,531
2020	19,189	55.0	1,055,974	71,671	984,303	147,645	1,131,948
2030	21,197	55.0	1,166,452	79,169	1,087,283	163,092	1,250,375
2040	23,415	55.0	1,288,489	87,452	1,201,037	180,155	1,381,192
2050	25,864	55.0	1,423,293	96,602 6.8	1,326,692	199,004	1,525,695
AAGR							
1994-2000	2.66%	0.00%	2.66%	ERR	2.16%	2.16%	2.16%
1994-2050	1.07%	0.00%	1.07%	ERR	0.94%	0.94%	0.94%

Sallal (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	2,823	77.7	219,199	0	219,199	32,880	252,079
2000	3,118	77.7	242,144	5,469 2.3	236,675	35,501	272,176
2010	3,548	77.7	275,519	12,180	263,339	39,501	302,840
2020	3,615	77.7	280,765	15,140	265,625	39,844	305,469
2030	3,684	77.7	286,111	15,428	270,683	40,602	311,285
2040	3,754	77.7	291,558	15,722	275,837	41,375	317,212
2050	3,826	77.7	297,109	16,021 5.4	281,088	42,163	323,252
AAGR							
1994-2000	1.67%	0.00%	1.67%	ERR	1.29%	1.29%	1.29%
1994-2050	0.54%	0.00%	0.54%	ERR	0.45%	0.45%	0.45%

Samammish Plateau (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	25,120	56.3	1,415,205	0	1,415,205	212,281	1,627,486
2000	30,666	56.3	1,727,680	51,226 3.0	1,676,454	251,468	1,927,922
2010	37,260	56.3	2,099,136	116,315	1,982,821	297,423	2,280,244
2020	43,605	56.3	2,456,632	164,005	2,292,627	343,894	2,636,521
2030	48,168	56.3	2,713,650	181,163	2,532,486	379,873	2,912,359
2040	53,207	56.3	2,997,558	200,117	2,797,441	419,616	3,217,057
2050	58,774	56.3	3,311,169	221,054 6.7	3,090,115	463,517	3,553,632
AAGR							
1994-2000	3.38%	0.00%	3.38%	ERR	2.86%	2.86%	2.86%
1994-2050	1.53%	0.00%	1.53%	ERR	1.40%	1.40%	1.40%

Shoreline (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	28,233	37.2	1,049,949	0	1,049,949	157,492	1,207,441
2000	28,958	37.2	1,076,915	32,683 3.0	1,044,232	156,635	1,200,866
2010	29,481	37.2	1,096,376	72,816	1,023,559	153,534	1,177,093
2020	30,497	37.2	1,134,141	103,022	1,031,119	154,668	1,185,787
2030	31,547	37.2	1,173,207	106,571	1,066,637	159,996	1,226,632
2040	32,634	37.2	1,213,619	110,242	1,103,378	165,507	1,268,884
2050	33,758	37.2	1,255,423	114,039 9.1	1,141,384	171,208	1,312,592
AAGR							
1994-2000	0.42%	0.00%	0.42%	ERR	-0.09%	-0.09%	-0.09%
1994-2050	0.32%	0.00%	0.32%	ERR	0.15%	0.15%	0.15%

Snoqualmie (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	2,240	68.9	154,302	0	154,302	23,145	177,447
2000	2,741	68.9	188,819	5,002 2.6	183,816	27,572	211,389
2010	3,590	68.9	247,242	12,276	234,966	35,245	270,211
2020	3,979	68.9	274,064	15,963	258,101	38,715	296,816
2030	4,395	68.9	302,737	17,633	285,104	42,766	327,869
2040	4,855	68.9	334,410	19,478	314,932	47,240	362,172
2050	5,363	68.9	369,397	21,516 5.8	347,881	52,182	400,063
AAGR							
1994-2000	3.42%	0.00%	3.42%	ERR	2.96%	2.96%	2.96%
1994-2050	1.57%	0.00%	1.57%	ERR	1.46%	1.46%	1.46%

Soos Creek (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	36,679	58.2	2,134,666	0	2,134,666	320,200	2,454,866
2000	40,090	58.2	2,333,169	60,174 2.6	2,272,995	340,949	2,613,944
2010	43,113	58.2	2,509,102	128,972	2,380,130	357,020	2,737,150
2020	50,322	58.2	2,928,653	191,139	2,737,514	410,627	3,148,141
2030	55,587	58.2	3,235,055	211,137	3,023,919	453,588	3,477,506
2040	61,402	58.2	3,573,514	233,226	3,340,287	501,043	3,841,331
2050	67,826	58.2	3,947,382	257,627 6.5	3,689,755	553,463	4,243,219
AAGR							
1994-2000	1.49%	0.00%	1.49%	ERR	1.05%	1.05%	1.05%
1994-2050	1.10%	0.00%	1.10%	ERR	0.98%	0.98%	0.98%

Union Hill (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	4,224	77.3	326,458	0	326,458	48,969	375,427
2000	5,389	77.3	416,450	10,736 2.6	405,714	60,857	466,571
2010	6,301	77.3	486,961	22,333	464,628	69,694	534,322
2020	8,533	77.3	659,420	35,667	623,753	93,563	717,316
2030	9,426	77.3	728,410	39,398	689,011	103,352	792,363
2040	10,412	77.3	804,618	43,520	761,097	114,165	875,262
2050	11,501	77.3	888,798	48,074 5.4	840,725	126,109	966,834
AAGR							
1994-2000	4.14%	0.00%	4.14%	ERR	3.69%	3.69%	3.69%
1994-2050	1.80%	0.00%	1.80%	ERR	1.70%	1.70%	1.70%

Woodinville (CCF) - Base Case Assumptions

Year	Population	Average Usage (CCF/Person)	Water Sales (CCF)	Conser-vation (CCF)	Water Sales after Cons. (CCF)	Losses @ 15% (CCF)	Total (CCF)
1994	36,326	55.2	2,003,864	0	2,003,864	300,580	2,304,444
2000	40,237	55.2	2,219,617	59,906 2.7	2,159,711	323,957	2,483,668
2010	45,070	55.2	2,486,229	134,005	2,352,224	352,834	2,705,057
2020	52,850	55.2	2,915,385	197,534	2,717,852	407,678	3,125,530
2030	58,379	55.2	3,220,399	218,200	3,002,199	450,330	3,452,529
2040	64,487	55.2	3,557,324	241,028	3,316,296	497,444	3,813,740
2050	71,234	55.2	3,929,499	266,245 6.8	3,663,254	549,488	4,212,742
AAGR							
1994-2000	1.72%	0.00%	1.72%	ERR	1.26%	1.26%	1.26%
1994-2050	1.21%	0.00%	1.21%	ERR	1.08%	1.08%	1.08%

APPENDIX B

April 7, 1994

DRAFT

King County Action Plan for the Receivership of Failed Water Systems

I. Background

The state Department of Health (DOH) can seek to have a receiver appointed to manage a water system which is unable to reliably provide drinking water of sufficient quantity and quality. If an approved manager does not volunteer to oversee the troubled system, then the court must appoint the county in which the water system is located, as the receiver. This change was made in 1991.

In 1993, two systems failed in King County and alternate operators had to be assigned. In one case, an adjacent water district assumed the service area and was able to provide direct service. In the other situation, the system was too far from a larger water system to allow for direct connections. Fortunately, a nearby district agreed to accept receivership of the system to get it operational again and to eventually transfer it to a newly formed homeowners association.

In both cases, King County could have been appointed the receiver. It is likely that the number of failing systems in King County will increase as the compliance with new drinking water regulations becomes tougher. The County currently has no plan to manage these water systems.

This Action Plan prepares King County for assuming the receivership of failed water systems and carrying out its responsibilities efficiently. There are two major goals of the Action Plan: (1) to prepare King County for the initial court hearing and (2) to guide the implementation of the court order resulting in completion of the duties. The Action Plan outlines the procedures and assigns responsibilities for each major step in the process.

II. Legislative Requirements

In accordance with RCW 43.70.195, if no other person is willing and able to be named as receiver of a distressed water system, the court is required to appoint the county in which the water system is located as receiver. The receiver assumes temporary operation of the system with responsibility for: (1) assessing the capability of the system to operate in compliance with health and safety standards and (2) reporting to the court its recommendations for the system's future operation.

If the county is appointed the receiver, it can either assign a county agency to operate the system or it can contract with an experienced manager. The receiver is authorized to assess the water system's customers to recover expenditures.

The state legislature amended the receivership requirements with the passage of Substitute Senate Bill 6428 in 1994. Within one year of being appointed a receiver, the receiver now must, in coordination with the county and state, present a plan to the court which outlines alternatives for disposition of the system. The court will then decide how to transfer the ownership of the system.

III. Current King County Involvement with Water Systems

Parks, Planning and Resources Department

The Parks, Planning and Resources Department (PPR) through the Planning and Community Development Division (PCDD) manages King County's review of comprehensive plans of all water and sewer systems operating in unincorporated King County. PCDD is responsible for serving as the chair of Utilities Technical Review Committee (UTRC) which is an interdepartmental committee responsible for ensuring that utility plans comply with County and state health requirements and County land use policies.

The federal Community Development Block Grant (CDBG) program administered by PCDD can, in certain situations, provide water purveyors and homeowners with financial assistance for infrastructure improvements to correct health and safety problems of failing water systems.

Seattle-King County Department of Public Health

The Drinking Water and Groundwater Section of the Seattle-King County Department of Public Health (Health) is responsible for administering the King County Board of Health drinking water regulations, coordinating the five groundwater management plans in King County, and participating in the review of comprehensive water system plans through its membership on the UTRC. The regulation of small water systems with two through nine connections is also the responsibility of this section. Health works closely with DOH on a regular basis.

The Health Department is responsible for the oversight and regulation of certain water systems, as defined in the agreement with the Department of Health and King County Board of Health Title 12. The department has historically worked with DOH to help ensure that all public water systems meet regulations.

Metropolitan Services Department

Metropolitan Services Department (Metro) is not directly involved with drinking water, however, since 1993, Metro has participated in the UTRC process. Metro does operate a water quality testing lab and has engineers on staff that are skilled in the conveyance and treatment of sewage. Metro also has staff that are skilled in preparing cost estimates and rate studies. There are many similarities between managing a sewerage system and a water system and the skills of Metro staff would be generally transferable to understanding and operating a water system.

IV. Action Plan

Policy Statement

If appointed the temporary receiver of a failed water system through court action in accordance with RCW 43.70.195, King County shall: (1) provide immediate management to ensure safe and reliable drinking water to the customers of the system and (2) work with the customers to find a long-term solution for the operation of the water system.

Actions and Responsibility:

1: Notification/Coordination

The Director of the Seattle-King County Department of Public Health (Health) is designated as the official to receive notification from DOH about an expected receivership resulting from a financially troubled water system. Health will be responsible for informing the Director of **PPR** who will coordinate all actions regarding the receivership for King County through an interdepartmental team led by the chair of the UTRC.

King County will work with the state to find an acceptable receiver for the system in the event that DOH determines a court-appointed receiver should be sought. If a receiver cannot be identified, then King County will prepare to assume the responsibility of receivership.

2: Interdepartmental Team

An **interdepartmental team** will be established comprised of the chair of the UTRC, staff members from Health, Metro, the Office of the Prosecuting Attorney (PA), the Office of Financial Management (OFM), the Metropolitan King County Council, and PCDD Community Development section if CDBG funding is a potential option. The team will be responsible for overseeing King County's receivership of the water system and providing briefings to King County officials as requested. The team will be ready to act immediately following DOH notification that King County receivership is imminent.

The general assignments will be categorized according to the expertise of each agency: (1) PPR will be responsible for planning and coordination; (2) Health will be the primary contact with DOH and oversee compliance with applicable regulations; (3) Metro will supervise repairs, operations, and maintenance, will prepare capital and operating cost estimates for short-term and long-term, and will conduct water quality testing; (4) PA will be responsible for legal issues; (5) OFM will review financial data and funding options; and (6) Council staff will serve as the liaison with the Metropolitan King County Council.

3: Immediate Needs Assessment/Preliminary Work Plan

The state law governing receiverships does not specify the manner in which the receiver is to accomplish the assigned tasks nor does it specify a schedule for completing the project except for requiring that the report identifying alternatives for disposition of the system be presented within one year of the receivership appointment. Prior to the court hearing during which King County is to be appointed the receiver, the interdepartmental team will prepare a preliminary work plan for completing the project. To aid in preparation for the court hearing, this work plan will outline the major responsibilities and estimate completion dates for the project. Most of the supporting documentation will be found in a report and compliance schedule prepared by DOH for each failed system.

As soon as possible, after it is determined that King County likely will be the receiver for a failed water system, the team will perform a *preliminary needs assessment* using reports prepared by DOH:

1. Identify the immediate critical needs (i.e., cleaning the water tank, fixing the chlorinator) and the procedures for addressing them.

2. Determine preliminary alternative approaches for the long term solution for the water system.

The team will then develop a *work plan* to:

1. Temporarily solve the problem facing the system.

2. Assess the financial and structural capabilities of the system, location constraints, and the local water supply situation.

3. Prepare Strategies for court appearances and an outline indicating major terms of the impending receivership.

4. Identify major milestones for interim reports to the court and complete an outline for the final report to the court.

5. Complete of the project and terminate the receivership.

4: Court Hearing

PA will be responsible for working with the Attorney General's office in responding to any legal questions and resolving legal issues of the receivership. PA will also represent King County at the hearing at which King County is to be appointed the receiver.

5: Health Regulations/DOH Liaison

Health, **Drinking Water and Groundwater Section**, will review the compliance schedule previously developed by DOH for each failed system and discuss with them how to address the most urgent needs of the system. Health will also work with DOH to determine how, under receivership, the County could proceed with the remainder of the plan. This may include developing a modified compliance schedule.

Health will work closely with Metro to ensure that maintenance and repair projects and lab testing are done in compliance with regulations. Health and Metro will collaborate on drinking water sample collections and on contracting with an independent lab if the Metro lab cannot be certified to perform the required water analysis.

6: Repairs, Operations, and Maintenance

Metro will oversee the repair work, operations and maintenance of the system during the period of receivership. Metro will use its staff engineers, facilities planners, and maintenance workers, wherever possible, to accomplish the tasks. Metro will also determine short-term and long-term operating and capital costs. If Metro does not have the capabilities to operate the system, then they may contract with other governmental agencies or consultants. Metro will coordinate with Health to fulfill the requirements of the federal and state health and safety regulations.

The Metro lab will be responsible for performing all water quality tests in consultation with Health. If the Metro lab does not receive certification for drinking water from DOH, then Health in coordination with Metro will contract with another lab.

7: Financial Assessment

OFM will coordinate the financial assessment of the water system and identify interim funding sources. OFM will be responsible for ensuring that Metro is reimbursed for all costs. If necessary, OFM will be responsible for coordinating a fund transfer. The court will authorize the receiver the ability to assess the customers for costs, however, initial repairs to the system may need to proceed before King County is able to collect fees from the customers.

Following King County's court appointment as the receiver for a failed water system, OFM, PPR and Council staff will brief the Metropolitan King County Council Budget and Fiscal Management Committee on the anticipated emergency expenditures and the proposed reimbursement method and schedule. The Executive should transmit to the Council via ordinance, an appropriation from the Executive Contingency Fund for any emergency expenditures and a proposal for reimbursement.

OFM will work with Metro to determine appropriate rates and ascertain the ability of the customers to actually pay for the necessary improvements. If the customers are eligible for block grant funding, then the application process will be initiated with PPR. Health will work with OFM and Metro to identify possible state and federal funding sources.

8: Long Range Planning - Alternatives for Disposition

PPR will work to develop a set of alternative long term solutions for the operation of the water system. Larger nearby water systems will be consulted and the possibility of combining systems within a region will also be explored. Pursuant to SSB 6428, PPR will work with Health, DOH and the customers to determine the best possible arrangements for operating the system. The alternatives will have to be consistent with the coordinated water system plan governing the area and local land use plans and policies.

9: Report to the Court

The **interdepartmental team** will develop the report to the court consistent with the requirements of RCW 43.70.195 and SSB 6428 which was adopted in 1994. The report will identify alternatives for disposition of the water system, summarize the assessment done by Health, the results of the work directed by Metro, and the financial assessment prepared by OFM.

10: Transfer of System

The **interdepartmental team** will develop a schedule for transfer of the operation of a system from King County to the permanent manager, consistent with court direction. Any new entity formed to manage the system must meet criteria established by DOH.

11: Evaluation

Following complete transfer of the water system to the permanent manager, the **interdepartmental team** will review the entire process of receivership and make recommendations for revising the process to make it more effective. The team will also prepare a summary report.

V. Approval Process

1: Action Plan

The Action Plan will be approved by the King County Executive and transmitted with a Motion to the King County Council for final approval. This process will formalize the responsibilities and organization of the interdepartmental work team. The team will then be authorized to act as soon as needed without further Council approval.

2: Financing Schedule

If the receivership requires an inter-fund transfer or in any way involves the use of County funds whether permanent or temporary, the Executive will transmit via ordinance, the appropriation request and reimbursement schedule.

3: Briefings

The interdepartmental team will be available to brief the King County Councilmember in whose district the water system is located and any interested committee at any time during the process. The Council staff representative should coordinate any briefings with the PPR director.