



KING COUNTY

1200 King County Courthouse
516 Third Avenue
Seattle, WA 98104

Signature Report

October 22, 2001

Ordinance 14237

Proposed No. 2001-0498.1

Sponsors Irons

1 AN ORDINANCE approving revisions to the Seattle
2 Public Utilities 2001 Water System Plan Update.

3
4

5 **PREAMBLE:**

6 K.C.C. chapter 13.24 requires approval of comprehensive plans for water
7 utilities as a prerequisite for granting right-of-way franchises and approval of
8 right-of-way construction permits.

9 The Seattle Public Utilities 2001 Water System Plan Update (plan)
10 discusses water service to existing and future populations within the retail
11 service area of Seattle Public Utilities (SPU).

12 On September 27, 2001, the utilities and technology committee
13 recommended that Proposed Ordinance 2001-0391, as amended by attachments,
14 be passed by the council. On October 8, 2001, the council adopted Ordinance
15 14221, adopting the plan as revised as set forth in three attachments to the
16 ordinance.

17 Following adoption of Ordinance 14221, a formatting error was
18 identified. One of the attachments to the proposed substitute ordinance was
19 included twice and one was omitted from the ordinance approved by the council.

20 The council is taking this action to ensure that the contents of the omitted
21 attachment are properly adopted and considered part of the approved SPU plan.

22 BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

23 SECTION 1. Attachment A to this ordinance, "Table 2 revisions to SPU 2001

Ordinance 14237

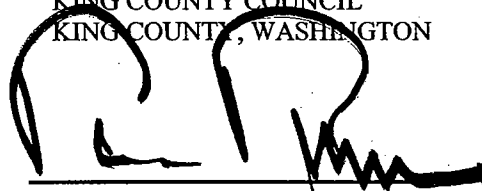
24 Water System Plan for Adoption by Seattle City Council", dated September 27, 2001, is
25 hereby approved as a revision to the Seattle Public Utilities 2001 Water System Plan
26 Update, consistent with King County Ordinance 14221.

27

Ordinance 14237 was introduced on 10/15/01 and passed by the Metropolitan King
County Council on 10/22/01, by the following vote:

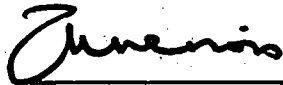
Yes: 12 - Mr. von Reichbauer, Ms. Miller, Ms. Fimia, Mr. Phillips, Mr. Pelz,
Mr. McKenna, Ms. Sullivan, Mr. Nickels, Mr. Pullen, Ms. Hague, Mr.
Thomas and Mr. Irons
No: 0
Excused: 1 - Mr. Gossett

KING COUNTY COUNCIL
KING COUNTY, WASHINGTON



Pete von Reichbauer, Chair

ATTEST:



Anne Noris, Clerk of the Council

APPROVED this 26 day of October 2001.



Ron Sims, County Executive

Attachments

A. Table 2 Revisions to SPU 2001 Water System Plan for Adoption by Seattle City
Council

Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
1	Page 1-1; first paragraph	The WSP updates information contained in the 1993 Water Supply Plan (SPU 1993a). It focuses...	While the policies of the 1993 Water Supply Plan (SPU 1993a) will continue to provide broad guidance for decision-making within the utility, <u>the this WSP updates information contained in the 1993 Water Supply Plan (SPU 1993a) that plan. This WSP Update focuses...</u>
2	Page 1-3; Section 1.3.1; first paragraph	The Cedar River Watershed is located in the Cascade Range, within Southeast King County. The watershed encompasses 90,495 acres and is almost entirely owned by the City of Seattle. In this...	The Cedar River Watershed is located in the Cascade Range, within Southeast King County. The watershed encompasses 90,495 acres and is almost entirely owned by the City of Seattle. <u>The remaining small portion of the watershed, 238 acres, is privately owned in small parcels with numerous different owners. In this...</u>
3	Page 1-4	See Exhibit 1-1	Note: The revised Exhibit clarifies the indirect service area, and correctly depicts service areas for Mirrorfont and the area adjacent to it on the west side of the district, and Issaquah. See Revised Exhibit 1-1 – Attached
4	Page 1-5; third paragraph	The Tolt Watershed is located about 13 miles east of Duvall in King County. The City owns approximately 69 percent of the watershed lands. The South Fork...	The Tolt Watershed is located about 13 miles east of Duvall in King County. The City owns approximately 69 percent of the watershed lands. <u>The U.S. Forest Service owns the remaining part of the watershed. The South Fork...</u>
5	Page 1-5; fourth paragraph titled Highline Wells	New Text Addition – New paragraph under “Highline Wells”.	The Highline Wellfield is equipped with unique recharge capability. <u>Artificial recharge, or aquifer storage and recovery (ASR), uses drinking water from the Cedar River source, and delivers water to the Highline production wells via Cedar River Pipeline No. 4, to supplement natural recharge into the aquifer. Water is injected by gravity at a rate of approximately one-half the well's production capacity; for the Highline Well field the maximum allowable rate is approximately 5 MGD. The recharge period depends on water availability in the Cedar River, extending from October through May. The objective is to return the piezometric head in the production aquifer to pre-project levels by the</u>

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Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
6	Page 1-9	See Exhibit 1-2	<p>end of May each year. <u>Withdrawals, as needed, would commence in mid to late summer.</u></p> <p>Note: The revised Exhibit clarifies the indirect service area, and correctly depicts service areas for Mirrorport and the area adjacent to it on the west side of the district, and Issaquah.</p> <p>See Revised Exhibit 1-2 - Attached</p>
7	Page 1-10; second paragraph in section 1.4.5	<p>There are six purveyors adjacent to the wholesale suppliers currently served by SPU that are not current SPU customers. These are Lakehaven Water District, City of Kent, City of Auburn, Water District No. 111, Sammamish Plateau Water and Sewer District, and Northeast Sammamish Water District.</p>	<p>There are six purveyors adjacent to the wholesale suppliers currently served by SPU that are not current SPU customers <u>within the SPU service area.</u> These are Lakehaven Water District, City of Kent, City of Auburn, Water District No. 111, Sammamish Plateau Water and Sewer District, and Northeast Sammamish Water District.</p>
8	Page 1-11; Section 1.4.7	New Text Addition - Add second paragraph	<p><u>As of September 2000, there is a pending legal proceeding related to the Cedar HCP. An action in superior court is seeking a judicial determination that the Department of Ecology lacked authority to make three specific commitments it made in the Instream Flow Agreement. The case is currently scheduled for trial in December 2000, but it is anticipated that it will be resolved through legal briefing, and without additional testimony. The validity of Seattle's Incidental Take Permit is not in question, and the relative certainty of the City's future water supply availability will not be materially affected by the outcome of this legal proceeding.</u></p>
9	Page 1-15; third paragraph	<p>Seattle has contracts with these purveyors that expire in 2012. Discussions are underway to secure new contracts. These talks aim at reaching terms that will enable purveyors to continue receiving water from the regional water system after 2012. Several contract formats are being discussed that may provide different levels of service. They...</p>	<p>Seattle has contracts with these purveyors that expire in 2012. Discussions are underway to secure new contracts. These talks aim at reaching terms for new contracts that will enable purveyors to continue receiving water from the regional water system after 2012. <u>Topics in the negotiations include water supply, transmission, water quality, conservation,</u></p>

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Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
10	Page 1-15; fourth paragraph	New Text Addition – End of paragraph four.	<p>rates and planning. Several contract formats are being discussed that may provide different levels of services. They...</p> <p>Current contract responsibilities for elements such as long-term supply planning may change as a result of the negotiations. The evolution of the Cascade Water Alliance, the Central Puget Sound Water Suppliers Forum and other regional developments could alter the planning outlook beyond 2012. Any changes would be reflected in future updates of the WSP.</p>
11	Page 2-1; first paragraph; last sentence.	This Section summarizes trends in demand, provides Seattle's water demand forecast, and describes the forecasting methodology.	<p>The planning horizon for this WSP is 2001-2020. This Section summarizes trends in demand, provides Seattle's water demand forecast, and describes the forecasting methodology.</p>
12	Page 2-2; second paragraph	New Text Addition – Last sentence of second paragraph.	<p>These changes to system operations include (1) discontinuing Green Lake flushing, (2) significantly reducing reservoir overflowing, (3) ceasing turbine overflows at SW Trenton, (4) relining Maple Leaf and Roosevelt reservoirs, (5) rehabilitating/replacing other reservoirs, and (6) improving reservoir washing practices.</p>
13	Page 2-3; Table 2-1	New Text Addition – Table 2-1 footnote.	<p>Note: An asterisk will be added after "Non-revenue Water" in Table 2-1 and use the following footnote at the bottom of the table:</p> <p>Non-revenue water does not include purveyor distribution non-revenue water. See page 2-12 for further discussion.</p>
14	Page 2-4; third paragraph; third sentence	... 149 MGD in 1999 to 144 MGD in 2010. The rate at which...	<p>... 149 MGD in 1999 to 144 MGD in 2010. SPU's 1% conservation saving efforts will exceed expected regional growth through 2010. The rate at...</p>
15	Page 2-5; Table 2-2	New Text Addition – Table 2-2 footnote.	<p>An asterisk will be added to the "Current Purveyor" "Non-Revenue" column heading of Table 2-2 and a footnote stating:</p>

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Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
16	Page 2-12; first paragraph	New Text Addition - Second paragraph.	<p><u>Transmission losses only. See discussion of non-revenue water on page 2-12.</u></p> <p><u>In calculating non-revenue water for the overall system, purveyor non-revenue water, as shown in Table 2-2, consists only of transmission losses to purveyors, not purveyor distribution system losses. The 4 to 5 MGD of purveyor distribution system non-revenue water is included as part of purveyor billed demand because, while it is non-revenue water to purveyors, it is revenue water to Seattle. Non-revenue water from Seattle's point of view consists of Seattle distribution and transmission non-revenue water plus purveyor transmission losses.</u></p>
17	Page 2-12; last paragraph	<p>New Wholesale Customers. Eight new or potential wholesale customers provided forecasts of their total demand and information about their current supply capacity. Their demand from the Seattle system will be the difference between their projected demand and current supply subject to whatever limits are placed on their purchases.</p>	<p>New Wholesale Customers. Eight new or potential wholesale customers provided forecasts of their total demand and information about their current supply capacity. Their demands from the Seattle system will be <u>were estimated by taking the difference between their projected demand projections and their current supply, subject to whatever limits are placed on their purchases.</u></p>
18	Page 2-13; Section 2.4, starting at third sentence	<p>Combining these estimates of firm yield with the new demand forecasts reveals that SPU has sufficient supply to meet the projected demand forecast through at least 2020. Exhibit 2-7 shows the demand forecast under the three conservation scenarios for Seattle's current retail and wholesale customers plus the incremental demand of the eight new or potential wholesale customers. Even without the Second Supply Project, SPU is expected to have sufficient supply capacity to meet forecast demand for both existing and new customers beyond 2020 as long as there is continued investment in programmatic conservation after 2010.</p>	<p>Combining these estimates of firm yield with the new demand forecasts reveals that SPU has sufficient supply to meet the projected demand forecast through at least 2020 <u>the planning horizon of this WSP. Exhibit 2-7 shows the demand forecast under the three conservation scenarios for Seattle's current retail and wholesale customers plus the incremental demand of the eight new or potential wholesale customers, with the Second Supply Project. Even without the Second Supply Project, SPU is expected to have sufficient supply capacity to meet forecast demand for both existing and new customers beyond 2020 as long as there is continued investment in programmatic conservation after 2010, as seen in Table 2-6.</u></p>

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Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
19	Page 2-14;	See Exhibit 2-7	<p>See new Table 2-6- Attached</p> <p>Note: Graph will be replaced with correct graph line that matches the title and explanation of the exhibit.</p> <p>See revised Exhibit 2-7- Attached.</p>
20	Page 3-1; Section 3.1.1; first paragraph	<p>SPU prepares long-term forecasts of water demand for the region served by the utility, as explained in Section 2. The forecasts are for average annual daily demand through the year 2020 for the entire regional system. To perform the hydraulic analyses of the pressure zones in the area serving retail customers, peak day diurnal demand patterns for the individual pressure zones are needed. The year 1998 is considered to be typical of current customer water demands. For the hydraulic analysis, actual maximum daily records for the year 1998 were used to represent current water use patterns. These were developed for each pressure zone from operational records.</p> <p>To estimate maximum day and peak hour demands in the year 2020, 1998 demands were increased by 5 percent. This percentage falls within the range of predicted increases in annual average daily consumption associated with retail customers (Table 2-2). It is also based on the assumption that peaking ratios will remain constant over the period 1998-2020.</p>	<p>The storage analysis begun in 1995, and described later in this section, used the projections from the 1993 WSP, the most current then available. The analysis assumed a 2020 ADD of 199 MGD for the regional system and 103 MGD for the retail service area. Using demand patterns characteristic of the late 1980's and early 1990's, the analysis projected peak week demands (PWD) and peak day demands (PDD) for 2020. For the regional system the PWD and PDD were 365 MGD and 416 MGD respectively, and for the retail service area they were 172 MGD and 207 MGD. For each pressure zone, diurnal usage patterns, including peak hour demand (PHD), were established based on the mix of customer types in the zone.</p> <p>To perform the hydraulic analyses of the pressure zones currently underway for the area serving retail customers, peak day diurnal demand patterns for the individual pressure zones are being developed from operational records that were not readily available at the time of the storage analysis needed. The year 1998 is considered to be typical of current customer water demands. For the hydraulic analysis, actual peak day flow maximum daily records for the year 1998 are being</p>

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Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
			<p>were— used to establish represent current water use patterns. These were developed for each pressure zone from operational records.</p> <p>To estimate maximum day and peak hour demands in the year 2020, 1998 demands were increased by 5 percent. This percentage falls within the range of predicted increases in annual average daily consumption associated with retail customers (Table 2-2). It is also based on the assumption that peaking ratios will remain constant over the period 1998-2020, <u>which is a typical assumption in this type of analysis.</u></p>
21	Page 3-18; second bullet; second sentence	The analysis recommended that additional sections of the pipeline be excavated within five years to determine whether further deterioration had occurred. No additional inspections have been performed to date.	<p>The analysis recommended that additional sections of the pipeline be excavated within five years to determine whether further deterioration had occurred. No additional inspections have been performed to date. <u>An external inspection of this pipeline at several locations is planned for 2001 and 2002. Opportunities to inspect this pipeline when it is exposed for utility and roadway construction are also being sought. Due to the smaller size of this pipeline, entry for internal inspection is difficult because of safety regulations for confined space entry. Limited internal inspection of this pipeline may be performed, and emerging technologies for remote inspection are being evaluated.</u></p>
22	Page 3-18; third bullet	New Text Addition – Text added to end of bullet	<p><u>In 1991, 1200 feet of this section were slip-lined with steel pipe, and the remaining 1100 feet were closely inspected per the consultant recommendations. Cracking of the internal and external cement mortar was found, but no corrosion was noted on the reinforcing bar wrap. The consultant recommended the pipeline be inspected annually, and if significant deterioration was not found, the inspection interval could be increased to 3-5 years. The pipeline was inspected again in 1993, and the condition appeared similar to that found in 1991. This</u></p>

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Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
23	Page 3-27; Section 3.2.5; first sentence	The SPU distribution system has 35 pump stations. Information on the pump stations is summarized in Table 3-12.	<p>pipeline will be inspected again in 2001.</p> <p>The SPU distribution water system has 35 <u>39</u> pump stations, <u>with most of them located in the distribution system, while some are associated with transmission, storage, and source facilities.</u> Information on the pump stations is summarized in Table 3-12.</p>
24	Page 3-28; Table 3-12; Title	Distribution System Pump Stations	<p>Distribution System Pump Stations</p>
25	Page 3-32; first and second paragraphs	<p>"Condition. SPU replaces about 40 large meters per year, with a goal to increase the number replaced to 150 per year. Meters are replaced that are not performing within the American Water Works Association (AWWA) standards of accuracy due to obsolescence, incorrect application, or if they are not repairable. Small meters (2-inches and smaller) are replaced - not repaired. On average small residential meters are replaced about once every 15 to 20 years.</p> <p><i>Planned Improvements.</i> SPU plans to continue its ongoing replacement program for distribution, purveyor, demand and system meters.</p>	<p>Condition. SPU replaces about 40 large meters per year, with a goal to increase the number replaced to 150 per year. Meters are replaced that are not performing within the American Water Works Association (AWWA) standards of accuracy due to obsolescence, incorrect application, or if they are not repairable. Small meters (2-inches and smaller) are replaced - not repaired. On average small residential meters are replaced about once every 15 to 20 years. Large meters that are inaccurate are the biggest problem, because they register a comparatively large percentage of the total metered water usage, and they typically are more inaccurate than small meters that are beyond their useful life.</p> <p><i>Planned Improvements.</i> SPU plans to continue its ongoing replacement program for distribution, purveyor, demand and system meters. <u>Near-term (from year 2000 through 2010) projected capital funding levels for the meter replacement program limit SPU to replacing only those small meters which have failed to register usage altogether. The focus of SPU's capital resources will be on replacing large meters.</u></p>
26	Page 3-32; Section 3.3; second	New Text Addition - Last sentence.	<p><u>Typically, the portion of the distribution system with the suspected problem has been analyzed with hydraulic modeling to quantify the problem and to evaluate</u></p>

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Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
	paragraph; last sentence		alternative solutions.
27	Page 3-33; Section 3.3.1; first paragraph	New Text Addition – Add first paragraph.	<p><u>SPU has a modern Geographic Information System (GIS) database, which contains extensive information on its distribution and transmission pipelines. This includes the location, size, and age of the individual pipes. However, the development of an optimized plan for rehabilitation and replacement of pipelines requires additional data that are not generally available. These include the extent to which internal and external corrosion has deteriorated individual pipes, and how the soil environment around the pipe might promote future corrosion. To acquire this additional information, SPU has initiated the Water Main and Pipeline Condition Assessment program.</u></p> <p>This initiative, begun in 1999...</p>
28	Page 3-33; Section 3.3.2; first paragraph	The use of computer models to analyze the performance of pipe networks has become common practice with water systems. In the past, SPU has used this method to analyze portions of its system. For example, in the early 1990's...	<p>The use of computer models to analyze the performance of pipe networks has become common practice with water systems. In the past, SPU has used this method to analyze portions of its system. <u>As mentioned previously, SPU has modeled some portions of the distribution system in response to suspected problems. For example, Also, in the early 1990's ...</u></p>
29	Page 3-35; end of Section 3.3.2	New Text Addition - Two paragraphs to the end of Section 3.3.2.	<p><u>The results from this initial effort have not identified any areas that cannot meet the DOH minimum pressure requirement of 20 psi under PHD conditions. The analysis did identify areas with substandard fire flows, including some residential areas where less than 500 gpm, or half of the flow required by the Uniform Fire Code, was available. Such areas will be identified for special consideration in the Asset Management Program. A more thorough discussion of the results for these first three areas is included in Appendix 3-B.</u></p>

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			<p>If the analysis of the remaining zones identifies a location that fails to meet the 20-psi standard, and the problem is confirmed by field investigation, DOH will be notified. SPU will work cooperatively with DOH to develop an acceptable solution to the problem.</p>
30	Page 4-1; Section 4.1	New Text Addition – Last sentence	<p>In addition to what's contained here, SPU compiles the data, plans and methodology descriptions required by the current DOH/DOE Conservation Planning Requirements for data collection, demand forecasting and conservation planning.</p>
31	Page 4-2; First paragraph; first sentence	Over the next ten years, SPU and its purveyor partners plan to reduce regional per capita water use by 1 percent per year...	<p>Over the next ten years, SPU and its purveyor partners have begun a ten year program that is designed to reduce regional per capita water use by 1 percent per year...</p>
32	Page 4-4; second paragraph; second sentence	Rate Structures. Structuring water rates to encourage conservation is a key conservation strategy and gives customers more control over their water bills. Generally, the more water costs per amount used, the less customers will use. SPU uses summer rates, and many purveyors use seasonal or inclining block rates, to encourage water conservation. To support this...	<p>Rate Structures. Structuring water rates to encourage conservation is a key conservation strategy and gives customers more control over their water bills. SPU has had good success in encouraging water use efficiency, especially during the summer peak with its seasonal rate structure. Generally, the more water costs per amount used, the less customers will use. SPU uses summer rates, and many purveyors use seasonal or inclining block rates, to encourage water conservation. Table 4-2a shows SPU's retail customer water rates for 2000-2001. The higher commodity rates in the summer help encourage water use efficiency when demand is greatest. To support this...</p>
33	Page 4-6; Table 4-3	Second Column titled, "Year When Demand is Projected to Equal Firm Yield"	<p>See New Table 4-2a - Attached "Year When Demand is Projected to Equal Firm Yield"</p> <p>In addition to title, entire second column and associated footnote will be deleted.</p>
34	Page 4-20; second paragraph;	... WSP and periodic updates . The City continues to grow into full beneficial use of its water right.	<p>... WSP and periodic updates. " The City continues to grow into full beneficial use of its water right.</p>

Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
35	last sentence Page 4-21; third paragraph; fifth sentence	In October 1997, the City requested Ecology to extend the temporary permit until 2003 to investigate and implement a production well for non-potable uses.	In October 1997, the City requested Ecology to extend the temporary permit until 2003 to investigate and implement a production well for non-potable uses, such as irrigation for the ball fields in the nearby park.
36	Page 4-23; end of first paragraph.	New Text Addition – Add paragraph.	<u>While lowering the reliability standard to below 98 percent would increase the firm yield of existing sources and delay the need for new source development, it would not come without impacts to customers and the river systems. A lower reliability standard would increase the frequency and level of curtailments requested or required of customers. Instream flows in the rivers would be lowered to critical flow levels more frequently. Also, because more water would be diverted from the rivers, stream flows would be at minimum levels more frequently and average stream flows would be lower.</u>
37	Page 4-24; beginning third full sentence	After many months of discussion and numerous analyses technical difficulties arose that could not be overcome. Consequently, SPU decided to continue using the 98 percent reliability standard to assess yield and reliability of supply.	<u>After many months of discussion and numerous analyses, technical difficulties arose that could not be overcome; it became apparent that it would be impossible to include into a computer model the types of information used to activate the Water Shortage Contingency Plan and set the appropriate level and type of curtailments. Consequently, SPU decided to continue using the 98 percent reliability standard to assess yield and reliability of supply.</u>
38	Page 4-25; End of first paragraph	New Text Addition- Add sentence to end of second full paragraph under subsection "Results of Modeling Firm Yield."	<u>However, the HCP includes an interim commitment (5 to 10 years) to manage its Cedar River operations in such a manner that annual Cedar diversions average between 98 to 105 mgd. This places a short-term constraint on SPU's future contractual water sales commitments.</u>

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39	Page 4-38	Any changes known to be in process at this time (May 2000) have been shown in Tables 4-6 to 4-8.	Any Changes known to be in process at this time (May September 2000) have been shown in Tables 4-6 to 4-8 are listed in Table 4-9.
40	Page 5-5; End of first full paragraph	... comprehensive watershed control measures.	... comprehensive watershed control measures. <u>The potential for impacts to water quality at the Tolt River Watershed by activities of USFS are minimal to none at all. The USFS lands adjacent to watershed lands are in Successional Reserve; meaning there are no plans to log, the forest would be left to grow into an old growth forest. The road from the watershed to USFS land has recently been closed. There are no plans for any chemical uses on these lands, fire suppression would be with water helicopter.</u>
41	Page 6-15;	New Text Addition – Add paragraph to end of Section 6.4	<u>SPU is currently conducting a review of its program for protecting water quality in the transmission and distribution systems. With enhanced treatment at the sources, water will enter the system with higher quality, and protecting this quality becomes increasingly important. The program, which includes both water quality monitoring and research, directly supports the objective of maintaining a high quality of water to the customers' tap. The review, being conducted with the aid of a consultant, will lead to recommendations for monitoring improvements and research to address current and near-term (through 2005) water quality objectives. The final product will be a Five Year Strategic Plan for Water Quality Monitoring and Research Needs.</u>

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Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
42	Page 6-21	New Text Addition - Add paragraph to end of Section 6.8.1	<p><u>Less frequent than water quality complaints are customer calls about low pressure or flow. These can be caused by conditions in the utility's distribution system, but are more typically caused by conditions on the customer property. Old galvanized pipe that has been partially plugged by corrosion is a common cause. Appendix 6-K outlines the steps taken when a customer calls SPU about such problems, including the steps taken to identify the cause of the problem and facilitate a solution.</u></p> <p>See New Appendix 6-K - Attached.</p>
43	Page 7-7; Section 7.5.4; third paragraph	<p>Flushing. After a sufficient chlorine residual and contact time has been verified by SPU Water Quality Control personnel, the installed water distribution main is flushed. If dry calcium hypochlorite is the method of disinfection, a flushing velocity of at least 2.5 feet per second is required. Installed water distribution mains are flushed for at least five minutes for every 150 feet of new distribution main and at least a 30-minute minimum.</p>	<p>Flushing. After sufficient chlorine residual and contact time has been verified by SPU Water Quality Control personnel, the installed water distribution main is flushed. <u>Water containing residual chlorine is de-chlorinated before being released to the environment. If dry calcium hypochlorite is the method of disinfection, a flushing velocity of at least 2.5 feet per second is required. Installed water distribution mains are flushed for at least five minutes for every 150 feet of new distribution main and at least a 30-minute minimum.</u></p>
44	Page 9-9; second paragraph	<p>Reducing this weather-related revenue risk could be accomplished through higher rates or reducing the difference between winter and summer rates. Higher rates would provide more annual revenue, and therefore more of a "cushion" against revenue shortfalls. Higher rate revenues could also be used to fund a Rate Stabilization Fund to be used to offset revenue shortfalls. However, changing the seasonal rate structure would reduce incentives to conserve water in the summer, when it is most expensive to supply. In late 1999 ...</p>	<p>Reducing this weather-related revenue risk could be accomplished through <u>setting rates to raise more annual revenue (an "additional" rate increase) or reducing the difference between winter and summer rates. Higher rates annual revenues would provide more annual revenue, and therefore more of a "cushion" against revenue shortfalls. Higher rate <u>Higher rate</u> revenues could also be used to fund a Rate Stabilization Fund to be used to offset revenue shortfalls. <u>This approach requires higher rate increases in the near term to develop the revenue "cushion" or Rate Stabilization Fund.</u></u></p> <p><u>Reducing the difference between summer and winter rates lowers revenue risk without increasing annual</u></p>

Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
45	Page 9-10; Section 9.5.2; first paragraph	<p>Rates for water vary by customer class and by season. Rates are set by customer class to reflect differences in cost attributable to variability in demand and economies of scale. SPU uses the system-wide average cost of supplying one hundred cubic feet of water in order to compare water rates over time. This measure is used because there is no actual rate that reflects the cost of water to customers as a whole.</p>	<p>revenues (no "additional" rate increase). Under this approach, the water system would receive more revenue during winter months when revenues are stable, less revenue during the summer when demand varies. However, changing the seasonal rate structure in this way would lower summer water rates and thereby reduce incentives to conserve water in the summer, when it is most expensive to supply. In late 1999 ...</p>
46	Appendix 4-E; Page 9	<p>New Text Addition - Replaces "Reclaimed Water" section in entirety.</p>	<p>Rates for water vary by customer class and by season. Rates are set by customer class to reflect differences in cost attributable to variability in demand and economies of scale. Within each customer class, the rate structure emphasizes volume charges over fixed (per-customer) charges, so that the more water a customer uses, the more that customer will pay. Because water rates vary by customer and season, SPU uses the system-wide average cost of supplying one hundred cubic feet of water in order to compare water rates over time. This measure is used because there is no actual rate that reflects the cost of water to customers as a whole.</p>
			<p>SPU recognizes the value of reclaimed water as a means to conserve and extend the useful life of the potable water supply. Reclaimed water is the use of highly treated effluent instead of potable water for irrigation, street washing, construction purposes, etc. in order to reduce demand for potable water and lessen the impact of shortages on the community. Currently, there are some significant constraints on the use of reclaimed water during a shortage, e.g. availability, cost and safety of trucking water over distances. This WSP suggests making reclaimed water available for tanker trucks only in the most severe conditions. It is important to note, however, that as reclaimed water becomes more widely available in the region, SPU will rely more heavily on it as a back-up supply for non-potable uses during water shortages.</p>

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Table 2. Revisions to SPU 2001 Water System Plan for Adoption by Seattle City Council

Item #	Location	Public Review Draft Text, July 2000	Revised Text
47	Appendix 8A	Discrepancies noted between Appendix 8A (CIP) and 8B.	<p>A note is being added that explains the difference between the CIP in Appendix 8A and the CFP in Appendix 8B.</p> <p>See Important Note- Attached.</p> <p>Updated and corrected report on CIP will replace report currently in Appendix 8A when "conformed" copy of the WSP is produced.</p>

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Exhibit 2-7
Firm Yield Estimates and Forecasts of Demand
 (in Average Annual MGD)

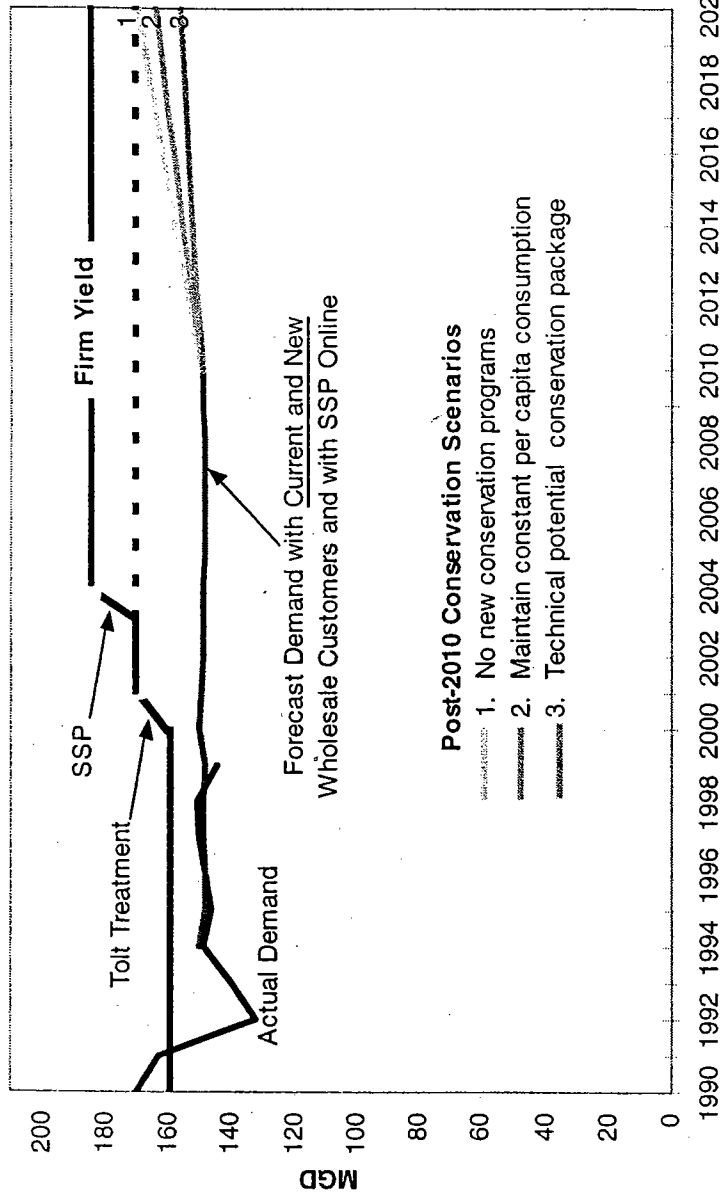


Table 2-6
Year When Demand Equals Firm Yield

Conservation Scenario	w/ SSP		w/o SSP	
	2027	2033	2018	2021
1. No new conservation programs				
2. Maintain constant per capita consumption				
3. Technical potential conservation package				

Table 4-2a
SPU's 2000-01 Residential Commodity Charge
(\$/100 Cubic Feet)

	Inside Seattle	Outside Seattle
Off-Peak Usage (Sept. 16 - May 15th)	\$2.16	\$2.46
Peak Usage* (May 16th - Sept. 15th)	\$2.53	\$2.88
(*All use over 5 ccf per month)		
2000-01 Commercial Commodity Charge (\$/100 Cubic Feet)		
	Inside Seattle	Outside Seattle
Off-Peak Usage (Sept. 16 - May 15th)	\$1.11	\$1.27
Peak Usage (May 16th - Sept. 15th)	\$2.01	\$2.29

Table 4-9

Revisions in Existing Purveyor Service Connections

Service Requested and Status (as of Sept 2000)

Wholesale District/City Name	Service Requested and Status (as of Sept 2000)
Water District 119	New tap on Tolt River Pipeline at the intersection of the pipeline easement and N.E. Big Rock Road. SPU has requested more detail on the proposed connection.
Water District 49	Remove 8" meter/service at 1st Ave. S. and S. 146th St. Replace 8" meter at Des Moines Wy S. and S. 168th St. Would re-activate an old purveyor tap; original ownership is being checked.
City of Bellevue - Utilities Services Division	Relocation of 10" Purveyor Meter; in final design, permits being obtained.
Highline Water District	Upgrade of Crestview Pump Station meter from 12" to 16"; construction pending.
Highline Water District	Replace 8" Purveyor Meter. Relocate to non-traffic location. This project is related to Des Moines Creek Bridge relocation project); in final design phase.
Mercer Island	Install new 10" meter on emergency intertie pipeline on Mercer Island; construction targeted for Fall 2000.
Redmond	Install new 10" meter with Tolt Tieline. Install unmetered service with Tolt tieline to be utilized in the future; meter has not been accepted by SPU Metering Division.
Renton	Relocate two 10" services to the Boeing Renton plant in the City of Renton; Renton has lead.
Shoreline Water District	New emergency intertie at 193rd St. & 1st Ave. N.E. (Richmond Highlands 590 zone)

Appendix 6-K
Seattle Public Utilities: Service and Water Distribution System
Customer Complaint Response
September, 2000

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If a customer has a concern about their water pressure, generally, they will call our one-stop customer service number. If the Customer Service Representatives get a call about low flow or low pressure, they will transfer the call to an Account Executive in the Utility Service Team area of Customer Service. Immediately, the area and the distribution system in it, elevations, pipe size and material, pressure zone, and all other pertinent hydraulic features will be researched to determine whether this appears to be a system or an on-property problem. An hydraulic analysis will also be reviewed when it is available, or completed for special cases.

If the extent and cause of the problem is not clear after the initial hydraulic analysis, then an inspector will make a site visit. If the problem seems to be significant (20-30 psi below what would be expected for this area), a site visit will occur within 24 hours by an inspector who is licensed for both water service and water quality/cross connection. Other low pressure or low flow inspections occur within 48 hours of the call. The inspector will check outside (and within, if possible) the building, the meter, and the general area to find out where a flow or pressure restriction may be occurring. The property owner or tenant, or both, will be informed of the inspector's findings and recommendations. If there's still some question about the extent or cause of the problem, the utility may install pressure recorders on the distribution system in the area for a several month period to determine what is actually happening within the system in that area.

If it appears that the problem is due to some feature of the distribution system, the utility may be able to make a simple change (e.g. open a closed valve, change the water level in a standpipe) to solve the problem. Other solutions may involve installation of several water mains for better gridding, a combination of new and replacement mains, or installation of an additional pump station to serve the area. There are several possible responses depending on the cause of the problem.

- If the customer lives in a low pressure zone, the account executive or inspector may discuss a means of increasing the flow on property (e.g. a booster pump on the property) despite low pressure in the water distribution system in the area.
- If the customer lives in an area that doesn't have particularly low pressure but may have substandard water mains, the customer would be referred to the Water Main Replacement Coordinator. The Water Main Replacement Coordinator would document the situation and present the project to the Water Main Replacement Committee for consideration. The Committee would ask SPU Engineering to do a feasibility study. The project would then be presented by affected properties via a letter explaining the proposed improvements and the contributions due from each benefiting property. Community meetings would be held at the request of any one affected property owner. If the utility determined that there were overriding safety concerns such as water quality or fire protection, the property owners would be

notified of the project and the cost to them. However, in most cases, the letter would request the property owners to endorse the project. If endorsed by a 51 per cent vote, the project would be put on the utility's schedule. If not endorsed by 51 per cent of the properties, the project would not be reconsidered for at least 5 years.

If it's clear that the problem is on the property, the customer will be advised to first replace their underground galvanized service line (if that's what the customer has). If this does not produce sufficient improvement, then replacement of other galvanized plumbing on the property may be warranted. If there is no galvanized piping on the property, then the customer will be advised to check all internal shutoff and other valves and aerator screens. If the caller is a tenant, and the property owner is not present, then the utility will advise the tenant to inform the property owner of the on-property problem. In the past, Account Executives have tried to help renters with on-property problems by taking actions such as informing the property owner about the problem. The tenant may also be advised of the name and phone number of the tenant-landlord agency, which can give legal advice about the options available to the tenant. In the past, the water utility has cooperated with these agencies and tenants in resolving a variety of water service issues.

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Appendix 8A

IMPORTANT NOTE:

The 2001 to 2006 Capital Improvement Program (CIP) in this appendix differs in some ways from the information in the 2001 to 2025 Capital Facilities Plan (CFP) included in Appendix 8B to this WSP.

The 2001 to 2025 CFP is the version that was the basis for analysis contained in Sections 8 and 9 of the WSP. It is a "snapshot in time" of the facilities planning that was available at the time these sections were drafted. It is dated April 2000.

This CIP summary was prepared in July 2000. It reflects the evolution in the capital facilities planning since April. These changes result from:

- Updated budget amounts as projects progress and better estimates become available.
- Delays in projects because of permitting issues
- Shifts in schedules caused by changes in related projects
- Smoothing of cash flows
- Shifts in project priorities because of new information

These factors will continue to affect the CIP. The final 2001-2006 CIP approved by the City Council later this year is likely to contain additional changes. The differences between the CFP used in the WSP and this more current CIP does not have a significant impact on the financial analysis for the WSP.

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