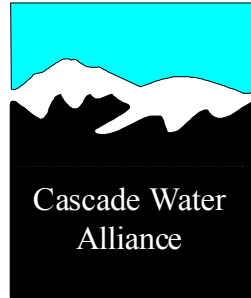


APPENDIX A

Cascade Interlocal Contract



INTERLOCAL CONTRACT

Amended and Restated

December 15, 2004

TABLE OF CONTENTS

ARTICLE 1.	Agreement	1
ARTICLE 2.	Definitions	1
ARTICLE 3.	Formation of Entity; Purpose and Powers.....	7
Section 3.1	Formation	7
Section 3.2	Membership	7
Section 3.3	Conversion to Municipal Corporation Status	8
Section 3.4	Purposes	9
Section 3.5	Powers.....	9
ARTICLE 4.	Organization Structure; Board	11
Section 4.1	Composition, ByLaws, and Meetings.....	11
Section 4.2	Powers of the Board.....	11
Section 4.3	Voting	11
Section 4.4	Officers and Committees	12
Section 4.5	Executive Committee.....	12
Section 4.6	Staff, Consultants and Contractors	13
Section 4.7	Budget; Dues; Financial Management.....	13
ARTICLE 5.	Asset Development and Supply Commitment	14
Section 5.1	Property Acquisition, Ownership, and Disposition	14
Section 5.2	Supply Commitment	15
Section 5.2.1	Commitment to Members.....	15
Section 5.2.2	Additional Rules for Members Retaining Independent Supply ...	17
Section 5.2.3	Additional Rules for Source Exchange	18
Section 5.3.	Financing of Assets.....	19
Section 5.4	Supply Expansions and System Extensions.....	22
Section 5.5	Regional Capital Facilities Charges.....	23
Section 5.6	Transfer Upon Mergers, Consolidations and Assumptions	25
ARTICLE 6.	New Independent Supply	25
ARTICLE 7.	Asset Management	26
Section 7.1	Supply System Management.....	26
Section 7.2	Conservation	27
Section 7.3	Shortages -- Emergency	27
Section 7.3.1	Shortages.....	27
Section 7.3.2.	Emergency	28
Section 7.4	Water Quality.....	29
Section 7.5	Water Supply Rates and Charges.....	29
Section 7.6	New Water Surcharge	31
Section 7.7	Franchises and Easements	32
Section 7.8	Sales of Water to Non-Members.....	32
ARTICLE 8.	Planning.....	35

Section 8.1	Water Supply Plan	35
Section 8.2	System Reliability Methodology	36
ARTICLE 9.	Filings.....	36
ARTICLE 10.	Duration and Dissolution; Withdrawal.....	36
Section 10.1	Duration	36
Section 10.2	Withdrawals	36
Section 10.3	Dissolution	38
Section 10.4	Successor Entity.....	39
ARTICLE 11.	Amendments.....	39
ARTICLE 12.	Applicable Law and Venue.	39
ARTICLE 13.	No Third Party Beneficiaries.....	39
ARTICLE 14.	Severability.....	39
ARTICLE 15.	Entire Agreement.	40
ARTICLE 16.	Execution.....	41

CASCADE WATER ALLIANCE

INTERLOCAL CONTRACT

Recitals

WHEREAS, the Cascade Water Alliance, an intergovernmental organization created by Interlocal Contract effective April 1, 1999 (as amended July 2000 and November 2002) to further the interests of its Members with respect to water supply and to work cooperatively with other water supply entities in the region; and

WHEREAS, Members of the Cascade Water Alliance have determined to amend the Cascade Water Alliance's Interlocal Contract to better facilitate the purposes of the Cascade Water Alliance;

NOW, THEREFORE, it is agreed as follows:

ARTICLE 1. Agreement

The Cascade Interlocal Contract, effective April 1, 1999, and entered into under authority of the Interlocal Cooperation Act, Chapter 39.34 RCW is amended and re-stated as provided herein.

ARTICLE 2. Definitions

“Asset Transfer Agreement” means an agreement between Cascade and a Member by which the Member transfers title to Water Supply Assets to Cascade, with or without monetary consideration, to be operated and maintained as part of the Cascade Water System.

“Authorized Issuer” means either: (a) Cascade (or a successor entity); or (b) a Member or other entity authorized to issue Bonds for the benefit of Cascade and approved by Resolution of the Board.

“Board” means the Board of Directors of Cascade.

“Bonds” means short-term or long-term bonds, notes, warrants, certificates of indebtedness, or other obligations issued by, or on behalf of Cascade.

“ByLaws” means the ByLaws of Cascade, as adopted and amended by the Board.

“Cascade” means the Cascade Water Alliance.

“Cascade ERUs” (“CERUs”) means equivalent residential units, calculated according to the Regional Capital Facilities Charge Methodology.

“Cascade Source Exchange Program” means a program adopted by Resolution of the Board for the replacement of all or a portion of a public water systems existing water supply to benefit stream flow and fish without serving growth or increasing that system’s water supply. A program utilizing Lake Tapps Water Supply shall include the terms and conditions for source exchange contained in the Lake Tapps’ Water Right Report of Examination.

“Cascade Source Exchange Program Agreement” means an agreement between Cascade and a Member or another public water supplier to implement the Cascade Source Exchange Program.

“Cascade Supply Date” means the date for the Founding Members and each new Member, established by Resolution of the Board, upon which Cascade undertakes a Supply Commitment.

“Contract” means this Cascade Water Alliance Interlocal Contract.

“Demand Share” means either a Member’s current share of water provided through the Supply System, or estimated share of water to be provided through the Supply System, whether Full Supply or Interruptible Supply, expressed in millions of gallons per day. Demand Share is calculated according to the Rate Calculation Methodology.

“Dual Majority Vote” means Board approval of a proposal on the basis of a simple majority of all Members, allowing one vote per Member, together with a simple majority of all Members on the basis of each Member’s Weighted Vote. A “simple majority” means a majority of all Members of Cascade, not just the Members present and voting.

“65% Dual Majority Vote” means Board approval of a proposal on the basis of a 65% supermajority of all Members, allowing one vote per Member, together with 65% supermajority of all Members on the basis of each Member’s Weighted Vote. A “supermajority” means 65% of all Members of Cascade, not just the Members present and voting.

“Founding Member” means the City of Bellevue, Covington Water District, the City of Issaquah, the City of Kirkland, the City of Redmond, Sammamish Plateau Water and Sewer District, Skyway Water and Sewer District, and the City of Tukwila.

“Gross Cascade Revenue” means all of the earnings and revenues received by Cascade from any source whatsoever including but not limited to: (a) Member Charges; (b) revenues from the sale, lease or furnishing of other commodities, services, properties or facilities; (c) the receipt of earnings from the investment of money in any maintenance fund or similar fund; (d) and withdrawals from any rate reserve or rate stabilization fund or account.

However, Gross Cascade Revenue shall not include: (a) principal proceeds of Bonds or any other borrowings, or earnings or proceeds from any investments in a trust, defeasance or escrow fund created to defease or refund obligations relating to the Water Supply System (until commingled with other earnings and revenues included in Gross Cascade Revenue) or held in a special account for the purpose of paying a rebate to the United States Government under the Code; (b) taxes and other income and revenue which may not legally be pledged for revenue

bond debt service; (c) improvement district assessments; (d) federal or state grants allocated to capital projects; (e) payments under Bond Insurance or other credit enhancement policy or device; (f) insurance or condemnation proceeds used for the replacement of capital projects or equipment; (g) earnings in any construction fund or bond redemption fund; (h) deposits to any rate reserve or rate stabilization fund or account; or (i) any revenues generated by any Independent Supply except those amounts that are payable to Cascade pursuant to this Contract or another interlocal agreement.

“Independent Supply” or “Independent Supplies” means a Member’s Water Supply Assets that are not part of the Supply System.

“Member” or “Members” means one or more member agencies of Cascade.

“Member Charges” means all payments that Cascade Members are required by this Contract to make to Cascade, including but not limited to all Rates and Charges, RCFCs, dues, assessments and other payments from Members.

“Net Cascade Revenue” means Gross Cascade Revenue less Operations and Maintenance Costs.

“Non-Member” means any person or agency that is not a party to this Contract.

“Operations and Maintenance Costs” or “O&M Costs” means all expenses incurred by Cascade to operate and maintain the Supply System in good repair, working order and condition, including without limitation, payments made to any other public or private entity for water or other utility service. Except as approved by the Board, Operations and Maintenance Costs shall not include any depreciation, capital additions or capital replacements to the Supply System.

“Rates and Charges” means the rates and charges (not including RCFCs) chargeable to each Member using the Rate Calculation Methodology plus any late payment or other charge that may be due.

“Rate Calculation Methodology” means the method of setting Rates and Charges adopted by the Board in accordance with Section 7.5.

“Regional Capital Facilities Charges” (“RCFCs”) means the charges to each Member for new CERUs connected to that Member’s water distribution system.

“Regional Capital Facilities Charge Methodology” (“RCFC Methodology”) means the method of determining the RCFCs adopted by the Board in accordance with Section 5.5.

“Satellite Systems” means water supply facilities identified as such by the Board, including but not limited to facilities that serve a portion of a Member’s customers but that are not part of the Member’s main water system.

“Seattle Contract Purveyor” or “Seattle Contract Purveyors” means a Member that is or was a party to The City of Seattle Water Purveyor Contracts, Version A or Version B, dated November 1981 (as amended) executed prior to July 1, 1998.

“Supply Commitment” means the obligation undertaken by Cascade, established by Resolution of the Board to supply water to a Member. With respect to Members, that obligation shall be characterized as **“Full Supply Commitment,”** or an **“Interruptible Supply Commitment”** defined as follows:

“Full Supply Commitment “ for any or all of a Member’s water needs means that those needs, as projected in the Member’s lawfully adopted water supply plan, shall be met from the Supply System, net of independent supply and subject to the other limitations established in this

agreement, on an equal parity with all other Full Supply Commitments, and with a guaranteed priority no lower than for any other Supply Commitment made by Cascade; provided that no Member is guaranteed any given amount of supply or capacity.

“Interruptible Supply Commitment” means a supply of all or part of a Member’s water needs from the Supply System on an as-available basis on a lower priority than any Full Supply Commitment.

The Supply Commitment for a Member shall be defined by this Interlocal Contact, the terms and conditions of membership, and the Supply Commitment resolution.

“Supply System” means the Water Supply Assets owned or controlled by Cascade.

“Water Supply Assets” means tangible and intangible assets usable in connection with the provision of water supply, including without limitation, real property, physical facilities (e.g., dams, wells, treatment plants, pump stations, reservoirs, and transmission lines), water rights, capacity and/or contractual rights in facilities or resources owned by other entities, and investments in conservation programs and facilities.

“Watershed Management Plan” means a plan adopted by Cascade for purposes of regional water supply, water transmission, water quality or protection, or any other water-related purpose, including but not limited to the plans identified in RCW 39.34.190 (3).

“Water Supply Plan” means the Cascade Regional Water Supply Plan (which may include the Cascade Watershed Management Plan) adopted by the Board as provided in Section 8.1 and 8.2.

“Weighted Vote” means a vote in which each Member’s vote is counted according to the Member’s Demand Share, but no Member shall have a Weighted Vote of less than one.

ARTICLE 3. Formation of Entity; Purpose and Powers

Section 3.1 Formation. The Cascade Water Alliance was created on April 1, 1999 as a public body and an instrumentality of its Members, which exercises essential governmental functions on its Members' behalf as authorized by the Interlocal Cooperation Act (RCW 39.34). Cascade is incorporated under RCW 39.34.040(3) as a public nonprofit corporation in the manner set forth in RCW 24.03 or 24.06 and it may, with Board approval, be incorporated as a partnership in the manner set forth in RCW 25.04, or the Board may organize the form of Cascade in any other manner permitted by law. In addition to its status under any other applicable law, Cascade shall constitute a "watershed management partnership" as provided in Chapter 39.34 RCW. The Board may approve the filing of Articles of Incorporation or similar documents in connection with incorporating Cascade or organizing it in some other manner.

Section 3.2 Membership. Subject to restrictions on future Cascade water rights, or to limitations upon water's place of use imposed by contract or permit, any municipal water utility serving within the Central Puget Sound Region may be admitted to Cascade. The decision to admit new Members rests with the sole discretion of the Board, which shall determine whether to extend a membership offer taking into consideration the audit findings, Cascade water resources, and any other factors the Board deems advisable.

When a municipality applies for membership, Cascade shall conduct a water supply audit according to the methodology and within the period determined by the Board. Audit results shall be provided to the Board and to the applicant.

If a membership offer is extended, it shall address the nature of the Water Supply Assets being transferred or retained and the "value" of those assets in terms of the calculation of an

applicant's Demand Share, RCFCs and other matters relating to the rights and obligations of the applicant and Cascade, which must be recorded in the form that the Board determines and which will constitute, along with this Contract, the conditions under which an applicant becomes a Member of Cascade. An applicant for membership shall be admitted by adoption of a Resolution of the Board accepting the application for membership and incorporating the terms and conditions of membership.

Each membership application must be accompanied by a nonrefundable application fee based on the cost of the audit and other costs related to the admission of a new Member or a request for new supply. The Board shall set the application fee for each applicant based on the estimated cost of processing the application, including the cost of the audit.

As a condition of membership, each new Member admitted to Cascade shall, in addition to any other applicable fees, rates, charges or assessments, pay to Cascade the membership fee, as established by the Board.

If an applicant's planning process or plans are materially out of compliance with the requirements of the Growth Management Act, the Board may condition an offer of membership upon the applicant's compliance with that act.

Section 3.3 Conversion to Municipal Corporation Status. In accordance with Section 10.4, Cascade may be converted into a separate municipal corporation if, and as permitted by law. Upon the creation of such a separate municipal corporation, all Cascade rights and obligations and all Member rights and obligations under this Contract shall transfer to that new municipal corporation.

Section 3.4 Purposes. Cascade's purposes include only those related to water resources, and do not include the provision of other general services to the public, and are to:

- a. provide a safe, reliable and high quality drinking water supply to meet the current and projected demands of Cascade Members serving the Central Puget Sound Region, and for Non-Members as determined by Cascade, and to carry out this task in a coordinated, cost-effective, and environmentally sensitive manner;
- b. develop, contract for, manage, acquire, own, maintain and operate Water Supply Assets, including without limitation, surface water supplies, groundwater supplies, reclaimed water supplies, and other water supply resources as determined by the Board;
- c. contract with Seattle to transfer to Cascade and to modify Seattle's rights and duties with respect to Seattle Contract Purveyors;
- d. contract for, or assume certain contractual rights and duties related to the Tacoma Second Supply Pipeline project;
- e. purchase and provide water supply, transmission services, treatment facilities and other related services;
- f. provide conservation programs to promote the wise and efficient use of resources;
- g. carry out emergency water supply and shortage management programs for its Members when demands exceed available supply;
- h. coordinate and plan cooperatively with other regional or local water utilities and other entities to maximize supply availability and to minimize system costs;
- i. develop a Water Supply Plan addressing the needs of its Members and develop a Watershed Management Plan serving the needs of its Members and Cascade itself and develop a regional water supply plan with other water providers as Cascade may find convenient or necessary to meet regional, state and federal planning requirements, and to take a leadership role in developing and coordinating those supply plans;
- j. share costs and risks among Members commensurate with benefits received; and
- k. carry out, or to further other water supply purposes that the Members determine, consistent with the provisions of this Contract.

Section 3.5 Powers. To further its purposes, Cascade has the full power and authority to exercise all powers authorized or permitted under RCW 39.34 and any other laws that are

now, or in the future may be, applicable or available to Cascade and to engage in all activities incidental or conducive to the attainment of the purposes set forth in Section 3.4 of this Contract, including but not limited to the authority to:

- a. acquire, construct, receive, own, manage, lease and sell real property, personal property, intangible property and other Water Supply Assets;
- b. operate and maintain facilities;
- c. enter into contracts;
- d. hire and fire personnel;
- e. sue and be sued,
- f. exercise the power of eminent domain (through its Members at their individual discretion, unless and until Cascade has that power under applicable law);
- g. impose, alter, regulate, control and collect rates, charges, and assessments,
- h. purchase and sell water and services within and outside the geographical boundaries of its Members;
- i. borrow money (through its Members or other entities at their individual discretion or as authorized by Chapter 39.34 RCW now or in the future), or enter into other financing arrangements;
- j. lend money or provide services or facilities to any Member, other governmental water utilities, or governmental service providers;
- k. invest its funds;
- l. establish policies, guidelines, or regulations to carry out its powers and responsibilities;
- m. purchase insurance, including participation in pooled insurance and self-insurance programs, and indemnify its Members, officers and employees in accordance with law;
- n. exercise all other powers within the authority of, and that may be exercised individually by all of its Members with respect to water supply, conservation, reuse, treatment and transmission, or any of the other purposes set forth in Section 3.4;

- o. exercise all other powers within the authority of, and that may be exercised individually by all its Members with respect to watershed planning and management; and
- p. exercise all other corporate powers that Cascade may exercise under the law relating to its formation and that are not inconsistent with this Interlocal Contract or with Chapter 39.34 RCW or other applicable law.

ARTICLE 4. Organization Structure; Board

Section 4.1 Composition, ByLaws and Meetings. Cascade is governed by a Board of Directors consisting of one individual representative appointed by Resolution of the Member's legislative authority. Members may similarly appoint Alternate Board Members. Each Board Member and each Alternate Board Member must be an elected official of the Member.

The Board shall adopt ByLaws consistent with this Interlocal Contract that specify, among other matters, the month of Cascade's Annual Meeting, Board powers and duties and those of the Executive Committee, Standing Committees, Officers and employees.

The Board shall meet as required by the ByLaws, but no less than quarterly.

Section 4.2 Powers of the Board. The Board has the power to take all actions on Cascade's behalf in accordance with voting provisions set forth in Section 4.3. The Board may delegate to the Executive Committee or to specific Cascade Officers or employees any action that does not require Board approval under this Contract.

Section 4.3 Voting. All Board actions must be approved by Dual Majority Vote of all Members, except where this Contract requires either a 65% Dual Majority Vote, as provided in Sections 5.2, 5.5, 7.1, 7.3, 8.3, 10.3, 10.4, and Article 11; or ratification by the Members' legislative authority, as provided in Section 10.4 and Article 11. The Board may act by voice votes, as set forth in the ByLaws. Any Member may require a recorded tabulation of votes either before or immediately after a voice vote is taken. Although voting is, in part, based on Weighted

Vote, the Members expressly agree that there is only one class of voting membership, and voting occurs within that single class.

Any Member that has been declared to be in default of its obligations under this Interlocal Contract by the Board shall lose its right to vote until the Board has declared the default to be cured.

Section 4.4 Officers and Committees. Cascade Officers shall include a Chair, a Vice Chair, a Secretary and a Treasurer. The Chair serves as the chair of the Board (and may be known as the “President”, if the ByLaws so designate) and performs those duties set forth in the ByLaws.

The Vice Chair shall perform the duties of the Chair in the Chair’s absence and shall perform other duties as set forth in the ByLaws. The Secretary shall be responsible for Cascade records and performs other duties as set forth in the ByLaws. The Treasurer shall be responsible for Cascade accounts and financial records and performs other duties as set forth in the ByLaws.

Consistent with the provisions of this Contract, the Board may, in the ByLaws, establish additional Officers and set forth their duties.

The Board may create and appoint Members to Standing Committees and special committees as it deems appropriate. Committee Members need not be elected officials or employees of Members, but Standing Committee Chairs must be Board Members or Alternate Board Members.

Section 4.5 Executive Committee. The Chair, Vice Chair, Secretary, Treasurer and chairpersons of Standing Committees together constitute Cascade’s Executive Committee. The Chair (or acting Chair) shall vote on matters before the Executive Committee only if necessary

to break a tie. The Executive Committee's duties and responsibilities are set forth in the ByLaws.

The Executive Committee shall not have the power to:

- a. approve any contract for a term longer than three years;
- b. approve any contract involving expenditure by, or revenue to Cascade in excess of such amounts and under such circumstances as set forth in the ByLaws;
- c. retain or dismiss the chief executive officer or determine the chief executive officer's compensation; or
- d. take any actions expressly reserved to the Board by this Contract or the ByLaws.

The Executive Committee shall have the authority, if necessary, to avoid default on any Bond, to withdraw from any capital reserve fund or rate stabilization fund, an amount equal to the amount necessary to avoid a default and to authorize payment of that amount to avoid default.

Section 4.6 Staff, Consultants and Contractors. Cascade staff shall consist of a chief executive officer and other positions established by the Board. The Board shall appoint, designate the title of, and establish the compensation range of the chief executive officer. The Board shall hire or retain legal counsel and independent accountants and auditors for Cascade. The authority to hire other consultants may be delegated to the Executive Committee. The chief executive officer appoints persons to fill other staff positions, and those appointments may be subject to ratification by the Board or the Executive Committee if the ByLaws so provide. The Board may also provide that administrative, professional or technical services be performed by contract.

Section 4.7 Budget; Dues; Financial Management. The Board must approve an annual budget determining Cascade's revenues and expenditures no later than sixty (60) days

before the beginning of the fiscal year in which that budget will be in effect. The budget will be developed and approved according to a schedule established by the ByLaws. The budget must identify the levels of Member Charges on which revenue projections are based. The Board may amend the budget.

Each Member must pay annual dues to defray part of Cascade's administrative costs based on the number of CERUs served by its water system, regardless of water usage or capacity, and regardless of whether those units are served by the Supply System or by Independent Supply. Total dues collected from all Members may not exceed the greater of \$1,000,000.00 or 5% of Cascade's annual revenue requirement, less debt service. The Board may establish minimum annual dues per Member and may provide that less than all of a Member's CERUs be taken into account in establishing dues.

All Cascade books and records shall be open to inspection by the Washington State Auditor.

ARTICLE 5. Asset Development and Supply Commitment

Section 5.1 Property Acquisition, Ownership and Disposition. Cascade may construct, purchase, rent, lease, manage, contract for, or otherwise acquire and dispose of Water Supply Assets and other assets. Cascade may control and manage both the assets it owns and the assets that are owned by Members that have transferred control and management of those assets to Cascade. This Contract does not vest in Cascade any authority with respect to Members' other facilities or assets, such as Water Supply Assets retained by Members as Independent Supply.

Subject to Cascade's agreement, a Member may transfer to Cascade its title to, or operational control and management of Water Supply Assets. Water Supply Assets may also be

fully retained by Members as Independent Supply, subject to the provisions of Article 6. At the discretion of the Board, Cascade may accept title to, or operational control and management of Water Supply Assets offered by Members or accept supply assets that constitute all or part of a Member's Satellite System(s). The Board may accept supply assets subject to the terms and conditions arranged between Cascade and the Member, based on the result of the audit process and mutual needs.

Cascade may enter into Asset Transfer Agreements which shall provide for the terms and conditions of: (a) Cascade's operation of the transferred Water Supply Asset with respect to the Member transferring the asset; (b) Cascade's operation, maintenance and replacement of the Water Supply Asset as part of the Supply System; (c) return or disposition of the Water Supply Asset if Cascade terminates its existence or the Member withdraws; (d) continuation of service (if appropriate) to Members or former Members by the Member receiving the Water Supply Asset at reasonable rates and charges or payment to Cascade of the cost of replacing the Water Supply Asset; and (e) such other conditions as the Board and the Member agree upon.

Members shall not be deemed to hold legal ownership rights in any Water Supply Assets owned by Cascade, whether those Water Supply Assets have been developed by, purchased by, or transferred to Cascade, and regardless of the accounting treatment of RCFC payments and other payments made to Cascade.

Section 5.2 Supply Commitment

Section 5.2.1 Commitment to Members. Beginning on the Cascade Supply Date, Cascade shall provide a Full Supply Commitment to each Founding Member. Thereafter, Cascade shall provide a Full Supply Commitment to meet all current and future water supply

needs of a Member that joins with Water Supply Assets sufficient to provide for its needs during the following fifteen (15) years (whether or not those Water Supply Assets are transferred to Cascade or retained as Independent Supply) commencing on the Member's Cascade Supply Date. When a supply contract is negotiated with Seattle, any Member that is a Seattle Contract Purveyor shall relinquish its rights under its Seattle Water Purveyor Contract to Cascade and execute such documents as may be necessary to transfer those rights to Cascade. Cascade shall accept those rights and a corresponding obligation to provide a Full Supply Commitment (net of Independent Supply). The approval of a contract with the City of Seattle providing for the initial acquisition of rights to substantial Water Supply Assets, and any material amendment to that contract, shall be effective upon a 65% Dual Majority Vote.

Any Full Supply Commitment shall be subject to water shortages, to Cascade's ability to implement the Water Supply Plan, and to the portion of the Member's needs that can be served by the audited capacity of its Independent Supply. If the needed supply is not available, the shortage shall be shared by all the Members in accordance with Cascade's shortage management plan, except as otherwise provided in Section 5.5. Cascade is not obligated to provide water supply to service area expansions in or outside the urban growth boundary, unless Cascade agrees to such expanded service area. However, Cascade shall be obligated to provide water supply to the entire service area of each Member (as that service area is defined in terms under which the Member was admitted), whether or not some of that service area is within the Member's current jurisdictional boundaries and/or within the current urban growth boundary. Cascade is not obligated to provide increased water supply to any Member if it is determined that

the Member's planning process or plans are materially out of compliance with the requirements of the Growth Management Act.

A Member that joins with Water Supply Assets insufficient to provide for its needs for fifteen (15) years receives the Full Supply it desires only if, when, and to the extent it is available within reliability standards determined by Cascade's system reliability methodology. If sufficient Full Supply is not available within reliability standards determined by Cascade's system reliability methodology, the Member receives partial Full or Interruptible Supply, and Full Supply must be provided within fifteen (15) years. Cascade shall then undertake to include in Cascade's Water Supply Plan, and to acquire the facilities or other assets necessary in the Board's determination to provide for that deficit. If Cascade fails to develop sufficient assets to timely provide the increased Full Supply, the commitment becomes a Full Supply Commitment at the end of that fifteen- (15) year period, and any shortage shall be shared by all Members in accordance with Cascade's shortage management plan.

If multiple Members request new Full Supply, requests must be honored in the order received (i.e., in the order in which application is made accompanied by the application fee). With respect to new Members, requests for Full Supply "vest" no earlier than the date that membership is effective. In cases of conflict or ambiguity, the Board may determine the order of requests.

Section 5.2.2 Additional Rules for Members Retaining Independent Supply.

Whenever Cascade has a Supply Commitment to a Member that retains Independent Supply, Cascade shall provide Full Supply for all of that Member's water supply needs minus the amount of water that an audit determines may be provided by that Member's Independent Supply.

Members are not required to share shortages resulting from the loss of all or part of Independent Supply, although Cascade may make Interruptible Supply available to a Member that loses Independent Supply at prices that are consistent with the price of Interruptible Supply being made available to others at that time. Cascade may at any time and at its cost and expense carry out audits of a Member's Independent Supply.

A Member requesting an additional Full Supply Commitment due to loss of Independent Supply shall make that request by Resolution of the requesting Member's legislative authority. When and as determined by the Board, the Member shall pay an amount equal to the RCFCs allocable to the number of CERUs that can be served by the replacement supply provided or to be provided by Cascade. Cascade shall then include the supply in its Water Supply Plan, and provide the supply when it becomes available, but in any event within fifteen (15) years. If, within fifteen (15) years the supply is not available, Cascade's commitment becomes a Full Supply Commitment and any shortage with respect to that supply must be shared by all the Members in accordance with the Shortage Management Plan, except as otherwise provided in Section 7.3.

Section 5.2.3 Additional Rules for Source Exchange. The Board may, at its sole discretion, authorize a Cascade Source Exchange Program Agreement with a Member or Non-Member. The terms and conditions of a Cascade Source Exchange Program Agreement shall be developed from a source exchange proposal submitted to the Board. The agreement shall identify: (a) the water right (instantaneous and annual) to be augmented or replaced; (b) the Water Supply Assets to be utilized; (c) mechanisms and arrangements for delivery of regional water; (d) characteristics of supply obligation (for example, peak and average quantities,

seasonal or annual delivery, duration, interruptibility and shortage management); (e) reporting requirements; (f) changes in operation needed to benefit stream flow and fish; (g) rates and charges; and (h) such other conditions as the Board and the Member or public water supplier agree upon. The agreement may or may not provide for adjustments to a Member's RCFC payments or credits and whether or not the source exchange is a loss of a Member's Independent Supply that would be subject to the provisions of Section 5.2.2.

Section 5.3 Financing of Assets. The acquisition of new capital facilities and other Water Supply Assets may be financed using RCFCs, transfers of Water Supply Assets, Rates and Charges, the issuance of revenue Bonds and such other sources as the Board may deem appropriate.

Section 5.3.1 Issuance of Bonds. An Authorized Issuer may issue Bonds payable from and secured solely by all or a portion of Net Cascade Revenue, evidencing indebtedness up to an amount approved by Resolution of the Board in order to provide financing or refinancing to acquire, construct, receive, own, manage, lease or sell real property, personal property, intangible property and other Water Supply Assets, to establish debt service reserves, to provide for capitalized interest and to pay the costs of issuance of, and other costs related to the issuance of the Bonds. Such Bonds shall be payable solely from all or a portion of the Net Cascade Revenue or (if the Authorized Issuer is other than Cascade) from payments to be made by Cascade out of all or a portion of Net Cascade Revenue, and such Bonds shall not pledge the full faith and credit or taxing power or, except as expressly provided by contract, the revenue, assets or funds of any Member.

Members serving as Authorized Issuers may conduct the financing through "separate

systems” permitted by their applicable bond resolutions, or in some other appropriate manner, and Cascade may compensate those Members for all costs associated with the financing. Bond-related documents of Authorized Issuers other than Cascade must expressly permit the Bonds to be refunded or prepaid without penalty prior to their stated maturity, on and after such dates as are approved by the Authorized Issuer and the Board, to allow for a transfer of the obligation to Cascade or to Cascade’s successor entity, including without limitation a joint operating agency or similar entity, as may be permitted by law.

Section 5.3.2 Pledge of Revenues. For as long as any Bonds payable from Net Cascade Revenue (or any portion thereof) are outstanding, Cascade irrevocably pledges to establish, maintain and collect all Member Charges in amounts sufficient to pay when due the principal of and interest on the Bonds (and, if the Authorized Issuer is other than Cascade, in addition to the foregoing pledge, to pledge to make timely payments to that Authorized Issuer for the payment of principal of and interest on the Bonds), together with amounts sufficient to satisfy all debt service reserve requirements, debt service coverage requirements, and other covenants with respect to the Bonds.

Each Member hereby irrevocably covenants that it shall establish, maintain and collect rates, fees or other charges for water and other services, facilities and commodities related to the water supply it receives from Cascade and/or its water utility at levels adequate to provide revenues sufficient to enable the Member to: (a) make the payments required to be made under this Contract; and (b) pay or provide for payment of all other charges and obligations payable from or constituting a charge or lien upon such revenues. Each Member hereby acknowledges that this covenant and its covenant in Section 7.9 of this Contract may be relied upon by Bond

owners, consistent with this Contract.

Each Member shall pay the Member Charges imposed on it whether or not the Water Supply Assets to be financed through the issuance of Bonds are completed, operable or operating, and notwithstanding the suspension, interruption, interference, reduction or curtailment in the operation of any Water Supply Assets for any reason whatsoever, in whole or in part. Member Charges shall not be subject to any reduction, whether by offset or otherwise, and shall not be conditioned upon the performance or nonperformance of any Member, or of any entity under this or any other agreement or instrument. However, credits against future RCFCs and Rates and Charges described in Sections 5.5 and 7.5, respectively, for development or addition of excess capacity that is either transferred to Cascade or retained as Independent Supply, shall not be considered "offsets" or "reductions" for the purposes of this Section.

If, in connection with the issuance of obligations, any Member establishes a new lien position on revenues relating to its water utility, that Member shall covenant in the relevant documents that the amounts to be paid to Cascade as Member Charges shall be treated either: (a) as part of that Member's internal operation and maintenance costs payable prior to debt service on those obligations; and/or (b) for any portion of those Member Charges that is allocable to capital costs, as a contract resource obligation payable prior to debt service on those obligations. If any Member has existing outstanding revenue obligations relating to its water utility, it shall include substantially similar "springing covenants" in the documents relating to any new parity obligations.

Section 5.3.3 Continuing Disclosure. To meet the requirements of United States Securities and Exchange Commission ("SEC") Rule 15c2-12(b)(5) (the "Rule") as applicable to

a participating underwriter for any Bonds and any obligation of each Member as an “Obligated Person” under the Rule, Cascade and each Member agree to make an appropriate written undertaking, respectively, for the benefit of holders of the Bonds consistent with the requirements of the Rule.

Section 5.3.4 Preservation of Tax Exemption for Interest on the Bonds. Each Member covenants that it will take all actions necessary to prevent interest on tax-exempt Bonds from being included in gross income for federal income tax purposes, and it will neither take any action nor make or permit any use of proceeds of tax-exempt Bonds or other funds treated as proceeds of those Bonds at any time during the term of those Bonds that will cause interest on those Bonds to be included in gross income for federal income tax purposes.

Section 5.3.5 Additional Certificates. Each Member further agrees to provide such certificates or verifications as are reasonably requested by an Authorized Issuer in connection with the issuance of Bonds under this Section.

Section 5.4 Supply Expansions and System Extensions. Cascade must provide for Supply System expansions and extensions to meet the needs of additional water customers of Members, subject to consistency with applicable growth management plans and comprehensive plans, Cascade’s water supply plan, orderly asset development, reasonable cost and financing capacity. The Board shall establish a water supply development process, including criteria governing the evaluation of new projects, and that process must promote equality of costs and services (other than direct local services), regardless of geographic location. The results of the water supply planning process must be reflected in Cascade’s Water Supply Plan. The Board shall have the authority to undertake new projects identified in Cascade’s Water Supply Plan for

the expansion of Water Supply Assets and regional transmission system extensions to meet Members' projected needs. To reduce costs, Cascade may, to the extent that the Board deems advisable, enter into agreements with Members to wheel water through their existing systems. When facilities are constructed that are used partially by Cascade for wheeling water and partially by Members or other entities for their purposes, the Board may determine an appropriate Cascade contribution to the cost of those facilities. Existing arrangements among Members (and between Members and Non-Members), in place when a Member joins Cascade, remain unaffected except as otherwise agreed between Cascade and the other entities concerned.

Section 5.5 Regional Capital Facilities Charges. To allocate growth costs to those Members that require capacity increases, each Member shall pay to Cascade an RCFC for each new CERU connected to its water distribution system. Growth in water usage by existing CERUs is not subject to RCFCs unless that growth constitutes a CERU increase as provided in the RCFC Methodology. Members with a supply deficit must pay an RCFC commensurate with that deficit. To the extent that a Member transfers to Cascade or retains as Independent Supply water supply in excess of its needs, it receives a corresponding credit against future RCFCs.

Subject to the provisions of Section 5.2.2, a Founding Member pays no RCFCs with respect to the number of CERUs served as of January 31, 2003, or other such later date as determined by Resolution of the Board.

A new Member with adequate supply shall commence paying RCFCs fifteen (15) years prior to the date that its Water Supply Assets are projected to be insufficient to provide for its needs as determined by the Board (taking into consideration the results of the Water Supply Audit).

A Member that joins with Water Supply Assets that are projected to be insufficient to provide for its needs for fifteen (15) years shall immediately pay RCFCs for the number of CERUs representing the deficit as determined by the Board.

RCFCs shall be calculated according to the RCFC Methodology, which shall define the analytical steps required to calculate the RCFCs according to the greater of: (a) the incremental difference between the average unit cost of expanding the system (i.e., the marginal cost of new capacity) and the average unit cost of the existing system; or (b) the average unit cost of past construction of the existing system plus then-planned Supply System improvements. The methodology shall provide for an annual escalator, recalculation and update not less frequently than every fifth year, and a methodology for determining CERUs. The RCFCs shall be imposed on the Member for each new CERU of that Member in accordance with the terms of this Contract. Amendments to the RCFC Methodology shall require a 65% Dual Majority Vote.

If a Founding Member owns Water Supply Assets or transfers Water Supply Assets to Cascade under Section 5.1, to the extent the audited capacity of those assets (including Seattle Contract Purveyor rights) exceeds the Member's needs, that Member shall receive a credit against future RCFCs. If a Member seeks to transfer assets substantially in excess of its foreseeable needs, Cascade may negotiate appropriate compensation arrangements for the transfer.

Members that develop new Independent Supply that is approved by the Board in accordance with Article 6, similarly receive a credit effective when the Independent Supply is placed in service as determined by the Board.

A Member that accepts ownership of a Satellite System that Cascade agrees to serve shall pay an RCFC for the amount of supply needed to serve that system in excess of its rated capacity.

Members that experience a net reduction in the number of CERUs served shall receive a CERU-for-CERU credit against future RCFCs.

RCFC credits may not be transferred among Members without Board approval.

Members shall not be required to pass RCFCs to their customers as capital facilities charges, but may provide for the payment of RCFCs in whatever manner they deem appropriate.

For Members joining with an unmet net supply need, Cascade may, under circumstances determined by the Board, require the prepayment of RCFCs allocable to the full amount of the requested supply, i.e., when funds are needed to begin the construction of facilities immediately.

Section 5.6 Transfer Upon Mergers, Consolidations and Assumptions. If: (a) two or more Members merge or consolidate; (b) a Member or a Non-Member assumes jurisdiction of part or all of a Member; or (c) a Member assumes jurisdiction of part or all of a Non-Member, the jurisdictions' water supply rights from and obligations to Cascade must be transferred or assumed under applicable law and consistent with the requirements of this Contract and the obligations of Cascade.

ARTICLE 6. New Independent Supply

Members may not bring new Water Supply Assets on-line as Independent Supply without Board approval. That approval may be granted or denied following an evaluation process, based on whether the Board determines that development of the proposed Independent Supply will benefit or be adverse to the interests of the Members as a whole. Recognizing that in certain

circumstances the acquisition of additional Independent Supply might benefit (or cause no material harm to) the Members, new supplies under one (1) MGD may be approved by the Board regardless of the provisions of the Water Supply Plan and without a formal evaluation process. New supplies in amounts greater than one (1) MGD must be described in and be consistent with the Water Supply Plan.

Members that have invested in the development of new Independent Supply assets may offer to sell their interest in such assets to Cascade. Cascade may, in its sole discretion and subject to mutually agreeable terms and conditions, purchase the Member's interest in such Independent Supply asset by reimbursing or otherwise compensating the Member for its investment in the project to the extent that investment has been capitalized. Once Cascade has purchased a Member's interest in a project, the project will be considered a Water Supply Asset of Cascade and be incorporated into the Water Supply Plan.

ARTICLE 7. Asset Management

Section 7.1 Supply System Management. Cascade is responsible for managing, on behalf of all Members, the Supply System. Cascade is not responsible for managing Independent Supply unless it has expressly agreed to do so. Supply System management responsibilities shall be governed by Cascade's system management plan adopted by the Board. Cascade's system management plan concerns, without limitation, matters such as daily system operations and maintenance, interface with other supply providers, contractual obligations, water quality, billing, management and administration. Cascade may delegate and/or contract out its Supply System responsibilities.

Cascade must manage the Supply System in compliance with applicable laws, regulations and Cascade's minimum service standards. Adoption and amendments to the minimum service standards shall require a 65% Dual Majority Vote.

Section 7.2 Conservation. Cascade shall develop and carry out, and Members must participate in, water conservation programs that are uniform among Members. The Board shall develop and implement a Cascade conservation management plan that provides a mandatory base conservation program that functions to reduce both average and peak demands and may establish a charge or assessment to fund development and implementation of the program. Members may implement additional conservation programs. The Board may adopt wholesale charges in addition to normal Demand Share charges to encourage resource conservation. The Board may also provide or contribute to additional local conservation programs that are not offered to all Members, and these local programs may be locally funded or funded by Cascade. Members that fail to comply with base programs as set forth in Cascade's conservation management plan may be required to assume a disproportionate reduction in water supply or to pay penalty charges, or both.

Section 7.3 Shortages and Emergency.

Section 7.3.1 Shortages. Members must respond to water shortages in a collective, shared fashion under a Cascade shortage management plan adopted by the Board. Resources must be shared in a manner that reduces the risk of severe shortages to each Member. Cascade's shortage management plan may include without limitation, a definition and classification of shortages, a shortage contingency plan including mandatory programmatic actions among all Members in the event of shortages, allocation of authority for determining and responding to

shortages, and a communications and outreach program for the public. Members shall not be required to implement Cascade's shortage management plan in areas not served by the Supply System.

In the event of shortages, Cascade shall reduce or halt Interruptible Supply before invoking the Shortage Management Plan with respect to all Members with a Full Supply Commitment. However, the Board may, by 65% Dual Majority Vote, continue service in the amounts it deems appropriate to one or more Members receiving Interruptible Supply.

The Board may require that Members failing to comply with mandatory shortage management programs implemented under Cascade's shortage management plan assume a disproportionate reduction in supply or pay penalty charges, or both.

In the event of a Cascade-wide water shortage, Members with Independent Supply may, without penalty, decline to participate in the shortage management program for that shortage by foregoing all supply from Cascade for the duration of the emergency or shortage.

To avoid shortages resulting from emergencies or the inability to develop sufficient supplies, the Board may, by 65% Dual Majority Vote, establish moratoria on connections or additional commitments for future water services by the Members. A moratorium may be discontinued by a Dual Majority Vote of the Board.

Section 7.3.2. Emergency. The Board shall include in Cascade's shortage management plan policies and procedures for addressing short-term disruptions of water supply, transmission or water quality, and it may delegate to the General Manager authority to address such disruptions according to such policies and procedures.

Section 7.4 Water Quality. Cascade shall be responsible for water quality that meets or exceeds all federal or state requirements at the point of delivery from Cascade to the Member, consistent with applicable laws and regulations. Cascade assumes source water quality responsibility and liability with respect to Water Supply Assets under its ownership or control (including water wheeled to a Member through another Member's facilities). Cascade is also responsible for preparing and carrying out water quality activities compatible with the water quality requirements of regional water suppliers integrated with Cascade's system (e.g., Tacoma, Everett and Seattle).

Cascade may, in its sole discretion, determine and adjust the appropriate method and level of treatment of water that it supplies, so long as that water meets applicable state and federal requirements. If water that it supplies meets those requirements, Cascade shall not be obligated to adjust the method or level of treatment so that the water can be more readily blended with a Member's Independent Supply or more readily transmitted through a Member's internal system. Each Member shall remain responsible for water quality within its respective distribution system, assuming that adequate water supply quality is provided by Cascade at the point of delivery from Cascade.

Each Member shall be responsible for all costs related to making water supplied by Cascade compatible with that Member's internal system, including but not limited to, costs of additional treatment.

Section 7.5 Water Supply Rates and Charges. The Board shall set Rates and Charges according to a Rate Calculation Methodology adopted from time to time by the Board. The Rate Calculation Methodology for Members' Supply Commitment shall provide for the

definition and calculation of Demand Shares and for a uniform pricing structure with a commodity charge and fixed charges allocated by Demand Share.

Cascade may sell water to a Non-Member under terms and conditions established by the Board. The terms and conditions shall not be more favorable than the terms and conditions under which water is sold to Members. Revenue received from the sale of water to Non-Members shall be used to offset or reduce Rates and Charges to Members to the extent practicable, except that such revenue need not be treated as reducing or offsetting those amounts that are necessary for the payment of debt service on Bonds and for the provision of reserve and coverage requirements for the Bonds.

A Member shall be assigned a Demand Share based on the Board's best estimate of capacity to be used by that Member. Initially, the Board may base its estimate on a Seattle Contract Purveyor's use of water from Seattle. For a Member that joins without a supply history as a Seattle Contract Purveyor, or for a Member that has received only part of its water from Seattle, the Demand Share shall be established based on an audit of that Member's past three (3) years of water use. After three (3) years as a Member, the baseline demand and capacity obligation for that Member shall be fixed based on actual experience as a Member. Specific Demand Shares may be set by the Board to account for circumstances, such as (by way of example and not by limitation) costs of extending the Supply System to a Member, or when Independent Supplies affect regional demand patterns. When water supply from Cascade is wheeled through a Member to another Member, Cascade may presume that the first Member receiving the water is the "User" for calculation of Demand Shares unless the Members concerned instruct Cascade to use a different allocation. Rate credits for Water Supply Asset

transfers are not deducted in the calculation of Demand Shares but are applied to reduce what a Member would otherwise pay.

The Board must set Member Charges at levels it determines to be sufficient, together with other available revenue sources, to provide adequately for Operation and Maintenance Costs, Bond debt service, coverage and other covenants, replacement and renewal of facilities, reserves and other costs that the Board deems appropriate. The Board may provide that a Member's failure to participate in the planning process may result in penalty charges.

A Member that has transferred Water Supply Assets shall receive a credit, determined when those assets are audited and transferred, based on the useful life of those facilities and on the Member's use of the water produced by those assets or an amount of water equivalent to the amount of supply from them.

The Board may implement wholesale charges (additional to Demand Share-based charges and variable commodity charges) to reduce extreme peak use (e.g., "peaking-off of the pipe").

Water Rates and Charges must be the same for all Members receiving the same class of service (subject to credits, surcharges and penalty charges).

Section 7.6 New Water Surcharge.

A new water surcharge of \$0.75 per 100 cubic feet (ccf) shall be imposed, effective on the Cascade Supply Date, and continue through December 31, 2011. It shall be applicable to all water purchased by Members over and above each Member's Old Water Allowance in the Seattle Purveyor Contract, if applicable, or to all water purchased by non-Seattle Purveyor Members. New water surcharge revenues shall be used to offset or reduce Rates and Charges to

Members to the extent practicable, except that such revenue need not be treated as reducing or offsetting those amounts that are necessary for payment of debt service on Bonds and for the provision of reserve and coverage requirements for the Bonds.

Section 7.7 Franchises and Easements. Except to the extent otherwise required by state law, each Member shall provide franchises and rights of way on, under or across that Member's streets or other property, to Cascade and to other Members for Water Supply Assets, without charging any fees, rent or charges other than the customary and usual right-of-way permit and inspection fees.

Section 7.8 Sales of Water to Non-Members. Unless approved by the Board, a Member shall not sell water, including source exchange water, supplied by Cascade, nor shall a Member sell Independent Supply offset by water supplied by Cascade, to a Non-Member. Notwithstanding the foregoing, any Member may sell water supplied by Cascade to a Non-Member to the extent required by a contract in effect as of the date the Member joins Cascade.

Section 7.9 Payment Procedures; Default; Step-Up Provisions.

Section 7.9.1 Invoice and Payment.

(a) Cascade shall provide each Member with periodic invoices showing the Member Charges payable by that Member for the billing period and the due date. Invoices shall be provided monthly or on other such periodic schedule as determined by the Board, but no more frequently than monthly nor less frequently than once every six months. The Board will determine a due date for all invoices.

(b) Payment of any and all invoices shall be due and payable on or before the due date,

and shall be made by wire transfer or such other means as are agreed to by Cascade and the Member. If a treasurer, trustee, fiscal agent or escrow agent is appointed in connection with the issuance of Bonds, Cascade may require, and specify on the invoice, that certain amounts be provided directly to that person or entity, and the Member shall pay those amounts in the manner and to the person so specified.

(c) If full payment of any invoice is not received on or before the due date, such payment shall be considered past due and a late payment charge shall accrue for each day that the invoice remains unpaid. The late payment charge shall equal the product of the unpaid amount and an interest rate established by the Board. Late payment charges shall continue to accumulate until the unpaid amount of the invoice and all late payment charges are paid in full. Further, if an invoice or any portion thereof remains unpaid for more than sixty (60) days after the due date, Cascade may pursue any legally available remedy at law or equity for the unpaid amount, including without limitation, specific performance and collection of the late payment charge. Cascade's right to enforce payments in this regard may be assigned to a treasurer, trustee, credit enhancement provider or other entity. Furthermore, upon written notice, Cascade may reduce or suspend delivery of water until the invoice and late payment charges are paid.

(d) If any Member disputes all or any portion of an invoice, it shall notify Cascade immediately upon receipt. If Cascade does not concur, the Member shall remit payment of the invoice in full, accompanied by written notice to Cascade indicating the portions of the invoice that the Member disputes and the reasons for the dispute. The Member and Cascade shall make a good faith effort to resolve such dispute. If the Member fails to remit payment of the invoice in full pending resolution of the dispute, the prevailing party in an action relating to the

collection of that invoice shall be entitled to reasonable attorney fees and costs.

Section 7.9.2 Default and Step-Up.

(a) If any Member fails to make any payment in full for more than fifty (50) days past the due date, Cascade shall make written demand upon that Member to make payment in full within ten (10) days of the date that the written demand is sent by Cascade. If the failure to pay is not cured within the ten (10) day period, the Member shall be deemed to be in default.

(b) Upon an event of default as described in subsection 7.9.2(a), the other Members shall pay Cascade (in addition to Member Charges otherwise due) the defaulting Member's Member Charges in proportion to each remaining Members' Demand Share in accordance with a schedule established by Resolution of the Board.

(c) The payment of a proportionate share of the existing defaulted Member's Member Charges by Members shall not relieve the defaulting Member of its liability for those payments. Cascade shall have a right of recovery from the defaulting Member on behalf of each Member. Cascade may commence such suits, actions or proceedings at law or in equity, including but not limited to suits for specific performance, as may be necessary or appropriate to enforce the obligations of this Contract against any defaulting Member. Cascade's right to enforce payments in this regard may be assigned to a treasurer, trustee, credit enhancement provider or other entity. Amounts recovered by Cascade as payment of amounts due shall be passed through to each Member in proportion to the share that each assumed, in cash or in credit against future Member Charges as the Board shall determine.

(d) The prevailing party in any such suit, action or proceeding, shall be entitled to recover its reasonable attorney fees and costs against the defaulting Member.

ARTICLE 8. Planning

Section 8.1 Water Supply Plan. Cascade must plan for its Members' water supply needs. That planning shall be to be compatible with the equivalent planning responsibilities of other wholesale water providers and with state, county and city planning responsibilities under the Growth Management Act. The Board must adopt, and may from time to time amend, a Water Supply Plan that must be based on no less than a twenty- (20) year planning horizon. Cascade shall coordinate its planning effort with local and regional utilities and other appropriate agencies and work to encourage cooperative region-wide planning and coordination.

Each Member shall actively participate in Cascade's water supply planning and shall provide to Cascade accurate data regarding its facilities and operations together with good-faith estimates of future needs and a description of any involvement in the development of new Independent Supplies. Each Member's water comprehensive or system plan shall be consistent with any plans adopted by Cascade, and shall be consistent with applicable requirements of the Growth Management Act and comprehensive plans.

Section 8.2 Watershed Management Plan. Cascade may adopt Watershed Management Plans, as appropriate, for the watersheds within its service area provided that a Watershed Management Plan may take the place of, or may be incorporated into a Cascade Water Supply Plan. In fulfilling its responsibilities for watershed management, Cascade may enter into interlocal agreements with Non-Member municipalities to engage in watershed management, including development of Watershed Management Plans and the implementation and financing of such plans.

Section 8.3 System Reliability Methodology. Cascade shall develop and adopt a system reliability methodology for planning, operation and management purposes. Adoption and amendments to the system reliability methodology shall require a 65% Dual Majority Vote.

ARTICLE 9. Filings

This Contract must be filed with the King County Office of Records and Elections or with any other applicable county auditor, in accordance with RCW 39.34.040, and must be submitted for review by the Washington State Department of Health and the Washington State Department of Ecology, in accordance with RCW 39.34.050.

ARTICLE 10. Duration and Dissolution; Withdrawal

Section 10.1 Duration. Except as provided in Section 10.3, Cascade shall remain in existence for the longer of the following: (a) the period it holds any assets; (b) the period during which Bonds are outstanding; or (c) the period it continues to include Members.

Section 10.2 Withdrawals. A Member may notify Cascade of its intent to withdraw by delivery to Cascade of a Resolution of its legislative authority expressing such intent. Upon receipt of such Resolution, the Member shall lose its right to vote and the Board shall determine: (a) the withdrawing Member's allocable share of the cost of the then-existing obligations of Cascade; and (b) the withdrawing Member's obligations to Cascade. "Then-existing obligations of Cascade" means obligations or costs incurred by Cascade as of the date the Member's withdrawal notice is received, including but not limited to Bond obligations, contract obligations and cash financed capital projects; provided that a withdrawing Member's allocable share shall in no event include an obligation for future expenses for which Cascade has not incurred a legal obligation; and provided further, that to the extent the Member's obligation (with respect to such

costs) is re-paid over time, the Member shall be entitled to a credit for supply abandoned by the Member and is otherwise used by Cascade. A “withdrawing Member’s obligation to Cascade” includes but is not limited to, the Member’s share of fixed operating costs, any other expenses contained in Cascade’s adopted budget for that year, and any assessments or other similar charges lawfully imposed by Cascade. For purposes of the preceding sentence, “fixed operating costs” shall be determined in the year of withdrawal, and the Member’s obligation with respect to such costs shall be limited only to that amount required to pay for supply abandoned by the Member and not otherwise used by Cascade.

The allocable share of cost or obligations shall be determined by the Board, taking into consideration as deemed applicable by the Board: (a) the ratio of the Member’s Demand Share to total Member demand; (b) the ratio of the Member’s contribution to Cascade revenue to total Cascade revenue including RCFCs; (c) the cost or a portion of the cost of capital projects or facilities specially benefiting the Member; and (d) and any other factor the Board deems appropriate to consider. The Member’s withdrawal shall be effective on payment of such allocable share or provision for arrangements to pay such allocable share that are satisfactory to the Board. Until the effective date of withdrawal, the Member shall continue to comply with all applicable provisions of this Interlocal Contract.

Upon withdrawal, except as provided in an Asset Transfer Agreement, the withdrawing Member shall have no right to, or interest in any Water Supply Assets owned by Cascade. The withdrawing Member shall be deemed to have abandoned any and all rights to service, to the use of Cascade Water Supply Assets or other rights with respect to Cascade (except as otherwise expressly provided in this Contract).

Notwithstanding the provisions of this Section 10.2, Cascade will, upon the withdrawal of a Member that has transferred operational control and management of (but not title to) an Independent Supply Asset to Cascade under Section 5.1, return operational control of such asset to the withdrawing Member. Return of operational control and management will be subject to: (a) continued use by Cascade, to the extent and for such time as the Board deems such use necessary for Cascade to continue providing service to its Members; and (b) payment or provision for payment of any Cascade costs, including but not limited, to those associated with the withdrawing Member's Independent Supply Asset.

The Board may establish additional generally applicable conditions and requirements for withdrawal.

Section 10.3 Dissolution. Cascade may be dissolved by a 65% Dual Majority Vote. Upon dissolution, except as provided in an Asset Transfer Agreement, Cascade's assets initially shall be held by its then current Members as tenants in common. Each Member's ownership interest must be based on that Member's Demand Share as of the time of the dissolution. Cascade's liabilities (including Bonds and other contractual obligations) initially shall be distributed based on Members Demand Shares as of the time of the dissolution. Assets and liabilities must be distributed in accordance with agreement or contract, under a voluntary mediation process, or by a court of law. A court may appoint an arbitrator or special master. Distribution shall be based on the best interests of efficient and economic water supply in the entire area served by the Members, subject to a rebuttable presumption that Water Supply Assets will be returned to the Member that originally transferred them to Cascade. That presumption may be overcome by a showing that another asset distribution is in the best interests of efficient

and economic water supply. The proceeds of any sale of assets must be distributed among the then current Members based on the Demand Shares at the time of dissolution.

Section 10.4 Successor Entity. Notwithstanding the provisions of Section 10.3, upon a 65% Dual Majority Vote (ratified within one hundred and twenty (120) days by 65%), as measured by Dual Majority Vote of the Members' legislative authorities, all assets, liabilities, and obligations of Cascade may be transferred to any successor entity (including without limitation, a joint operating agency or other municipal corporation, as permitted under state law), and all obligations of Members and parties contracting with Cascade become obligations to the successor entity.

ARTICLE 11. Amendments.

Amendments to this Contract shall be effective upon approval by 65% Dual Majority Vote (ratified within one hundred and twenty (120) days by 65%), as measured by Dual Majority Vote of the Members' legislative authorities.

ARTICLE 12. Applicable Law and Venue.

This Contract is governed by the laws of the state of Washington. The venue for any legal action arising from a dispute under this Contract is the Superior Court for King County.

ARTICLE 13. No Third Party Beneficiaries.

There are no third-party beneficiaries to this Contract except for the rights of Bond owners as provided in Section 5.3.2, no person or entity other than an agency signatory to this Contract shall have any rights hereunder or any authority to enforce its provisions, and any such rights or enforcement must be consistent with and subject to the terms of this Contract.

ARTICLE 14. Severability.

If any provision of this Contract or its application is held by a court of competent jurisdiction to be illegal, invalid, or void, the validity of the remaining provisions of this Contract or its application to other entities or circumstances shall not be affected. The remaining provisions continue in full force and effect, and the parties' rights and obligations must be construed and enforced as if the Contract did not contain the particular invalid provision. But if the invalid provision or its application is found by a court of competent jurisdiction to be substantive and to render performance of the remaining provisions unworkable and infeasible, is found to seriously affect the consideration, and is inseparably connected to the remainder of the contract, the entire Contract is deemed void.

ARTICLE 15. Entire Agreement.

This Contract constitutes the entire and exclusive agreement between the parties relating to the specific matters covered in this Contract. All prior or contemporaneous verbal or written agreements, understandings, representations or practices relative to the foregoing are superseded, revoked and rendered ineffective for any purpose. This Contract may be altered, amended or revoked only as set forth in Article 11. No verbal agreement or implied covenant may be held to vary the terms of this Contract, any statute, law, or custom to the contrary notwithstanding.

ARTICLE 16. Execution.

This Contract may be executed in one or more counterparts.

Signatory Agency

By: ER Berg

Title: Deputy City Manager Date: 04/15/2005

Attest: Myrna X Basich

Title: City Clerk Date: 04/15/2005

Authorized by: Res. No. 7165
(Resolution or Ordinance)

Date: 4/4/2005

Approved as to form:

Patricia C. Geh
Assistant City Attorney

City of Bellevue

ARTICLE 16.

Execution.

This Contract may be executed in one or more counterparts.

Signatory Agency

By: _____

Title: _____

Date: _____

Attest: _____

Title: _____

Date: _____

Authorized by: _____

(Resolution or Ordinance)

Date: _____

Covington Water District

ARTICLE 16.

Execution.

This Contract may be executed in one or more counterparts.

Signatory Agency

By: Bob Trueman

Title: MAYOR

Date: April 7, 2005

Attest: Christine Long

Title: CITY CLERK

Date: 4-4-2005

Authorized by: AB 5266 / Motion
(Resolution or Ordinance)

Date: 3-21-2005

City of Issaquah

ARTICLE 16.

Execution.

This Contract may be executed in one or more counterparts.

Signatory Agency

By: [Signature]

Title: Assistant City Manager

Date: 3/18/05

Attest: LYNN STOKESBARY

Title: ASSISTANT CITY MANAGER

Date: 3/18/05

Authorized by: Resolution 114493

(Resolution or Ordinance)

Date: 3/18/05

City of Kirkland

ARTICLE 16. Execution.

This Contract may be executed in one or more counterparts.

Signatory Agency

By: Jane Christenson

Title: ASSISTANT TO THE Mayor Date: 2-11-05

Attest: Bonnie Mattson

Title: City Clerk Date: 2/14/05

Authorized by: motion
(Resolution or Ordinance)

Date: 2/1/05

City of Redmond

ARTICLE 16. Execution.

This Contract may be executed in one or more counterparts.

Signatory Agency

By: M. B. Helwig E.P. -

Title: VICE PRESIDENT Date: 2/7/05

Attest: [Signature]

Title: Secretary Date: 2/7/05

Authorized by: RESOLUTION No 3282
(Resolution or Ordinance)

Date: 2/7/05

Sammamish Plateau W&S District

ARTICLE 16. Execution.

This Contract may be executed in one or more counterparts.

Signatory Agency

By: _____

Title: _____

Date: _____

Attest: _____

Title: _____

Date: _____

Authorized by: _____

(Resolution or Ordinance)

Date: _____

Skyway W&S District

ARTICLE 16. Execution.

This Contract may be executed in one or more counterparts.

Signatory Agency

By: JPB Steen M Mullet

Title: Mayor

Date: 2/28/05

Attest: Jane E. Cantu

Title: City clerk

Date: 2/28/05

Authorized by: Council minutes - 2/22/05

(Resolution or Ordinance) or minutes of Council meeting

Date: 2/22/05

City of Tukwila

Cascade Water Alliance:

By: _____

Title: _____

Chair

Date: December 15, 2004

Attest: _____

Title: _____

General Manager

Date: December 15, 2004

Authorized by: _____

Resolution No. 2004-18

Date: _____

December 15, 2004

Cascade Water Alliance

APPENDIX B

Seattle Declining Block Contract – Amended 2008

**AMENDED AND RESTATED
50-YEAR DECLINING BLOCK
WATER SUPPLY AGREEMENT BETWEEN
THE CITY OF SEATTLE
AND
THE CASCADE WATER ALLIANCE**

December 17, 2008

Attachment I to SPU Cascade Contract ORD

Amended and Restated
50-Year Declining Block Water Supply Agreement

TABLE OF CONTENTS

LIST OF SECTIONS

ARTICLE I	AGREEMENT	3
ARTICLE II	DEFINITIONS	4
ARTICLE III	SUPPLY	5
ARTICLE IV	TRANSMISSION	8
ARTICLE V	WATER QUALITY	9
ARTICLE VI	CONSERVATION	9
ARTICLE VII	PLANNING	9
ARTICLE VIII	COST RECOVERY	9
ARTICLE IX	ADMINISTRATION	16
ARTICLE X	TECHNICAL COMMITTEE	18
ARTICLE XI	DISPUTE RESOLUTION	18
ARTICLE XII	UNFORESEEN AND UNAVOIDABLE EVENTS	18

LIST OF EXHIBITS

Other Agreements

Points of Delivery

Block Allocation by Individual Water Utilities

Seattle Supply System Facilities

Seattle Transmission System Facilities

Cost Centers used for Operations Cost Indexes

Cascade Sub-regional System Facilities

AMENDED AND RESTATED
50-YEAR DECLINING BLOCK
WATER SUPPLY AGREEMENT BETWEEN
THE CITY OF SEATTLE
AND
THE CASCADE WATER ALLIANCE

This amendment to and restatement of the 50-Year Declining Block Water Supply Agreement between the City of Seattle, a municipal corporation ("Seattle"), and the Cascade Water Alliance, a non-profit organization of municipalities formed under authority of Chapter 39.30 RCW ("Cascade"), is dated and effective this 1st day of January, 2008⁹.

Whereas, Seattle is a regional water supplier currently providing service to numerous water utilities in King County Washington; and

Whereas, the Cascade Water Alliance was formed for the purpose of providing water supply to its Members; and

Whereas, in 2004, the Cascade Water Alliance and Seattle entered into a single 50 year Declining Block Water Supply Agreement; and

Whereas, the Cascade Water Alliance and Seattle desire to amend the 2004 Declining Block Water Supply Agreement to increase the block of water available for purchase by Cascade for its Members through December 31, 2023; and

Now therefore, Seattle and Cascade agree to the following terms and conditions for the provision and purchase of a 50-year declining block water supply.

ARTICLE I - AGREEMENT

Seattle agrees to sell to Cascade and Cascade agrees to purchase from Seattle, according to the terms of this Agreement, a wholesale supply of water and the transmission capacity sufficient to deliver such water supply to Cascade.

The term of this Agreement is fifty (50) years, with an effective date of January 1, 2004 and a termination date of December 31, 2053.

Apart from the contract right to purchase water from Seattle under the terms of this Agreement, neither Cascade nor any Cascade Member has any right or claim to the Seattle Water System, the Cedar and Tolt Rivers and to the Highline Well Fields, or to any other water right or claim held by Seattle. Likewise, Seattle shall have no right or claim to the Cascade Water System or to any groundwater right or claim held by any Cascade Member, or to any future source of supply developed by Cascade or by any of its Members. At the termination of this Agreement, Seattle shall have no further obligation to supply Cascade or any Cascade Member with water, with the exception of Cascade's right to purchase up to 5.3 MGD as set forth in Section 3.5.

ARTICLE II - DEFINITIONS

Average Daily Demand ("ADD"). The amount of water supplied by the Seattle Water System to Cascade in a calendar year divided by the number of days in that calendar year.

AWWA. American Water Works Association.

Base Block. The amount of water Seattle commits to supply Cascade beginning on January 1, 2004 through the termination date of this Agreement, as specifically scheduled in Section 3.4 A.

Cascade Block. The total amount of water Seattle commits to supply Cascade under this Agreement, composed of the Base Block and the Supplemental Block, as more fully expressed in Article III.

Cascade Member. A municipal water supplier that has entered into a Membership Agreement with the Cascade Water Alliance.

Cascade Sub-regional System. Seattle Transmission assets serving Cascade Members as listed in Exhibit VII.

Cascade Volume Charge. In any year, the Cascade Volume Charge is the average cost to Cascade of each million gallons of water in the Base Block. The Cascade Volume Charge shall be calculated by dividing the projected annual cost of the Base Block calculated in accordance with Section 8.10.B, by the product of the Base Block and 365.

Cascade Water System. Tangible and intangible assets owned or operated by Cascade useable in connection with the provision of water supply.

Existing Supply System Facilities. Seattle Supply System assets as listed in Exhibit IV.

Existing Transmission System Facilities. Seattle Transmission System assets as listed in Exhibit V.

Firm Yield. The estimated amount of water that Seattle's Supply System can provide according to Seattle's supply reliability standard and expressed in annual average MGD. For purposes of this contract, Seattle's Firm Yield is 171 MGD, unless modified pursuant to Section 3.2.

Management Agreement. A written agreement, pertaining to subjects authorized by this Agreement, between the Director, Seattle Public Utilities, and the General Manager, Cascade Water Alliance.

MGD. Million gallons per day.

Party (ies). Seattle and/or Cascade, as well as their respective successors and assigns.

Peak Month. The consecutive thirty- (30) day period during a calendar year in which Cascade puts its maximum demand upon the Seattle Water System.

Peak Month Factor. Average Daily Demand multiplied by 1.69

Peak Season. June 1 through September 30.

Peak Season Factor. Average Daily Demand multiplied by 1.35

Points of Delivery. Specific metered delivery locations at which Seattle provides a defined level of service.

Rate of Return on Investment. The average cost of debt of the Seattle Water System plus 1.5 percent.

Seattle Water System. The Seattle Supply System as listed in Exhibit IV and the Seattle Transmission System as listed in Exhibit V together comprise the Seattle Water System.

Sub-regional Facilities. Any facilities owned and operated by Seattle that are not identified as Existing Supply System (Exhibit IV), Existing Transmission System (Exhibit V), or Cascade Sub-regional System (Exhibit VII).

Supplemental Block. The amount of water Seattle commits to supply Cascade beginning on January 1, 2009 through December 31, 2023, as specifically scheduled in Section 3.4 B.

ARTICLE III - SUPPLY

- 3.1 A. Each calendar year from the effective date of this Agreement Seattle shall make available to Cascade the Base Block, according to the schedule set forth in Section 3.4.A.

B. Each calendar year commencing January 1, 2009 and terminating on December 31, 2023, Seattle shall make available to Cascade the Supplemental Block, according to the schedule set forth in Section 3.4.B.
- 3.2 In the event the Firm Yield of the Seattle Supply System is reduced, the Cascade Block will be reduced in proportion to such reduction in Firm Yield only if the Firm Yield is reduced by order of a State or Federal regulatory agency with appropriate jurisdiction or as the result of updated climatic data utilized in the hydraulic model used to calculate Firm Yield. Cascade shall be notified of any potential change in Firm Yield as far in advance as possible, but in no event less than 180 days prior to the effective date of an adjustment to Firm Yield that affects the Cascade Block.
- 3.3 Seattle will supply the Cascade Block during the Peak Season and Peak Month as follows below and will be adjusted proportionately in relation to the decreases identified in Section 3.4:
 - A. During the Peak Season, Seattle shall make available the Cascade Block multiplied by the Peak Season Factor.

- B. During the Peak Month, Seattle shall make available the Cascade Block multiplied by the Peak Month Factor.

3.4

- A. The Base Block shall be supplied in accordance with the following schedule:
 - 1. Beginning January 1, 2004 through December 31, 2023, Seattle shall make available to Cascade 30.3 MGD Average Daily Demand;
 - 2. Beginning January 1, 2024 through December 31, 2029, Seattle shall make available to Cascade 25.3 MGD Average Daily Demand;
 - 3. Beginning January 1, 2030 through December 31, 2034, Seattle shall make available to Cascade 20.3 MGD Average Daily Demand;
 - 4. Beginning January 1, 2035 through December 31, 2039, Seattle shall make available to Cascade 15.3 MGD Average Daily Demand;
 - 5. Beginning January 1, 2040 through December 31, 2044, Seattle shall make available to Cascade 10.3 MGD Average Daily Demand;
 - 6. Beginning January 1, 2045 through the termination date of this Agreement, Seattle shall make available to Cascade 5.3 MGD Average Daily Demand.
- B. The Supplemental Block shall be supplied in accordance with the following schedule:
 - 1. Beginning January 1, 2009 through December 31, 2017 Seattle shall make available to Cascade 3.0 MGD Average Daily Demand;
 - 2. Beginning January 1, 2018 through December 31, 2023 Seattle shall make available to Cascade 5.0 MGD Average Daily Demand.

3.5 At the expiration of this Agreement, Cascade shall have the right to purchase up to 5.3 MGD for the sole purpose of serving Cascade Members that cannot be economically served by any other means than the Seattle Transmission System. The right to purchase up to 5.3 MGD shall be exercised by Cascade upon a minimum of one year's written notice to Seattle prior to the expiration of the Agreement, specifying the Block of water from zero to 5.3 MGD and the Cascade Members to be served by that Block.

3.6 All water supplied to Cascade under this Agreement is for the purpose of re-sale to Cascade Members and other customers of Cascade; provided that all water supplied under this Agreement must be used within the designated place of use of Seattle's water certificates, permits, or claims.

3.7 A. Before December 31, 2011, if an agency identified in Exhibit III becomes a Cascade Member, Seattle will release that agency from its obligations under its existing water supply contracts with Seattle in accordance with the provisions of such contract and the Base Block will be increased by the allocated amount of water identified in Exhibit III, with corresponding proportional increase to the adjusted Base Block in Sections 3.3 and 3.4. If that agency takes delivery of all or a portion of its water through a Sub-regional Facility, Cascade and Seattle shall enter into a Management Agreement for the costs of such facility prior to increasing the Base Block.

B. Before December 31, 2011, if a Cascade Member, previously a Seattle wholesale customer, withdraws from Cascade and contracts for water supply directly with Seattle, Cascade will release that Member from its Membership Agreement in accordance with

the provisions of such Agreement, and the Base Block will be decreased by the amount of allocated water identified in accordance with the provisions of such Agreement in Exhibit III, with corresponding proportional decrease to the adjusted Base Block in Sections 3.3 and 3.4. If that agency takes delivery of all or a portion of its water through a Cascade Sub-regional System Facility, Cascade and Seattle shall enter into a Management Agreement for the costs of such facility prior to decreasing the Base Block.

- 3.8 For the purpose of determining the consecutive 30-day period, which constitutes the Peak Month, a daily average delivery may be calculated so long as meter readings occur no fewer than 26 days apart. In such cases, daily average delivery shall be calculated by dividing the total deliveries by the actual number of days between meter readings. Periods less than 26 days shall not be applicable for determining the Peak Month.
- 3.9 Daily average delivery during the Peak Season may be calculated using meter readings taken closest to June 1 and September 30 each year and dividing the total delivery during such time by the actual number of days between meter readings. Periods less than 110 days shall not be applicable for determining the Peak Season.
- 3.10 Seattle shall endeavor to read the meters at all Points of Delivery on the same day. In the event that meters at all Points of Delivery cannot be read on the same day, all meter reads for that metering period shall be considered to occur on the day on which the meters measuring the majority of the Cascade volume for that metering period were read.
- 3.11 Normal operation of the water system includes the periodic shutdown of various facilities for routine maintenance, rehabilitation and replacement. Seattle and Cascade shall cooperate in the timing of such activities. Cascade shall not use such activities as evidence of the unavailability of supply or transmission services provided by Seattle under this Agreement so long as Seattle proceeds in good faith to restore such facilities to service.
- 3.12 Nothing in this Agreement, including, but not limited to, any penalties for exceedance of the Cascade Block, shall be construed to require Seattle to sell or deliver water in excess of the following amounts:
 - A. Total deliveries during a calendar year in the amount of the Cascade Block multiplied by 365 days (366 in leap years);
 - B. Total deliveries during the Peak Season in the amount of the Cascade Block multiplied by 165 days;
 - C. Total deliveries during the Peak Month in the amount of the Cascade Block multiplied by 51 days;
 - D. Total deliveries during any consecutive 30-day period from October 1 to May 30 in the amount of the Cascade Block multiplied by 30 days;
 - E. Total deliveries during any consecutive 7-day period in the amount the Cascade Block multiplied by 13 days;
 - F. Total deliveries within any one-day period in the amount of the Cascade Block multiplied by 2 days.

Upon notice by Seattle of exceedance of these limits, Cascade must immediately reduce its deliveries of Seattle water. Upon the failure of Cascade to reduce its demand, Seattle may

Attachment 1 to SPU Cascade Contract ORD

Amended and Restated
50-Year Declining Block Water Supply Agreement

install and operate devices that limit deliveries to Cascade to these amounts, all at Cascade's expense.

ARTICLE IV - TRANSMISSION

- 4.1 Each calendar year during the term of this Agreement, Seattle shall sell to Cascade and Cascade shall purchase from Seattle capacity in the Seattle Transmission System according to the following terms and conditions:
- A. Seattle shall provide capacity sufficient to supply the Cascade Block to Cascade at Cascade's Points of Delivery. Adjustments in the Cascade Block shall result in an equivalent adjustment in Seattle's Transmission capacity commitment. The specific Points of Delivery that are to be adjusted and the adjustment for each Point of Delivery shall be determined by Management Agreement so long as a determination is made that there is no adverse impact on the overall Seattle Water System.
 - B. Points of Delivery are identified in Exhibit II. The location, hydraulic gradient and instantaneous flows at each Point of Delivery may be changed by Management Agreement.
 - C. Seattle shall supply water at the inlet side of each Point of Delivery meter at a hydraulic gradient no less than the minimum identified in Exhibit II provided that the instantaneous flow does not exceed that set forth in the same exhibit. Seattle may change the minimum hydraulic gradient at any Point of Delivery once during any fifteen-year period, provided that four years prior notice is given to Cascade. Under emergency conditions or other unusual short-term operating situations Seattle shall not be obligated to meet minimum hydraulic gradients.
 - D. Cascade may request additional Points of Delivery from the Seattle Transmission System, which Seattle may approve or reject at its sole discretion. Seattle shall establish the minimum hydraulic gradient for any new Point of Delivery at its sole discretion, after consultation with Cascade. Changes in Points of Delivery shall be determined by Management Agreement.
 - E. No provision of this Agreement shall be construed to require Seattle to provide flows greater than those identified in Exhibit II. Upon notice by Seattle, Cascade shall immediately reduce Cascade deliveries at a Point of Delivery to not more than those identified in Exhibit II. In the event that Cascade is unwilling or unable to reduce deliveries as required under this provision, Seattle may install and operate flow restricting devices at non-compliant points of delivery, all at Cascade expense.
- 4.2 Cascade is served, in part, by transmission facilities referred to as the Cascade Sub-regional System listed in Exhibit VII. The costs of operating, maintaining, repairing and replacing these facilities shall be the responsibility of Cascade as outlined in Sections 8.6 and 8.7 below.
- 4.3 Nothing herein shall restrict Cascade's authority to construct an independent water transmission system for its own water supply.

- 4.4 Cascade Members have interties, listed in Exhibit I, with adjacent water utilities that are non-Cascade members. Any existing agreements related to the billing and meter reading arrangements for these interties are assumed as a part of this Agreement. If new interconnections between Cascade or Cascade Members and non-Cascade members require similar billing and meter reading arrangements, such arrangements shall be defined in an agreement to be entered into by Cascade, Seattle and the non-Cascade member.

ARTICLE V - WATER QUALITY

Seattle shall be responsible for water quality within the Seattle Water System, and it shall supply water to Cascade, that meets or exceeds federal and state drinking water quality standards, as those standards may change from time to time.

ARTICLE VI - CONSERVATION

Each Party is committed to the principles of water conservation and each intends to achieve its anticipated savings by implementing water conservation programs either unilaterally or in partnership with other agencies.

ARTICLE VII - PLANNING AND SHORTAGE MANAGEMENT

- 7.1 Each Party recognizes its obligation to plan for water supply and distribution in compliance with the State Department of Health water system planning regulations. Each Party shall develop a water system plan for its service area and the Parties shall coordinate those elements of overlapping responsibilities.
- 7.2 Cascade and Seattle shall coordinate the development, adoption and implementation of their respective Water Shortage Management Plans. Before invoking its Water Shortage Management Plan, the Parties shall communicate with each other concerning current and projected water supply conditions.
- 7.3 Seattle has negotiated agreements with federal agencies, state agencies and tribes for the long term preservation and enhancement of watersheds and in-stream beneficial uses and habitat. Such agreements have direct bearing on decisions to curtail the amount of water available for municipal and industrial water supply in any given season. Any water use restrictions imposed under the terms of such agreements shall be borne proportionately by Seattle, its other wholesale customers, and Cascade with respect only to the size of the Cascade Block at the time curtailment is required.

ARTICLE VIII - COST RECOVERY

- 8.1 The provisions of this Article shall apply to the establishment of fees and charges for water supply and related services beginning January 1, 2004. Prior to that date, the pricing provisions of each Cascade Members' individual water supply contract with Seattle shall be maintained.

- 8.2 For the purposes of allocating costs of water supply, there shall be two water supply cost pools consisting of an existing Seattle water supply assets cost pool ("Existing Supply Cost Pool") and a new Seattle water supply assets cost pool (the "New Supply Cost Pool").
- A. Existing Supply Cost Pool. The costs of infrastructure, including operation, maintenance, repair and replacement of Seattle Supply System Facilities listed in Exhibit IV shall be included in the Existing Supply Cost Pool
 - B. New Supply Cost Pool. The costs of water supply resources developed in the future ("New Supply Resources") that expand the capacity of the Seattle Supply System, including the costs of the 1% conservation program from January 1, 2004 through 2010 shall be included in the New Supply Cost Pool. If any portion of a New Supply Resource project enhances reliability of Existing Supply Resources, the costs thereof may be allocated to the Existing Supply Cost Pool by Management Agreement.
- 8.3 For purposes of determining the cost of the transmission of water to the Wholesale Customers there shall be three transmission cost pools consisting of an existing transmission cost pool ("Existing Transmission Cost Pool"), a new transmission cost pool ("New Transmission Cost Pool"), and a Cascade transmission cost pool ("Cascade Sub-regional System Cost Pool").
- A. Existing Transmission Cost Pool. Costs to be allocated to the Existing Transmission Cost Pool shall consist of the following: operation, maintenance, repairs and replacements to the Seattle Transmission System Facilities listed in Exhibit V. Costs incurred for purposes of transmission reliability may be included in the Existing Transmission Cost Pool by Management Agreement.
 - B. New Transmission Cost Pool. The cost of new transmission facilities shall be included in the New Transmission Cost Pool. A portion of the renewal, replacement or modification of existing transmission facilities which create an expansion of transmission capacity may be allocated to the New Transmission Cost Pool.
 - C. Cascade Sub-regional System Cost Pool. The costs of operating, maintaining, repairing and replacing the Cascade Sub-Regional System Facilities owned by Seattle and listed in Exhibit VII shall be included in the Cascade Sub-regional System Cost Pool, in an amount proportionate to the use of the facilities by Cascade, together with any other costs Cascade and Seattle agree to include by Management Agreement. In the event that Cascade ceases to receive water through one or more of the facilities in the Cascade Sub-regional System, these facilities may be decommissioned at Seattle's sole discretion, and Cascade shall pay Seattle for the remaining Net Book Value of the decommissioned facilities in an amount proportionate to the use of the facilities by Cascade together with any decommissioning costs.
- 8.4 A. If Seattle determines that changing the location of a Cascade Point of Delivery is required for the improved operation of the Seattle Transmission System then such costs shall be included in the Existing Transmission Cost Pool. Seattle shall notify Cascade of any proposed changes to a Cascade Point of Delivery and consult with Cascade to

ensure minimal impact on the affected Cascade Member's distribution system and appropriate coordination of operation and construction activities.

- B. The costs of replacing, relocating, maintaining or improving Cascade Points of Delivery for any other reason than Section 8.4.A. shall be borne by Cascade regardless of the cause provided that such cause is consistent with AWWA and safety standards and practices. Costs will be invoiced and due in 30 days upon receipt or as otherwise provided for by Management Agreement. Seattle shall notify Cascade of any proposed improvements to a Cascade Point of Delivery and consult with Cascade to ensure minimal impact on the affected Cascade Member's distribution system and appropriate coordination of operation and construction activities.

8.5 Seattle shall maintain a cost accounting system consistent with the provisions of this Agreement and generally accepted accounting principles consistently applied in developing the financial information for determining the costs of construction, replacement, maintenance and operation of the facilities in each cost pool.

- A. Asset Accounts. An asset account shall be maintained for each facility and within that account Seattle shall record the original cost of that facility plus betterments and less retirements.
- B. Depreciation. Facilities shall be depreciated according to Standard Water System Asset Lives and a record of life-to-date depreciation shall be maintained for each facility. No depreciation shall be recorded in the first calendar year of operation of a facility. A full year's depreciation shall be recorded in every subsequent year.
- C. Net Book Value. The net book value of any facility shall be its original cost plus betterments and less retirements as recorded in its facility asset account, less life-to-date depreciation.

8.6 Costs in each cost pool shall be calculated as follows:

- A. Infrastructure Costs. Each cost pool shall include the infrastructure costs for its respective facilities, calculated on a utility, cash or other basis depending upon the facility and the cost pool as set forth below.
 - 1. Utility Basis. The utility basis shall be used to calculate the infrastructure costs for all Existing Supply Facilities, all Existing Transmission Facilities, and all Cascade Sub-Regional System facilities, as well as their replacements and betterments. Under the utility basis, the infrastructure cost for a facility in any year shall be the sum of (i) the annual depreciation expense recorded for that facility and (ii) the product of the net book value of that facility and the Rate Of Return On Investment. At Seattle's discretion, interest costs may be considered current infrastructure costs during the construction of a facility. However, any such interest costs must then be considered contributions in aid of construction, and not included in the Net Book Value of the facility for purposes of calculating Utility Basis costs in future years.

B. Operations Costs. The costs of operating the assets assigned to a cost pool shall be included in the cost pool. The annual operations costs of a cost pool shall be the labor, materials, equipment and other direct costs required for the operation and maintenance of the facilities in that cost pool, together with any net profit or expense from the disposition of facilities in that pool. Operations costs shall include the cost of general and administrative overhead applied in a manner consistent with its application to facilities construction projects.

1. Existing Supply Operations Costs. The parties agree that an efficient way of handling operations costs for the Existing Supply Cost Pool shall be as follows: The Operations Cost base in the Existing Supply Cost Pool for the year 2001 shall be \$17,780,262.00. In each succeeding year, the amount from the previous year shall be adjusted by the percentage change in the total cost of all the supply cost centers identified in Exhibit VI, except that the increase in treatment operations costs caused by the first full year start-up of the Cedar Treatment Plant at Lake Youngs in or around 2005 shall not be included in the percentage adjustment. Any increase in Cedar Treatment operations costs for the first full year of operation of the plant shall instead be added directly to the Operations Cost total from the prior year as adjusted by the index. For each year after the first full year of operation, increases in Cedar Treatment operations costs shall be included in the adjustment index.
2. Existing Transmission Operations Costs. The parties agree that an efficient way of handling operations costs for the Existing Transmission Cost Pool shall be as follows: the Operations Costs base in the Existing Transmission Cost Pool for the year 2001 shall be \$4,531,931.00. In each succeeding year, the amount of these costs from the previous year shall be adjusted by the percentage change in the total cost of all the transmission cost centers identified in Exhibit VI.
3. Cascade Sub-regional System Cost Pool Operating Costs. Cascade Sub-regional System Cost Pool Operating Costs shall include: (i) the actual costs of operating the facilities listed in Exhibit VII in proportion to the actual use of such facilities by Cascade; (ii) the electricity costs paid by Seattle after the effective date of this Agreement, in accordance with certain contracts effective on or before January 1, 2002 identified in Exhibit I, for pump stations owned and operated by Cascade Members and connected to the Tolt East Side Supply Line; and, (iii) any other costs approved by Management Agreement shall be Cascade Sub-regional System Cost Pool Operating Costs.

C. Disposition Costs. The costs of disposing of assets within a cost pool shall be included in the cost pool. Net disposition costs shall be calculated as follows:

1. Disposition under the Utility Basis. The net book value of the facility, less any sales, salvage, or other revenues derived from the disposition of that facility.

8.7 For the Base Block, the costs in cost pools shall be allocated to Cascade as follows:

- A. Allocation of Existing Supply Cost Pool. Cascade shall pay one hundred two percent (102%) of the product of the Base Block and the costs in the Existing Supply Cost Pool divided by the Firm Yield.
- B. Allocation of New Supply Cost Pool. Cascade shall pay none of the costs in the New Supply Cost Pool.
- C. Allocation of Existing Transmission Cost Pool. Cascade shall pay one hundred two percent (102%) of the product of the Base Block and the costs in the Existing Transmission Cost Pool divided by the Firm Yield.
- D. Allocation of New Transmission Cost Pool. Cascade shall pay none of the costs in the New Transmission Cost Pool.
- E. Allocation of the Cascade Sub-regional System Cost Pool. Cascade shall pay costs in the Cascade Sub-regional System Cost Pool as follows:
 - 1. 100% of the costs associated with all facilities listed in Exhibit VII.A.
 - 2. A proportionate share of those facilities listed in Exhibit VII.B. based on flows of Cascade Members. Costs will be allocated based on Peak 7 Day flows through each segment. In the event that Peak 7 Day flow data is not available, Peak Month flows may be substituted.

8.8 For the Supplemental Block, the charge to Cascade shall be the then current Full and Partial Requirements Customer Commodity Charge per 100 cubic feet (ccf) as approved by the Seattle City Council from time to time. The Growth Charge shall not apply. The Full and Partial Requirements Customer Commodity Charge shall be applied to the annual volume of the Supplemental Block allocated by month in accordance with the schedule in Section 8.10C. Seattle will provide Cascade 30 days' advance notice of any proposed changes to the Full and Partial Requirements Customer Commodity Charges. For months that include a rate change, the charge shall be prorated in accordance with the effective date of the rate change.

8.9 Cascade shall pay the costs of penalties for exceeding the Cascade Block, as defined in Section 8.11 and any other costs requiring invoice by Seattle within 30 days of invoice by Seattle.

8.10 Cascade shall pay the annual costs allocated to Cascade in accordance with Section 8.7 for the Base Block and 8.8 for the Supplemental Block as follows:

- A. Prospective Cost Estimate for the Base Block. Seattle may conduct a cost estimating study to revise estimates of the annual costs allocable to Cascade for the Base Block upon 120 days notice to Cascade. Cascade shall pay Seattle for the Base Block according to the estimated annual costs in such study, provided that not more than five years has elapsed from the time a study is conducted to the year in which the estimates from that study are used. Each study shall estimate the annual costs for the Base Block not less than the five following years.
- B. Statement of Annual Costs. On or before October 1st of each year, Seattle shall provide Cascade with its best, non-binding estimate of the annual costs for the Base and Supplemental Blocks for the next year. On or before December 1st of each year, Seattle

shall notify Cascade of Cascade's annual costs for the Base and Supplemental Blocks for the next year. For the Base Block, such annual cost shall be the sum of the prospective cost estimate determined in accordance with Section 8.10A and the amount of excess or deficit identified in the most recent cost audit performed in accordance with Section 8.10D. For the Supplemental Block, such annual cost shall be in accordance with Section 8.8. In the event the Full and Partial Requirements Customer Commodity Charges change during the year, Seattle will provide Cascade with an updated cost estimate for the Supplemental Block for the remainder of that year.

- C. Payment Distribution. On or before the last day of each month, Cascade shall pay Seattle that portion of Cascade's annual cost for that year, calculated pursuant to Section 8.10B for the Base Block and Section 8.8 for the Supplemental Block, according to the following schedule:

January 5%
February 5%
March 6%
April 6%
May 6%
June 12%
July 13%
August 15%
September 13%
October 7%
November 6%
December 6%

Overdue balances shall bear interest at the rate of 1% per month. In no event shall Cascade be required to pay Seattle a monthly payment during a year until at least 30 days after Seattle provides Cascade with a statement of annual costs for that year, and such payments shall not be considered overdue, until 30 days after such statement is provided to Cascade.

- D. Cost Audit for the Base Block. No later than August 1 of each year, Seattle shall provide a statement of actual costs for the Base Block allocated to each cost pool and other costs and revenues received during the prior year, which statement shall be examined by an external auditor in an "agreed-procedures" engagement. In addition, Cascade may have the statement audited by an external auditor of its choice, solely at Cascade's expense. This statement shall clearly identify the amount by which payments for the Base Block made by Cascade during the prior year were in excess of, or insufficient to meet the actual costs allocable to Cascade for the Base Block for the prior year. This surplus or deficit shall earn interest at the Rate of Return on Investment, and shall be reduced in accordance with Section 8.10B. No later than December 31 of the year following the termination of the contract, any remaining surplus or deficit balance shall be paid in cash by the party owing the balance to the party to whom the balance is owed.

E. Payment from Gross Revenues. Cascade shall pay the Base Block and Supplemental Block charges out of its gross revenues. Cascade's payments to Seattle pursuant to this Agreement and payments otherwise required or provided for by this Agreement shall be maintenance and operation expenses of Cascade, payable prior to and superior to any charge or lien of any revenue bond issued by Cascade that are payable from the revenues of Cascade. Cascade shall establish rates and collect fees and charges for wholesale water service sufficient to pay for the maintenance and operation of its Water Supply System, including payments to Seattle, and the principal and interest on any and all Cascade revenue obligations that constitute a charge against the revenue of Cascade.

F. Emergency Surcharge. In the event of a catastrophe or other extraordinary condition that requires emergency expenditures to maintain a sufficient water supply, Seattle may impose an emergency surcharge proportionately on all of its retail and wholesale customers, including Cascade in order to pay for such expenditures. Any such emergency surcharge shall be presented to Cascade prior to adoption by Seattle. Seattle shall consider Cascade's comments but shall nevertheless have the full authority to adopt the charge.

8.11 A. Charges will be imposed for exceeding the Cascade Average Annual, Peak Season or Peak Month Block limitations. These charges will be determined through the application of multipliers to the Cascade Volume Charge. The charge for exceeding the Cascade Block, Peak Month or Peak Season shall be calculated by (1) multiplying the Cascade Volume Charge by the appropriate factor in the following table, (2) multiplying by the amount of the exceedance (in MGD) and (3) multiplying by the actual number of days in the year, Peak Month or Peak Season, whichever is applicable.

Category	0 to 1 MGD	>1 to 3 MGD	>3 MGD
Annual Average Daily Demand	1.0	1.1	1.2
Peak Month Demand	1.5	9.1	16.7
Peak Season Demand	1.5	3.1	4.7

B. In the event that the Cascade Block, Peak Season or Peak Month limitations are exceeded in 2 or more years during any consecutive five-year period, the following charges apply:

Category	0 to 1 MGD	>1 to 3 MGD	>3 MGD
Annual Average Daily Demand	1.0	1.2	1.2
Peak Month Demand	1.5	16.7	16.7
Peak Season Demand	1.5	4.7	4.7

C. In the event of a charge for exceeding the block occurs in more than one category in either a single year or in multiple years during any consecutive five-year period, only the category that results in the highest charge will be assessed.

- 8.12 Except in the case of an emergency, the provisions of Section 8.11 shall be applied reciprocally to Seattle to calculate credits to Cascade, should Seattle fail to deliver the Cascade Block as required by this Agreement.

ARTICLE IX - ADMINISTRATION

- 9.1 Seattle shall own and maintain appropriate metering devices to measure the water flowing from the Seattle Water System to each Point of Delivery. At Cascade's request and sole expense, Seattle will install and maintain equipment selected by Cascade and approved by Seattle to transmit signals to recording equipment of Cascade or its Members (located elsewhere) of the amount of water delivered, as measured by Seattle's meters.
- 9.2 As of the end of the calendar year immediately following the effective date of this Agreement and following a change in Cascade Membership through 2011, Seattle shall prorate the balances in the Purveyor Balance Accounts among its contract Purveyors (1982 Water Purveyor Contract, Version A or B) and transfer to Cascade the pro rated balance of each Purveyor that is a Cascade Member, provided that such transfer shall occur only once for each Cascade Member.
- 9.3 Seattle shall keep full and complete books of accounts for the Seattle Water Supply System and Seattle's retail distribution system in compliance with current standards required by the State Auditor. Cascade, at its own expense, may at any time audit Seattle's book of accounts using the services of a public accounting firm and Seattle shall make the books and records of the Seattle Water System and Seattle's retail distribution system available to such auditors during reasonable business hours upon reasonable notice at the place where such records are normally kept. Seattle shall provide adequate facilities; i.e., room and workspace, so the audit can be performed. Seattle shall have reciprocal rights to audit Cascade books and accounts.
- 9.4 This Agreement shall be interpreted according to the laws of the State of Washington and the venue for any litigation between the Parties concerning its terms shall be in the Superior Court of King County at Seattle. The Parties shall be entitled to specific performance of the terms of this Agreement.
- 9.5 This Agreement shall inure to the benefit of and be binding upon successors of interest and assigns of the Parties. Neither this Agreement nor obligations to perform hereunder may be voluntarily assigned by either Party without the other Party's written consent, which shall not be unreasonably withheld; provided however, that a change in Cascade's corporate form; e.g., from interlocal organization to another form of organization authorized by Washington law, shall not be considered an assignment. Seattle may not convey the Seattle Water System or its component parts without providing for an assumption of this Agreement and the obligations contained herein by the conveyee. The Parties do not intend to confer rights or benefits upon any third party. Only a writing executed by the Parties may modify this Agreement.

- 9.6 All notices relating to this Agreement shall be sent to the following addresses, certified mail, return receipt requested, unless the other Party is previously notified in writing of a change in recipient or address:

To Seattle:
Director
Seattle Public Utilities
700 Fifth Avenue, 49th Fl.
Seattle, WA 98104

To Cascade:
Chief Executive Officer
Cascade Water Alliance
11400 SE 8th Street, Suite 440
Bellevue, WA 98004

- 9.7 If any provision of this Agreement or its application is determined by a court of law to be illegal, invalid, or void without rendering performance of this Agreement impossible or infeasible, then the Parties intend that the validity of the remaining provisions of this Agreement or their application shall not be affected and shall continue in full force and effect.
- 9.8 This Agreement is a contract for the purchase and sale of water and transmission services related to that water and no provision hereof shall be construed to make the Parties partners or joint ventures. Neither Party is the agent of the other nor shall either Party be held liable for the acts of the other on a theory of agency or any other representative capacity.
- 9.9 In the event of default of any provision of this Agreement, the non-defaulting Party shall issue written notice to the other Party setting forth the nature of the default. If the default is for a monetary payment due hereunder, the defaulting Party shall have thirty (30) days to cure the default. In the event of other defaults, the defaulting Party shall use its best efforts to cure the default within ninety (90) days. If such default cannot be reasonably cured within such ninety (90) day period, the defaulting party shall, upon written request prior to the expiration of the ninety (90) day period be granted an additional sixty (60) days to cure the default.
- 9.10 In the event of a default in payment by Cascade, Seattle shall have the right to compensation from the constituent Cascade Members up to the proportionate share of each Member's use of the Cascade Block which in the first 15 months of the Agreement shall be established by Exhibit III, and thereafter by the most recent annual report of Cascade Member's proportionate use of the Cascade Block, which proportionate use shall total 100 percent of the Cascade Block. Cascade's annual proportionate use report shall be completed and delivered to Seattle no later than March 31 of each year. Each Cascade Member must acknowledge and accept this individual, contingent liability to Seattle in writing at the time that Cascade enters into this Agreement. Those agencies that later join Cascade in accordance with Section 3.7A shall convey such written acknowledgment to Seattle within one month of joining Cascade. Should any Cascade Member required to do so fail to convey such written acknowledgement, Seattle shall have the unilateral right, upon written notice to Cascade, to reduce the Cascade Block by the amount allocated to such Cascade Member as set forth in Exhibit III, or by Cascade's most recent annual proportionate use report, until such written acknowledgement is provided to Seattle.

Attachment 1 to SPU Cascade Contract ORD

- 9.11 Upon entering into this Agreement, or upon later becoming a Cascade Member, each water utility that is listed in Exhibit III thereby relinquishes its then existing Seattle wholesale contract and the terms and conditions of that contract shall have no further force or effect as to those utilities that are or become Cascade Members.

ARTICLE X - TECHNICAL COMMITTEE

Technical Committees comprising Seattle staff and other affected parties will address day to day operational issues related to the Seattle Water System. Finance cost and rate issues will be addressed independently between the Director of Seattle Public Utilities and the General Manager of Cascade Water Alliance, or their respective designees as provided for in written notice to the other. It is recognized that daily operation of the Seattle Water System may require direct communication between Seattle staff and the staff of the Cascade Members.

ARTICLE XI - DISPUTE RESOLUTION

- 11.1 Cascade and Seattle shall make good faith efforts to resolve by informal discussion any dispute arising under or in connection with this Agreement. If at any time a Party to a dispute determines that such informal discussions will not result in a resolution, such Party may initiate non-binding mediation of any dispute arising under or in connection with this Agreement. Within ten (10) days of receiving written notice of initiation of non-binding mediation by one or both Parties, each Party shall designate in writing not more than five (5) candidates it proposes to act as a non-binding mediator. The Parties shall within an additional five (5) days select one of the mediators from either list to serve as mediator. Should the parties be unable to agree upon a mediator, a mediator shall be chosen from one of the two lists by the presiding judge of the King County Superior Court at Seattle. Upon selection of the mediator, the Parties shall use reasonable efforts to resolve the dispute within thirty (30) days with the assistance of the mediator. The cost of mediation shall be shared by Cascade and Seattle equally.
- 11.2 If mediation fails to resolve the dispute within thirty (30) days of selection of the mediator, the Parties may thereafter seek redress in court.
- 11.3 Pending the decision in any mediation or litigation process pursuant to this section, the Parties to such process shall continue to fulfill their respective duties under this Agreement.

ARTICLE XII - EMERGENCY EVENTS

- 12.1 The Parties recognize that unforeseen and unavoidable events may occur which would require Seattle to act unilaterally for what it deems to be in the best interest of the general public served by the Seattle Water System; including water shortages resulting from drought circumstances and temporary reduction in water supply associated with turbidity events. Upon the occurrence of an unforeseen or unavoidable event, Seattle shall, to the extent practicable, treat its wholesale and retail customers equally and any curtailment of supply shall be imposed proportionately among those customers. This authority to act

unilaterally carries with it a unilateral responsibility of Seattle to restore, expeditiously, the Seattle Water System to its pre-emergency capability to supply the region.

12.2 Upon occurrence of an unforeseen or unavoidable event that adversely impacts the Cascade Water System, Cascade may request Seattle to temporarily modify or suspend operational or supply provisions of this Agreement and Seattle shall make reasonable efforts to grant such request. Cascade will act expeditiously to restore the Cascade Water System to its pre-emergency capability.

12.3 The time periods for Seattle's performance under any provisions of this Agreement shall be extended for a reasonable period of time during which Seattle's performance is prevented, in good faith, due to fire, flood, drought, turbidity events, earthquake, lockouts, strikes, embargoes, acts of God, war and civil disobedience. If this provision is invoked, Seattle agrees to immediately take all reasonable steps to alleviate, cure, minimize or avoid the cause preventing such performance.

ARTICLE XIII - EXHIBITS

Exhibits I through VII are attached hereto and are hereby incorporated by reference into the Agreement as if set forth in full herein.

ARTICLE XIV - COMPLETE AGREEMENT

This Agreement, as amended and restated herein, represents the entire agreement between the parties concerning the subject matter hereof, and will supercede the original 50-Year Declining Block Water Supply Agreement dated December 15, 2003 upon the effective date noted herein. This Agreement may not be amended except as provided in Section 9.5.

THE CITY OF SEATTLE, a municipal corporation

By: 
acting DIRECTOR, SEATTLE PUBLIC UTILITIES

DATE: 1/22/09

THE CASCADE WATER ALLIANCE, a nonprofit corporation

BY: 
CHAIR, BOARD OF DIRECTORS
CBO

DATE: Effective 1/1/09

Other Agreements

- A. List of documents, commitments, adjustments, reductions, agreements, and/or written approvals by Seattle regarding the supply, purchase and/or resale of water according to Section 4.4 of this Agreement:
1. Interties and associated agreements with other agencies as referenced in Section 4.4:
 - a) Redmond/Union Hill Water Association Water Service Agreement
 - b) Redmond/Union Hill Water Association Agreement for Water System Interties
 - c) Redmond/Woodinville Water District Interlocal Agreement
 - d) Redmond/Woodinville Water District Agreement for Water System Interties
 - e) Redmond/Northeast Sammamish Water & Sewer District Agreement for Water System Interties
 - f) Skyway / WD 125
 - g) Bellevue/Coal Creek
 2. Other pertinent Agreements:
 - a. List of electric contracts for pump stations owned and operated by Cascade Members and connected to the Tolt Eastside Supply Line according to Section 8.6.B.3 of this Agreement:
 1. Between the City of Bellevue and the City of Seattle, effective August 1983, pursuant to Ordinance #111276 for SE 28th pumping station (50% / 50%) and N.E. 8th pumping station (Bellevue 60% / Seattle 40%)

EXHIBIT II

POINTS OF DELIVERY, MINIMUM HYDRAULIC GRADIENTS, AND MAXIMUM FLOW RATES OF WATER SUPPLIED

METER SERVICE				MINIMUM HYDRAULIC GRADIENT AT STATION UPSTREAM OF METER (FEET NAVD-88 Datum)	FLOW UP TO WHICH THE MINIMUM HYDRAULIC GRADIENT IS GUARANTEED (gpm)
LOCATION	STATION NUMBER (¹)	PIPELINE SEGMENT NUMBER (¹)	SIZE OF METER (IN.)		
Bellevue (* Redmond)					
132 nd Ave. SE & SE 26 th Street	59	8	8	425	1,300
128 th Ave. SE & Newport Way	56	8	8	435	850
Mercer Is. Pipeline & 108 th Ave. SE	66	9	8	420	700
140 th Ave. NE & 40 th Street	65	2	10	500	3,500
132 nd Ave. NE & NE 14 th St.	62	2	12	470	4,500
132 nd Ave. NE & NE 24 th Street	63	2	10	455	4,500
152 nd Ave. NE & NE 8 th Street	61	2	24	460	3,500
145 th Pl. SE & SE 28 th Street	58	3	12	470	3,000
14509 SE Newport Way ⁽²⁾	60	3	10	525	4,600
14509 SE Newport Way ⁽⁶⁾⁽⁷⁾	TBD	3	10	525	2,900
128 th Ave SE & SE 56 th ST ⁽³⁾	47	8	8	440	Backup to Sta. 55 ⁽⁵⁾
128 th Ave SE & Newport Way ⁽³⁾	55	8	6	435	800
120 th Ave SE & SE 35 th ST ⁽³⁾	46	9	6	425	Backup to Sta. 124 ⁽⁵⁾
I-90 & Lake Washington Boulevard ⁽³⁾	50	9	6	425	Fire flow backup only
124 th Ave SE & SE 38 PL ⁽³⁾	124	9	8	425	1,500
128 th Ave SE & SE 70 th ST ⁽⁴⁾	52	8	12	445	1,020

Attachment 1 to SPU Cascade Contract ORD

Amended and Restated
50-Year Declining Block Water Supply Agreement

METER SERVICE				MINIMUM HYDRAULIC GRADIENT AT STATION UPSTREAM OF METER (FEET NAVD-88 Datum)	FLOW UP TO WHICH THE MINIMUM HYDRAULIC GRADIENT IS GUARANTEED (gpm)
LOCATION	STATION NUMBER (1)	PIPELINE SEGMENT NUMBER ⁽¹⁾	SIZE OF METER (IN.)		
Kirkland / Redmond					
132 nd Ave. NE & NE 113 th Street	74	1	10	555	4,500
132 nd Ave. NE & NE 85 th Street	75	1	16	535	4,080
140 th Ave. NE & NE 70 th Street	72	2	12	520	1,240
Redmond					
160 th Ave NE & NE 104 th Street	165	28	10	515	1,000 (combined with following planned new location)
NE 172 nd Street & Tolt Pipeline No. 2	TBD	28	TBD	515	planned new location
Trilogy Parkway NE & NE 125 Street	164	26	10	610	2,000 (combined with following planned additional meter)
Trilogy Parkway NE & NE 125 Street	TBD	26	10	610	Planned additional meter
Skyway					
84 th Ave. S & S 134 th Street	1	10	6	455	210
Beacon Ave S & S 124 th Street	5	10	8	455	720
Cornell Ave S & S 112 th Street	172	4	6	375	Backup service
Tukwila					
39 th Ave S & S 112 Street	11	15	10	460	Backup service
South Center Parkway & Tukwila Parkway	13	13	10	460	2,200
West Valley Hwy & S 162 nd Street	14	13	8	460	Backup emergency service
Christensen Rd. & Baker Rd	15	13	8	460	480

Attachment 1 to SPU Cascade Contract ORD

Amended and Restated
50-Year Declining Block Water Supply Agreement

METER SERVICE				MINIMUM HYDRAULIC GRADIENT AT STATION UPSTREAM OF METER (FEET NAVD-88 Datum)	FLOW UP TO WHICH THE MINIMUM HYDRAULIC GRADIENT IS GUARANTEED (gpm)
LOCATION	STATION NUMBER (1)	PIPELINE SEGMENT NUMBER ⁽¹⁾	SIZE OF METER (IN.)		
53 rd Ave S & S 160 th Street	16	13	6	460	20
E Marginal Way & S 112 th Street	168	15	12	445	810
51 st Ave S & S Leo Street	169	12	8	455	60
W. Marginal Place & s 102 nd St.	170	5	12	300	80
47 th Ave S & S Victor Street	173	12	6	425	Backup service
				TOTAL:	50,070

Notes:

- (1) Station and Pipeline Segment Numbers pertain to the Demand Metering program.
- (2) Assumes existing 16-inch sonic meter is replaced with a 10-inch Protectus meter as planned.
- (3) These stations to be fully transferred from Coal Creek Utility District to Bellevue.
- (4) This station supplies to Coal Creek Utility District directly. Assumes Coal Creek sub-meters 40 percent of total flow (average, peak) through this station to Bellevue.
- (5) Maximum combined flow of primary and backup stations shall not exceed the flow for the primary station as shown on this Exhibit.
- (6) Assumes a new 10-inch Protectus meter is installed as planned.
- (7) If another supply source of equal or higher capacity is provided into the Issaquah - Sammamish Plateau area by any party other than Seattle to serve Cascade members, Seattle's supply obligation at this station will terminate. Seattle's delivery obligation at this station is not transferable to any other station.

BLOCK ALLOCATIONS BY INDIVIDUAL WATER UTILITIES

As Measured at the Meter (Net of 2% Transmission Losses)

	Annual Block	Peak Season Factor	Peak Season Block	Peak Month Factor	Peak Month Block
CWA	30.3		41.0		51.2
Existing Purveyors	30.28		41.02		51.23
Bellevue	17.67	1.35 a, b	23.85	1.70 f, b	30.04
Kirkland	4.40	1.35 a, b	5.94	1.70 f, b	7.48
Redmond	4.56	1.35 a, b	6.16	1.70 f, b	7.75
Skyway	0.48	1.12 a, c	0.54	1.32 f, c	0.63
Tukwila	3.17	1.43 a	4.53	1.68 f	5.33
New Purveyors	0.00		0.00		0.00
Covington	0.00	1.24 e	0.00	1.45 e	0.00
Issaquah	0.00	1.24 e	0.00	1.45 e	0.00
Sammamish Plateau	0.00	1.24 e	0.00	1.45 e	0.00
NON-CWA					
Existing Purveyors	42.38		54.86		68.30
Bothell	1.62	1.42 a	2.30	1.78 g	2.88
Cedar River	2.83	1.45 a	4.10	2.08 f	5.89
Coal Creek	0.94	1.42 a	1.33	1.90 f	1.79
Duvall	0.83	1.34 a	1.11	1.66 f	1.38
Edmonds	0.00	1.00	0.00	1.00	0.00
Highline	6.89	1.22 a	8.41	1.45 f	9.99
Mercer Island	2.15	1.44 a	3.10	1.86 f	4.00
Northshore	6.05	1.31 a	7.93	1.64 f	9.92
Olympic View	1.02	1.14 a	1.16	1.53 f	1.56
Shoreline	1.91	1.24 a	2.37	1.55 f	2.96
Soos Creek	4.62	1.17 a	5.41	1.27 f	5.87
Woodinville	5.57	1.42 a	7.91	1.84 f	10.25
WD 20	2.73	1.22 a, d	3.33	1.47 f, d	4.01
WD 45	0.30	1.22 a, d	0.37	1.47 f, d	0.44
WD 49	1.39	1.22 a	1.70	1.39 f	1.93
WD 85	0.11	1.22 a, d	0.13	1.47 f, d	0.16
WD 90	0.93	1.27 a	1.18	1.67 f	1.55
WD 119	0.42	1.16 a	0.49	1.62 f	0.68
WD 125	2.07	1.22 a, d	2.53	1.47 f, d	3.04

- Notes:**
- a. Based on water purchased from Seattle in 1998, which was the year in the period from 1994 to 2000 with the highest total system peak season factor. Billing data from May 22-Sept 22, 1998, was used to compute the factors.
 - b. Total average peaking factor for Bellevue, Kirkland and Redmond, since Redmond purchases Seattle water from Bellevue and Kirkland.
 - c. Based on total from Bryn Mawr and Skyway, which merged in 2001.
 - d. Total average peaking factor for W.D. 20, 45, 85, and 125, since these water districts operate as a consortium.
 - e. System average
 - f. Based on water purchased from Seattle in 1998, which was the year in the period from 1994 to 2000 with the highest total system peak month factor. Demand Metering data and Allocation Factor calculations for July 17-August 15, 1998, was used to compute the factors.
 - g. Because of possible metering errors during the peak month for Bothell in 1998, peak month factor is based on August purchases from Seattle in 2000.

Seattle Supply System Facilities

1. Cedar Source

- All roads, buildings, structures, water supply facilities, recreational and educational facilities, and fisheries enhancement and mitigation facilities located within or close to the Cedar River Hydrographic Watershed boundary as defined by Seattle land ownership, including the land itself, and any capitalized studies related to the above. Excepted are facilities solely owned by Seattle City Light for the purpose of power generation. Facilities shared by Seattle City Light and Seattle Public Utilities shall be part of the Seattle Supply System only to the extent of SPU share or responsibility.
- All facilities located within the Lake Youngs Reservation as defined by Seattle ownership of the land except for conveyance facilities used to transport finished water during non-emergency operation
- All facilities located within the Lake Youngs Aqueduct, the Landsburg Tunnel, and the Lake Youngs Supply Lines right-of-way, including the right-of-way itself
- Existing Morse Lake Floating Pump Stations

2. Tolt Source

- All roads, buildings, structures, water supply facilities, recreational and educational facilities, and fisheries enhancement and mitigation facilities located within or close to the South Fork Tolt River Hydrographic Watershed boundary as defined by Seattle land ownership, including the land itself, and any capitalized studies related to the above. Excepted are facilities solely owned by Seattle City Light for the purpose of power generation. Facilities shared by Seattle City Light and Seattle Public Utilities shall be part of the Seattle Supply System only to the extent of SPU share or responsibility.
- Tolt Treatment Facility

3. Highline Wellfield

- Riverton Wells, including all pumping and treatment equipment, original yard piping, to the connection to CRPL4, and the low flow piping to Riverton Reservoir
- Boulevard Well, including all pumping and treatment equipment, and all piping up to the connection to CRPL4

4. Other

-
- One Percent Conservation Program through December 31, 2003
- Commercial Incentive Program through December 31, 2003
- Commercial Toilet Retrofit Program through December 31, 2003
- Showerhead retrofit Program through December 31, 2003
- The Seattle Forecasting Model (SEAFM Model)
- GIS Projects related to facilities identified herein as part of the Seattle Supply System

Seattle Transmission System Facilities

1. Pipelines

- Tolt Pipeline No. 1 from the outlet of the Tolt Treatment Facility (TTF) to Lake Forest Reservoir, including any transfer and ancillary small diameter parallel pipes (*Note: Includes TPL1 and TPL2 between the Reg. Basin and TTF in Supply!*)
- Tolt Pipeline No. 2 (where constructed), including any transfer and ancillary small diameter parallel pipes
- Tolt Tieline
- Tolt Eastside Supply Line (from TESS Junction to the intersection of SE 16th ST and 145th Place SE)
- Tolt Eastside Line Extension (from the intersection of SE 16th ST and 145th Place SE to Eastside Reservoir)
- The 540 head Pipeline from Maple Leaf Reservoir to Lake Forest Reservoir
- Lake Youngs Bypass No. 4 from the outlet of each of the Cedar Treatment Facility clearwells to Control Works
- Lake Youngs Bypass No. 5 from the outlet of each of the Cedar Treatment Facility clearwells to the Lake Youngs Tunnel
- The Lake Youngs Tunnel (from the original lake outlet to Control Works)
- The Maple Leaf Pipeline (from the intersection of 18th Avenue E. and E. Prospect Street to Maple Leaf Reservoir)
- Cedar River Pipeline No. 1 from Control Works to the intersection of 18th Avenue E. and E. Prospect Street
- Cedar River Pipeline No. 2 from Control Works to the intersection of 12th Avenue E. and E. Olive Street
- Cedar River Pipeline No. 3 from Control Works to the intersection of 18th Avenue E. and E. Prospect Street
- 30" intertie between Cedar River Pipelines 2 and 3 in east Olive Street
- Cedar River Pipeline No. 4 from Control Works to the West Seattle Pipeline
- Cedar Eastside Supply Line (from the Cedar Wye to the intersection of SE 16th St and 145th Place SE)
- West Seattle Pipeline from Augusta Gatehouse to Cedar River Pipeline 4
- The 8th Avenue S. Pipeline between S. 146th Street and S. 160th Street
- The Bow Lake Pipeline (between 8th Avenue S. and CRPL 4, and as relocated outside runways at Seatac Airport)
- The Burien Feeder (in S. 146th Street between 8th Avenue S. and CRPL 4)
- The Fairwood Line (between Fairwood Pump Station and Soos Reservoirs)
- The 24-inch discharge pipeline of Lake Youngs Pump Station up to Soos Reservoirs
- The 12-inch discharge pipeline of Lake Youngs Pump Station up to Soos Reservoirs
- The 630 head pipeline between Lake Youngs Pump Station and the Cedar River WSD pump station at the eastern boundary of the Lake Youngs Reservation

2. Reservoirs, Tanks, and Standpipes, including overflow pipes, all valves, appurtenances, and disinfection facility located on the premises of each storage facility, unless otherwise noted

- Lake Forest Reservoir
- Eastside Reservoir
- Riverton Reservoir
- Maple Leaf Reservoir (excluding Roosevelt Way Pump Station and its suction and discharge piping, Maple Leaf Tank and 520 zone piping, except where solely serving the disinfection facility)
- Soos Reservoirs

3. Pump Stations, Major Valve Structures, and other Facilities

- TESS Junction Pump Station
- Lake Hills Pump Station
- Maplewood Pump Station
- Maple Leaf Pump Station
- Bothell Way Pump Station
- Fairwood Pump Station
- Lake Youngs Pump Station
- The Control Works
- Augusta Gatehouse
- Eastgate Pump Station

The facilities include the appurtenances to the transmission lines including but not limited to rights of way, line valves, system meters and remote automation devices. The facilities also include the existing meters, vaults and related equipment at all wholesale points of delivery to the extent that the costs of such meters, vaults and related equipment were unamortized as of December 31, 2003. New and replacement meter installations shall be treated consistent with Section 8.4B.

Cost Centers Used for Operations Cost Indices

The following costs centers or successor cost centers that capture the direct costs of operation of Existing Supply Facilities, Existing Transmission Facilities and the 1% Program shall be used as the indices for operations cost in the Existing Supply Cost Pool, Existing Transmission Cost Pool and for the 1% Program in the New Supply Cost Pool.

Supply

Program	Project	Project Name	Activity
Communications	N1203	Communications Activity Group	N120304 Purveyor Relations
Audit & Accounting	N3303	Customer Audit	N330303 Purveyor Audit
Watershed Management	N5401	Program Management	N540194 Department Support
Watershed Management	N5401	Program Management	N540195 General Expense
Watershed Management	N5401	Program Management	N540196 General Management
Watershed Management	N5401	Program Management	N540197 Training
Watershed Management	N5401	Program Management	N540198 Safety
Watershed Management	N5401	Program Management	N540199 Personnel
Watershed Management	N5401	Program Management	N540289 Capital Purchase
Watershed Management	N5403	Support Services	N540301 Modified Duty
Watershed Management	N5403	Support Services	N540302 Procuring/Paying/Receiving
Watershed Management	N5403	Support Services	N540303 Vehicle Equipment Downtime
Watershed Management	N5404	Watershed Protection	N540401 Hydrological Data Collection
Watershed Management	N5404	Watershed Protection	N540402 Fire Protection
Watershed Management	N5404	Watershed Protection	N540403 Inspection
Watershed Management	N5404	Watershed Protection	N540404 Boundaries
Watershed Management	N5405	Facility Management	N540501 WS Grounds
Watershed Management	N5405	Facility Management	N540502 WS Buildings
Watershed Management	N5405	Facility Management	N540503 WS Facilities & Roads
Watershed Management	N5406	Watershed Road Maintenance	N540601 Grade/Gravel/Ditching
Watershed Management	N5406	Watershed Road Maintenance	N540602 Bridges/Streams Culvert
Watershed Management	N5406	Watershed Road Maintenance	N540603 Roads/Row/Vegetation Cutting
Watershed Management	N5406	Watershed Road Maintenance	N540604 Tolt Roads & Streams
Watershed Management	N5407	Watershed Operations Support	N540701 Veh/Equipment Management
Watershed Management	N5407	Watershed Operations Support	N540702 Veh/Equip/Tool Repair
Watershed Management	N5408	Water Quality & Hydrology	N540801 Water Quality Monitoring
Watershed Management	N5408	Water Quality & Hydrology	N540802 Hydrological Monitoring
Watershed Management	N5409	Public/Cultural Programs	N540901 Recreation Planning
Watershed Management	N5409	Public/Cultural Programs	N540902 Management & Research
Watershed Management	N5409	Public/Cultural Programs	N540903 Watershed Education
Watershed Management	N5409	Public/Cultural Programs	N540904 Watershed Public Information
Watershed Management	N5410	Wildlife & Fisheries Programs	N541001 Program Planning & Evaluation
Watershed Management	N5410	Wildlife & Fisheries Programs	N541002 Interagency/Public Involvement
Watershed Management	N5410	Wildlife & Fisheries Programs	N541003 Ecological Monitoring & Research
Watershed Management	N5410	Wildlife & Fisheries Programs	N541004 Habitat & Species Inventory
Watershed Management	N5410	Wildlife & Fisheries Programs	N541005 Habitat Enhancement/Restoration
Watershed Management	N5411	Resource Information Mgmt	N541101 Program Plan/Evaluation
Watershed Management	N5411	Resource Information Mgmt	N541102 Information Maintenance
Watershed Management	N5411	Resource Information Mgmt	N541103 Information Services
Watershed Management	N5412	Special Projects	N541202 Silviculture
Watershed Management	N5412	Special Projects	N541205 Land Exchanges/Acquisitions

Program	Project	Project Name	Activity
Watershed Management	N5415	Cedar HCP	N541501 ASSESS OF EXPAND FOREST STAND
Watershed Management	N5415	Cedar HCP	N541502 ASSESS EXPAND FOREST ATTRIBUTE
Watershed Management	N5415	Cedar HCP	N541503 AUGMENT FOREST HABITAT INV
Watershed Management	N5415	Cedar HCP	N541504 LONG-TERM FOREST HABITAT
Watershed Management	N5415	Cedar HCP	N541505 OLD-GROWTH CLASSIFICATION
Watershed Management	N5415	Cedar HCP	N541506 RIPARIAN RESTOR PROJECT MONIT
Watershed Management	N5415	Cedar HCP	N541507 UP0LAND FOREST RESTOR PROJ MONT
Watershed Management	N5415	Cedar HCP	N541515 GIS DATA COMPATIBILITY STUDY
Watershed Management	N5415	Cedar HCP	N541516 FOREST HABITAT MODELING
Watershed Management	N5415	Cedar HCP	N541517 SPECIE HABITAT RELATION MODEL
Watershed Management	N5416	Cedar HCP	N541601 CRHCP GIS SUPPORT
Watershed Management	N5416	Cedar HCP	N541603 CRHCP TECHNICAL SUPPORT
Watershed Management	N5417	Cedar HCP	N541701 ROAD MAINTENANCE
Watershed Management	N5418	Cedar HCP	N541801 EXPERIMENTAL STREAM MONITORING
Watershed Management	N5418	Cedar HCP	N541802 LONG-TERM STREAM MONITORING
Watershed Management	N5418	Cedar HCP	N541803 AQUATIC RESTORATION MONITORING
Watershed Management	N5418	Cedar HCP	N541804 BULL TROUT SURVEYS (ADULT)
Watershed Management	N5418	Cedar HCP	N541805 BULL TROUT SPAWNING SURVEY
Watershed Management	N5418	Cedar HCP	N541806 BULL TROUT FRY/JUVENILE SURVEY
Watershed Management	N5418	Cedar HCP	Riparian Zone Studies
Watershed Management	N5418	Cedar HCP	N541809 BULL TROUT STREAM DISTRIBUTION
Watershed Management	N5418	Cedar HCP	N541810 BULL TROUT REDD INUNDATION STU
Watershed Management	N5418	Cedar HCP	N541811 COMMON LOON MONITORING
Water Quality & Supply	N5503	Water System Operations	N550301 Water Management
Water Quality & Supply	N5503	Water System Operations	N550302 Water System Control
Water Quality & Supply	N5503	Water System Operations	N550303 Anadromous Fishery Mgmt
Water Quality & Supply	N5503	Water System Operations	N550304 SCADA Management
Water Quality & Supply	N5503	Water System Operations	N550305 Highline Well Field
Water Quality & Supply	N5503	Water System Operations	N550306 Morse Lake PS
Water Quality & Supply	N5503	Water System Operations	N550307-SAFETY PROCESS MGMT COMPLIANCE
Water Quality & Supply	N5503	Water System Operations	N550308-EPA RISK MGMT COMPLIANCE
Water Quality & Supply	N5504	Water System Analysis	N550401 Eng Analysis/Modeling
Water Quality & Supply	N5504	Water System Analysis	N550402 Water Rights Mgmt
Water Quality & Supply	N5504	Water System Analysis	N550403 DEMAND METERING
Water Quality & Supply	N5505	Surface Water Trtmnt Rule	N550501 Monitoring, Reporting & Admin
Water Quality & Supply	N5505	Surface Water Trtmnt Rule	N550502 Cholrination Facilities O&M
Water Quality & Supply	N5505	Surface Water Trtmnt Rule	N550503 Watershed Management
Water Quality & Supply	N5506	Total Coliform Rule Compl.	N550601 Monitoring, Reporting & Admin

Program	Project	Project Name	Activity
Water Quality & Supply	N5508	Lead & Copper Rule Compl.	N550801 Monitoring, Reporting & Admin
Water Quality & Supply	N5508	Lead & Copper Rule Compl.	N550802 Corrosion Trtmnt Facil O&M
Water Quality & Supply	N5509	Fluoridation Program	N550901 Fluoridation Program O&M
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551001 Otr Reg/Operational Analysis
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551002 Disinfection By-Product Rule
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551003 Limnology
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551005 WQ Lab
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551006 DW Reg Dev & App Research
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551007 Public Information/Notification
Water Quality & Supply	N5511	Special Projects	N551104 LIMS & QA/QC
Water Quality & Supply	N5512	Cedar HCP	N551201 INTERIM CHINOOK COHO
Water Quality & Supply	N5513	Cedar HCP	N551301 HCP STREAMFLOW GAUGING
Water Quality & Supply	N5513	Cedar HCP	N551302 SWITCHING CRITERIA STUDY
Water Quality & Supply	N5513	Cedar HCP	N551303 STEELHEAD REDD MONITORING
Water Quality & Supply	N5513	Cedar HCP	N551304 CHINOOK STUDIES
Water Quality & Supply	N5513	Cedar HCP	Salmonid Studies
Water Quality & Supply	N5514	WQ Monitoring	N551403 DRINKING WATER QUALITY MONITOR
Water Quality & Supply	N5515	HCP Fisheries	N551501 FRY CONDITION AT RELEASE
Water Quality & Supply	N5515	HCP Fisheries	N551502 FRY MARKING & EVALUATION
Water Quality & Supply	N5515	HCP Fisheries	N551503 FRY TRAPPING & COUNTING
Water Quality & Supply	N5515	HCP Fisheries	N551504 FISH HEALTH
Water Quality & Supply	N5515	HCP Fisheries	N551505 SHORT-TERM FRY REARING
Water Quality & Supply	N5515	HCP Fisheries	N551506 LAKE WASHINGTON PLANKTON STUDY
Water Quality & Supply	N5515	HCP Fisheries	N551508 ADULT SURVIVAL DISTRIBUTION
Water Quality & Supply	N5515	HCP Fisheries	N551509 PHENOTYPIC & GENETIC STUDY
Water Quality & Supply	N5516	Tolt DBO	N551601-CONTRACTOR PAYMENTS
Water Quality & Supply	N5516	Tolt DBO	N551603-MANAGEMENT COSTS
Resource Planning	N5609	Water Resource & Habitat Issues	N560903-ESA

Transmission

Program	Project	Project Name	Activity
Water Operation	N6540	WT - Headwork/Storage	N654001 Program Maintenance
Water Operation	N6540	WT - Headwork/Storage	N654002 Event Driven Repairs
Water Operation	N6541	WT - Transmission Pipeline Maint	N654101 Program Maintenance
Water Operation	N6541	WT - Transmission Pipeline Maint	N654102 Event Driven Repairs
Water Operation	N6542	WT - Value Op/Maint - Water Tran	N654201 Program Maintenance
Water Operation	N6542	WT - Value Op/Maint - Water Tran	N654202 Event Driven Repairs
Water Operation	N6543	WT - Grounds/Roads/ROW	N654301 Grade/gravel roads - P
Water Operation	N6543	WT - Grounds/Roads/ROW	N654302 Grade/gravel roads - E
Water Operation	N6543	WT - Grounds/Roads/ROW	N654303 Bridges/culverts - P
Water Operation	N6543	WT - Grounds/Roads/ROW	N654304 Bridges/culverts - E
Water Operation	N6543	WT - Grounds/Roads/ROW	N654305 Fences/gates - P
Water Operation	N6543	WT - Grounds/Roads/ROW	N654306 Fences/gates - E
Water Operation	N6543	WT - Grounds/Roads/ROW	N654307 Mow ROW - P
Water Operation	N6543	WT - Grounds/Roads/ROW	N654308 Mow ROW - E
Water Operation	N6543	WT - Grounds/Roads/ROW	N654309 Mow Other
Water Operation	N6544	WT - Facility Maintenance	N654401 Program Maintenance
Water Operation	N6544	WT - Facility Maintenance	N654402 Event Driven Repairs
Water Operation	N6545	WT - Castings	N654501 Casting Adjustments
Water Operation	N6546	WT - Customer Services	N654601 Communications/Dispatch
Water Operation	N6546	WT - Customer Services	N654602 Locating/Marking
Water Operation	N6547	WT - Damage by Others	N654701 P/L/ROW/Facility
Water Operation	N6548	WT - Transmission Shops	N654801 Shops/Fabrication
Water Operation	N6549	WT - General Expenses	N654905 Tools/small equipment
Water Operation	N6549	WT - General Expenses	N654906 Standby
Water Operation	N6549	WT - General Expenses	N654907 Truck Inventory
Water Operation	N6549	WT - General Expenses	N654908 Downtime - Job Related
Water Operation	N6549	WT - General Expenses	N654909-DISASTER-EMERG RESPONSE

1% Program

Program	Project	Project Name	Activity
Community Services	N5303	Resource Conservation	N530301 1% Conservation

EXHIBIT VII

Cascade Sub-regional System

The facilities included in this Exhibit incorporate all appurtenances including but not limited to rights of way, line valves, system meters, and remote automation devices.

A. Facilities used by Cascade:

- The NE 8th Street Feeder, from the Cedar Eastside Supply Line to the Bellevue pump station near the intersection of 151st PL NE and NE 8th Street
- The Bel-Red Road Feeder, from the Cedar Eastside Supply Line to the Bellevue Point of Delivery at the intersection of Bel-Red Road and 132nd Ave NE
- The NE 24th Street Feeder, from the Cedar Eastside Supply Line to the Bellevue Point of Delivery near the intersection of NE 24th Street and 132nd Ave NE

B. Other Sub-regional Transmission Facilities used in part by Cascade:

- SEGMENT 1 – Includes use by Bellevue, Coal Creek, Mercer Island, and Seattle and consists of:
 1. The portion of the of the original Mercer Island Pipeline from the tee off the Cedar Eastside Supply Line in Factoria Boulevard SE to the west flange of the main line tee at the east end of the 16-inch Mercer Slough Bridge Pipeline (30-inch).
- SEGMENT 2 – Includes use by Bellevue, Mercer Island, and Seattle and consists of:
 1. The portion of the of the original Mercer Island Pipeline from the west flange of the main line tee at the east end of the 16-inch Mercer Slough Bridge Pipeline to the west flange of the 20-inch valve west of the Enatai service to Bellevue (30-inch).
 2. The entire 16-inch Mercer Slough Bridge Pipeline (16-inch).
- SEGMENT 3 – Includes use by Tukwila and Seattle and consists of:
 1. The 20-inch pipeline in West Marginal Way from the West Seattle Pipeline to South Director Street.

Seattle may from time to time eliminate facilities from this list provided that it secures the written consent of Cascade in the event that Cascade is served by a tap or meter installation on the facility being eliminated. Seattle shall provide Cascade with 180 days prior written notice of any proposed change.

APPENDIX C

Shortage Management Plan



Shortage Management Plan



December 2011

Table of Contents

1.0	Introduction and Purpose.....	1
2.0	Related Agreements.....	1
2.1	Cascade Interlocal Contract.....	1
2.2	Seattle Block Contract	1
2.3	Lake Tapps Community Agreement.....	2
2.4	Tacoma Public Utilities Water Supply Agreement	2
3.0	Plan Activation and Applicability to Cascade Members.....	3
3.1	Activation of SMP.....	3
3.2	Water Shortage Management Committee	3
3.3	Coordination with SPU.....	3
3.4	Applicability to Cascade Members	4
3.5	Member Shortage Plans	5
4.0	Stages of Water Use Curtailment	5
4.1	Advisory Stage.....	5
4.2	Voluntary Stage	7
4.3	Mandatory Stage.....	9
4.4	Emergency Stage	10
5.0	Communications During Water Shortages.....	12

Tables

Table 1: Four Stages of Curtailment.....	6
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List of Appendices

Appendix A Cascade Interlocal Contract Section 7.3 (Shortages and Emergencies)	
Appendix B Actions that Can Reduce Water Usage by Distribution Systems and Customers	

1.0 Introduction and Purpose

Municipal water suppliers must be prepared for water shortages in order to minimize effects on the communities they serve. This Shortage Management Plan (SMP) outlines how Cascade Water Alliance (Cascade) will respond to a water supply shortage affecting its regional water supply.

At the present time Cascade purchases all of its water from Seattle Public Utilities (SPU). Various events could cause a shortage in the SPU water supply system. These include reduced snowpack in the Cascade Range due to a dry winter or early spring melt; an earthquake or other event that damages reservoirs, treatment facilities or transmission lines; water quality problems; or intentional destructive acts. These different kinds of events may cause shortages with different characteristics in terms of advance warning, severity and duration. The SMP offers flexibility for a range of appropriate responses.

As required under Washington State Department of Health (DOH) regulations, SPU and each Member of Cascade has its own shortage management plan to guide water system operations and interaction with end-use customers in each community during a water shortage. Cascade's SMP complements the SPU and Member SMPs. ***Cascade's primary role in the event of a water shortage is to coordinate responses among the Cascade Member water systems that receive water from the regional supply, and SPU as the source of the regional supply. Therefore this SMP focuses on the communication and coordination activities to be carried out by Cascade staff during a water shortage.***

2.0 Related Agreements

2.1 Cascade Interlocal Contract

Cascade's *Interlocal Contract* (2004) provides the basis for Cascade's operations. Section 7.3 of the *Interlocal Contract* addresses water shortages and emergencies. The agreement says Cascade Members "must respond to water shortages in a collective, shared fashion under a Cascade shortage management plan adopted by the Board." The agreement allows the Board to impose penalty charges or to impose a disproportionate reduction in supply on any Cascade Member who does not comply with the shortage management plan during a shortage. However the agreement also indicates that Members are not required to impose Cascade's shortage management plan in areas not served by Cascade's regional supply; and that Members with independent supply may decline to participate in Cascade's shortage management program without penalty if they cease taking Cascade water during the period of the emergency or shortage.

A copy of Section 7.3 of the *Interlocal Contract* is included in Appendix A of this SMP.

2.2 Seattle Block Contract

In 2004 Cascade and SPU entered into a *50-Year Declining Block Water Supply Agreement between the City of Seattle and the Cascade Water Alliance* (Block Contract; amended in 2008). Article VII of the Block Contract provides for shortage management. Section 7.2 says that Cascade and SPU "shall coordinate the development, adoption and implementation" of shortage

management plans and “shall communicate with each other concerning current and projected water supply conditions” prior to invoking shortage management plans.

Section 12.1 of the Block Contract recognizes that unilateral actions by Seattle may be needed at times due to unforeseen and unavoidable events, including water shortages. It indicates that any curtailment of supply by Seattle shall be imposed proportionately among its wholesale and retail customers.

Consistent with Section 7.2 of the Block Contract, this SMP was provided to SPU for review prior to adoption by the Cascade Board.

As a separate matter, Section 7.3 of the Block Contract provides that if water use restrictions are imposed on SPU by the terms of its agreements with Federal and State agencies and Tribes, such restrictions will be borne proportionally by SPU and its wholesale customers, including Cascade. In this event, Cascade and its Members will need to review the restrictions and determine appropriate short-term or long-term actions.

2.3 Lake Tapps Community Agreement

Cascade entered into a *2009 Agreement Regarding Lake Tapps* with the Lake Tapps Community. The agreement addresses the Lake Tapps Community’s desire for a management approach that assures the recreational and ecological viability of Lake Tapps. It stipulates that Cascade will maintain “Normal Full Pool” during an “Annual Recreation Period.”

Cascade’s obligation to maintain recreational Lake Levels will be implemented consistent with the following priority of interests for use of White River flows: (i) provision of minimum stream flows; (ii) provision of recreational lake levels; and (iii) provision of municipal water supply.

One way in which Cascade intends to meet this obligation is to reduce and minimize the need for Lake Tapps to provide for municipal water supply during drought conditions. Therefore, once Lake Tapps begins providing municipal supply, consideration of maintaining recreational water levels in Lake Tapps should become a criterion for triggering curtailment actions under Cascade’s SMP.

Lake Tapps lake level triggers are not established in this SMP at this time, for the following reasons:

- Cascade is not currently using Lake Tapps for municipal supply.
- Cascade’s current planning vision indicates that Cascade’s use of Lake Tapps is at least 20 years away.
- Curtailment by Cascade Members now would have no effect on lake levels.

Cascade will update the SMP to include lake level triggers at such time as Lake Tapps is brought on line for municipal supply purposes.

2.4 Tacoma Public Utilities Water Supply Agreement

Cascade has an *Agreement for the Sale of Wholesale Water* (2005) with Tacoma Public Utilities (TPU). At this time Cascade is not using this supply source, and will not begin using it until a transmission pipeline is constructed to deliver the water from Tacoma’s Second Supply Pipeline. Therefore at this time direct coordination with Tacoma is not addressed in this Shortage

Management Plan. At such time as Cascade begins receiving regional water supply from Tacoma, the need to incorporate shortage response actions in coordination with TPU will be reviewed.

3.0 Plan Activation and Applicability to Cascade Members

3.1 Activation of SMP

It is anticipated that the initial need for shortage management will be identified through a communication from SPU indicating that a supply shortage may occur or is in progress. If this is the case, SPU will activate its own Water Shortage Contingency Plan (WSCP). Cascade's response to activation of the SPU WSCP will be guided by the Block Contract between Cascade and SPU. The Block Contract provides that Cascade and SPU coordinate the development and implementation of their respective shortage management plans. While SPU is required to deliver to Cascade amounts up to the limits of the Block, Section 12.1 (Emergency Events) permits SPU to curtail supply to Cascade (on a proportional basis with its retail and other wholesale customers) in the event of an "unforeseen and unavoidable" event, including water shortages resulting from drought circumstances. SPU may declare an Emergency Event at any stage under its WSCP.

Action by the Cascade Board will be required in order to activate Cascade shortage management actions under this SMP. This action could be taken during a regularly scheduled Board meeting, or during an emergency meeting called in response to the expected or actual water shortage. The Board may adopt a resolution directing Cascade's Chief Executive Officer (CEO) or designee to activate the Cascade SMP, including water use curtailment actions from Section 4. Alternatively the Board also has the authority to activate the Cascade SMP without activation of SPU's SMP.

In the event of an emergency that requires immediate action to prevent risks to public health and safety, Cascade's CEO may activate the SMP on a temporary basis. In this event the Board shall meet as soon as possible to review the CEO's action.

Once the SMP has been activated, it may be necessary to move from one level of shortage management to another. This will likely be in response to a change in the stage of curtailment by SPU, but could also be done as an independent action by Cascade if conditions warrant. Cascade's Executive Committee shall have the authority to direct Cascade's CEO or designee to either elevate or diminish the level of curtailment from one level to another.

3.2 Water Shortage Management Committee

The Cascade CEO shall designate a member of Cascade's staff to lead Cascade's shortage response actions while the SMP remains activated. The CEO shall also designate a Water Shortage Management Committee consisting of select Cascade staff and Member staff to advise Cascade on implementation of the SMP once it has been activated and for the duration of the water shortage.

3.3 Coordination with SPU

Cascade's CEO or designee will communicate closely with SPU regarding activation of the SMP and a change in the level of shortage designated. Cascade will take the following actions in the event SPU activates its plan:

- If SPU initiates its **Advisory stage**, Cascade will assess the situation to determine whether to activate its plan and recommend the same to its Members.
- If SPU activates its **Voluntary or Mandatory stages**, Cascade (and its Members) should again assess the situation and consider whether to: a) activate their SMPs (if not already activated), and b) rely more heavily on non-SPU sources of supply, in the Member service areas where this is applicable.
- If SPU activates its **Emergency Curtailment stage**, Cascade anticipates that Section 12.1 (Emergency Events) of the Block Contract would also be triggered (if it had not already been triggered at a previous stage). In the event of significant curtailment, Cascade and its Members would need to activate their SMPs in order to manage the situation effectively.
- Cascade and its Members have a key role in the communications strategy during a regional water shortage. It is anticipated that SPU will communicate with its own retail customers, wholesale customers, large retail customers, regional stakeholders, state/federal resource agencies, and regional media. Cascade Members should communicate with retail customers, wholesale customers, local stakeholders, and local media. Cascade will help to coordinate and facilitate communications between the regional level and the local level.

Cascade will maintain a current copy of SPU's WSCP on file at Cascade offices, and encourages Members that receive water from Cascade's regional water supply system maintain a copy of both the Cascade SMP and SPU WSCP readily available with their own Member SMP.

3.4 Applicability to Cascade Members

Consistent with the Interlocal Contract, Section 7.3 activation of shortage management applies to Cascade Members as follows:

- **Members receiving all of their water supply from Cascade:** Required to comply with Cascade's SMP.
- **Members receiving partial supply from Cascade:** Required to comply, in portions of their service areas that receive regional supply; *or* to discontinue use of Cascade supply during the water shortage.
- **Members not receiving Cascade supply.** Not required to comply with Cascade's SMP.

At the present time Covington Water District does not receive water from Cascade. As long as this remains true, the District would not be required to implement shortage management actions under this SMP.

Section 7.3 of the Interlocal Contract also addresses Cascade Members with interruptible supply. However at this time there are no members with interruptible supply.

3.5 Member Shortage Plans

DOH regulations at Chapter 246-290-100 Washington Administrative Code require water utilities to have their own water shortage response plan. These are typically submitted to DOH every six years with their comprehensive water system plan update. Cascade recommends that Members receiving a significant supply of Cascade water review their water shortage response plans and consider modifications if needed to ensure the Member plans use similar stages of curtailment as listed in the Cascade SMP, and that provisions in the Member SMPs support effective coordination with SPU and Cascade during a water shortage.

4.0 Stages of Water Use Curtailment

Cascade's SMP has the same four stages of curtailment as SPU's Water Shortage Contingency Plan (WSCP). These are designed for progressive implementation during a drought or other long-range disruption of water supply. However if a shortage occurs due to a sudden, unexpected event, any of the four stages can be activated from the outset of the event.

Table 1 summarizes actions to be taken in the four stages of curtailment. Additional detail is provided in the subsections following Table 1.

4.1 Advisory Stage

This stage is advisory only, and does not require curtailment actions by water users. The public is informed as early as meaningful data are available that a water shortage may occur.

4.1.1 Objectives

- Prepare Cascade, its Members and water users for a potential water shortage, thereby allowing for adequate planning and coordination.
- Support distribution system management actions by Cascade Members that can help to forestall or minimize the need for more stringent demand or supply management actions.

4.1.2 Triggers

- Notice from SPU that they have activated the Advisory Stage of their WSCP and that Cascade is requested to do the same; and
- An action of the Cascade Board authorizing activation of Cascade's advisory stage.

4.1.3 Theme of Public Messages

- Cascade's public messaging will be consistent with SPU's messaging during the shortage event. The 2006 SPU WSCP provides the following description for this stage: "Potential exists for lower than normal supply; conditions may return to normal, or later on we may need to reduce consumption. Continue to use water wisely to help ensure sufficient supply for people and fish. We'll keep you informed."

Table 1: Four Stages of Curtailment

	Advisory	Voluntary	Mandatory	Emergency
Theme of Public Messages from SPU	A shortage may occur soon; get ready.	A shortage has occurred. We are requesting voluntary curtailment to reduce demand by x percent.	A severe shortage has occurred. Mandatory curtailment is necessary and specific uses of water are restricted.	An emergency shortage has occurred. Mandatory curtailment is necessary and public health and safety uses are the priority.
Cascade Communication Actions	• Inform Members they are required to activate their Advisory Stage (see exemptions). • Establish a regular communication mechanism with Members. • Request Cascade Members carry out supply-side management actions. • Participate on SPU's Water Shortage Advisory Group. • Assist Members to acquire and distribute public information materials.	• Inform Members they are required to activate their Voluntary Stage. • Request Cascade Members report to Cascade regarding supply-side management actions. For Members that have independent supply, this may include relying more heavily on these supplies. • Request Cascade Members communicate with their largest customers. • Communicate regularly with Cascade Members. • Communicate with the Washington State Department of Health. • Participate on SPU's Water Shortage Advisory Group. • Assist Cascade Members to acquire and distribute public information materials.	• Inform Cascade Members that they are required to activate their Mandatory Stage, including enforcement as appropriate. • Gather information from SPU on water quality or pressure problems, and communicate these to Members. • Continue communication actions from the Voluntary Stage, with modifications as appropriate for the Mandatory Stage.	• Inform Cascade Members that they are required to activate their Emergency Stage, including enforcement as appropriate. • Continue and intensify communication actions from the Mandatory Stage. • For Members that have independent supply, request they rely as much as possible on these supplies. • Alert Members of particular operational problems that may occur with system-wide reduced water consumption. • Assist Cascade Members to define and communicate exemptions for public health and safety.
Cascade Operating Actions	• Initiate preparation for Voluntary Stage.	• Assess revenue implications and remedies. • Initiate preparation for Mandatory Stage.	• Continue operating actions from the Voluntary Stage • Initiate preparation for Emergency Stage. • If necessary consider enforcement actions against any non-complying Member.	• Continue operating actions from Mandatory Stage. • Make staff resources available to Cascade Members. • Coordinate volunteers on behalf of Members.

4.1.4 Communication Actions

- Once the Advisory Stage has been activated by Cascade, inform Cascade Members that they are required to activate their Advisory Stage (or equivalent actions per each Member's individual SMP). This will not apply to Cascade Members exempted per Section 3.3 of this SMP.
- Establish a regular communication mechanism to keep Cascade Members and the Cascade Board informed regarding stages of curtailment; water supply conditions; actions taken by Cascade Members and others in the region; and information that should be communicated to the public, local parks departments, large customers, landscape industry professionals and others.
- Request Cascade Members carry out supply-side management actions they will take during the Advisory Stage to reduce use of water for local water distribution system operations, and compile information on the actions taken. For Members that have independent supply, this may include relying more heavily on these supplies where feasible, to reduce pressure on the Cascade regional supply.
- If requested by SPU, participate on SPU's Water Shortage Advisory Group to help develop public information messages and materials and to provide input on Cascade Member actions.
- Assist Cascade Members acquire and distribute public information materials as needed. This may include materials from SPU or other sources, as appropriate. Post information on Cascade's web site regarding the Advisory Stage.

4.1.5 Operating Actions

- Initiate planning and preparation for Voluntary Stage actions, including an assessment of potential staffing impacts, training needs and communications strategies. Assist Members plan specific actions for the Voluntary Stage, including distribution system actions by the Member and voluntary water use curtailment actions Members can suggest to their end-use customers if the Voluntary Stage is activated.

4.2 Voluntary Stage

If supply conditions worsen, the plan moves to the Voluntary Stage which relies on voluntary cooperation and support of customers to meet target consumption goals. During this stage, specific voluntary actions are suggested for residential and commercial customers.

4.2.1 Objectives

- Encourage Members to take distribution system management actions to further stretch available supply.
- Encourage customer voluntary actions to maintain or reduce demand to meet target consumption levels.

- Forestall or minimize need for later more stringent demand or supply management actions.
- Maintain drinking water quality at acceptable levels throughout the shortage.

4.2.2 Triggers

- Notice from SPU that they have activated the Voluntary Stage of their WSCP and that Cascade is requested to do the same; and
- Action by Cascade's Executive Committee can authorize a change in curtailment level to the Voluntary Stage. (Alternatively the Board may authorize the Voluntary Stage as Cascade's initial response to a shortage).

4.2.3 Theme of Public Messages

- Cascade's public messaging will be consistent with SPU's messaging during the shortage event. The 2006 SPU WSCP provides the following description for this stage: "Regional water demands need to be reduced by x percent [the level will be determined in consultation with SPU]. Customers are responsible for determining how they will meet that goal. We are relying on support and cooperation of all water users to stretch the available water supply. If everyone cooperates we may avoid imposing more stringent restrictions. In addition to meeting essential water needs of customers, meeting the needs of fish habitat and other environmental concerns is a priority."

4.2.4 Communication Actions

- Once the Voluntary Stage has been activated by Cascade, inform Cascade Members that they are required to activate their Voluntary Stage (or equivalent actions per each Member's individual SMP). This will not apply to Cascade Members exempted per Section 3.3 of this SMP.
- Request Cascade Members report to Cascade regarding supply-side management actions they will take during the Voluntary Stage. For Members that have independent supply, this may include relying more heavily on these supplies where feasible, to reduce pressure on the Cascade regional supply.
- Request Cascade Members communicate with their largest customers to request percentage reductions.
- Communicate regularly with Cascade Members regarding information that should be communicated to the public, local parks departments, large customers, landscape industry professionals and others. At the voluntary stage, this will include specific recommendations on how customers can reduce water consumption, including links to the *savingwater.org* website or equivalent information resources.
- Communicate with the Washington State Department of Health regarding actions being taken by Cascade and its Members.

- If requested by SPU, participate on SPU's Water Shortage Advisory Group to help develop public information messages and materials and to provide input on Cascade Member actions.
- Assist Cascade Members acquire and distribute public information materials as needed. Review information from SPU, including materials in the WSCP, regarding actions customers can take to reduce their water consumption. As appropriate, post information for Cascade Members and their customers on Cascade's web site regarding the Voluntary Stage. Appendix B provides examples of water saving actions customers can take.

4.2.5 Operating Actions

- Assess revenue implications and potential remedies and report to the Cascade Board.
- Initiate planning and preparation for Mandatory Stage actions, including an assessment of potential staffing impacts, training needs and communications strategies. Assist Cascade Members identify mandatory restrictions that may apply during the Mandatory Stage, if it is needed.

4.3 Mandatory Stage

If the voluntary stage does not result in the demand reduction needed, or supply conditions worsen, the Mandatory Stage would be implemented. This stage prohibits or limits certain water actions. Cascade will rely on its Members to enforce mandatory actions, using techniques as appropriate to each service area or jurisdiction.

4.3.1 Objectives

- Achieve targeted goals for reducing consumption, by restricting certain water uses. Goals will be determined in consultation with SPU, based on the characteristics and severity of the water shortage.
- Ensure that adequate water supply will be available for the duration of the supply shortage.
- Minimize the disruption to customers' lives and businesses while meeting target consumption goals.
- Maintain drinking water quality at acceptable levels throughout the shortage.
- Promote equity among Cascade Members in responding to the supply shortage.

4.3.2 Triggers

- Notice from SPU that they have activated the Mandatory Stage of their WSCP and that Cascade is requested to do the same; and
- Action by Cascade's Executive Committee can authorize a change in curtailment level to the Mandatory Stage. (Alternatively the Board may authorize the Mandatory Stage as Cascade's initial response to a shortage).

4.3.3 Theme of Public Messages

- Cascade's public messaging will be consistent with SPU's messaging during the shortage event. The 2006 SPU WSCP provides the following description for this stage: "It is necessary to impose mandatory restrictions to reduce demand because the voluntary approach has not resulted in the necessary savings [or conditions have continued to get worse and even more savings are needed]. We are continuing to rely on the support and cooperation of the public to comply with these restrictions, but need the certainty and predictability of restricting certain water uses in order to ensure that throughout the duration of this shortage an adequate supply of water is maintained for public health and safety."

4.3.4 Communication Actions

- Once the Mandatory Stage has been activated by Cascade, inform Cascade Members that they are required to activate their Mandatory Stage (or equivalent actions per each Member's individual SMP). This will not apply to Cascade Members exempted per Section 3.3 of this SMP. Enforcement actions may be needed in the Mandatory Stage. Cascade expects each Member to enforce restrictions in a manner suitable to the local service area or to work with other local governments having enforcement powers to do so.
- Gather information from SPU regarding any water quality or water pressure problems, if any, that are identified or that may possibly occur at the mandatory stage, and communicate these to Cascade Members management, operations staff and public affairs staff.
- Continue communication actions from the Voluntary Stage, with modifications as appropriate for the Mandatory Stage (as determined in consultation with SPU and Cascade Members).

4.3.5 Operating Actions

- Continue operating actions from the Voluntary Stage, and:
- Initiate planning and preparation for Emergency Stage actions, including an assessment of potential staffing impacts, training needs, and communications strategies. Assist Members plan specific actions that may be needed if the Emergency Stage is activated.
- If necessary the Board will consider enforcement actions against any Members who do not comply with Mandatory Stage actions, as allowed under the Cascade Interlocal Agreement.

4.4 Emergency Stage

At this stage Cascade and its Members recognize that a critical water situation exists and that, without additional significant curtailment actions a shortage of water for public health and safety is imminent. This would be used as the last stage of a progressive drought or similar situation, or to address an immediate crisis such as a disruption to water sources, treatment or

transmission facilities. This type of situation has never occurred in Cascade or SPU history, but could occur during a very severe drought or under emergency conditions such as a major earthquake that ruptures transmission pipelines.

4.4.1 Objectives

- Strive to meet the water use goals established for this stage, recognizing that customers' lives and businesses may be significantly impacted in order to achieve necessary water savings. Goals will be determined in consultation with SPU, based on the characteristics and severity of the water shortage.
- Promote equity among Cascade Members in responding to the supply shortage.

4.4.2 Triggers

- Notice from SPU that they have activated the Emergency Stage of their WSCP and that Cascade is requested to do the same; and
- If Cascade's SMP has already been activated, action by Cascade's Executive Committee can authorize a change in curtailment level to the Emergency Stage. (Alternatively the Board may authorize the Emergency Stage as Cascade's initial response to a shortage; or the CEO may authorize the Emergency Stage if there is an emergency that requires immediate action to prevent risks to public health and safety. See Section 3.1.).

4.4.3 Theme of Public Messages

- Cascade's public messaging will be consistent with SPU's messaging during the shortage event. The 2006 SPU WSCP provides the following description for this stage: "We are in an emergency water supply situation and need the immediate assistance of the public to achieve necessary water savings. We are imposing additional water restrictions to achieve the savings because the mandatory approach has not resulted in sufficient savings [or conditions have continued to get worse], and we need to ensure water will be available for public health and safety throughout this shortage."

4.4.4 Communication Actions

- Once the Emergency Stage has been activated by Cascade, inform Cascade Members that they are required to activate their Emergency Stage (or equivalent actions per each Member's individual SMP). This will not apply to Cascade Members exempted per Section 3.3 of this SMP. Enforcement actions may be needed in the Emergency Stage. Cascade anticipates each Member will enforce restrictions in a manner suitable to the local service area or will work with other local governments having enforcement powers to do so.
- Continue and intensify communication actions from the Mandatory Stage, with modifications as appropriate for the Emergency Stage (as determined in consultation with SPU and Cascade Members). This includes, but is not limited to, Cascade's

role in supporting effective communications between individual Cascade Members and SPU.

- For Members that have independent supply, request they rely as much as possible on these supplies, to reduce pressure on the Cascade regional supply.
- Alert Members of particular operational problems that may occur with system-wide reduced water consumption, and communicate these to Cascade Members management, operations staff and public affairs staff and on the Cascade website. These could include, for example, taste and odor problems; and reduced pressures in Member distribution systems.
- Assist Cascade Members to define and communicate exemptions for medical facilities and other facilities having key responsibilities for public health and safety.

4.4.5 Operating Actions

- Continue to monitor staffing impacts, training needs and communications strategies and make adjustments where feasible to enhance effectiveness of the regional water shortage response.
- If feasible and applicable, make staff resources available to Cascade Members to assist them in the water shortage response. This may include temporary reassignment of Cascade staff; and/or outsourcing of specialized functions or additional staffing resources that could provide assistance to Cascade Members.
- If volunteer services are available and deemed valuable to the water shortage response, and if desired by the Members, Cascade will coordinate volunteers on behalf of its Members.
- If necessary the Board will consider enforcement actions against any Members who do not comply with Emergency Stage actions, as allowed under the Cascade Interlocal Agreement.

5.0 Communications During Water Shortages

In the event of a water shortage that requires this SMP to be activated, Cascade will coordinate closely with its Members and SPU regarding public communications. It is anticipated that SPU will take the lead on communications involving regional media such as major radio, television and newspaper outlets. Members will have the primary responsibility for communicating directly with their own customers and local communities. Cascade will coordinate communications among Members and SPU and will assist its Members issue consistent and effective communications to the communities that they serve.

Appendix A

Cascade Interlocal Contract Section 7.3 (Shortages and Emergencies)

Section 7.3 Shortages and Emergency.

Section 7.3.1 Shortages. Members must respond to water shortages in a collective, shared fashion under a Cascade shortage management plan adopted by the Board. Resources must be shared in a manner that reduces the risk of severe shortages to each Member. Cascade's shortage management plan may include without limitation, a definition and classification of shortages, a shortage contingency plan including mandatory programmatic actions among all Members in the event of shortages, allocation of authority for determining and responding to shortages, and a communications and outreach program for the public. Members shall not be required to implement Cascade's shortage management plan in areas not served by the Supply System.

In the event of shortages, Cascade shall reduce or halt Interruptible Supply before invoking the Shortage Management Plan with respect to all Members with a Full Supply Commitment. However, the Board may, by 65% Dual Majority Vote, continue service in the amounts it deems appropriate to one or more Members receiving Interruptible Supply.

The Board may require that Members failing to comply with mandatory shortage management programs implemented under Cascade's shortage management plan assume a disproportionate reduction in supply or pay penalty charges, or both.

In the event of a Cascade-wide water shortage, members with Independent Supply may, without penalty decline to participate in the shortage management program for that shortage by foregoing all supply from Cascade for the duration of the emergency or shortage.

To avoid shortages resulting from emergencies or the inability to develop sufficient supplies, the Board may, by 65% Dual Majority Vote, establish moratoria on connections or additional commitments for future water services by the Members. A moratorium may be discontinued by a Dual Majority Vote of the Board.

Section 7.3.2 Emergency. The Board shall include in Cascade's shortage management plan policies and procedures for addressing short-term disruptions of water supply, transmission or water quality, and it may delegate to the General Manager authority to address such disruptions according to such policies and procedures.

Appendix B

Actions that Can Reduce Water Usage by Distribution Systems and Customers

POSSIBLE ADVISORY STAGE WATER CONSERVATION TIPS FOR CUSTOMERS

(Adapted from SPU 2006 WSCP)

Conserve Inside

For most households, the vast majority of water is used indoors. Taking conservation actions and installing efficient fixtures help reduce your water use year-round. There are also ways to conserve water in outdoor uses and at work. Below are suggested actions:

- Fix leaking faucets and toilets.
- Wash only full loads in the dishwasher and clothes washer.
- Minimize faucet use when brushing your teeth, shaving and washing dishes.
- Don't pre-rinse dishes unless you need to. Most new dishwashers don't require pre-rinsing.
- Save lukewarm water for watering plants, etc. while you wait for hot water in kitchens and showers.
- If you are buying a new toilet, look for a WaterSense model.
- If you are buying a new washing machine, purchase a high-efficiency model. WashWise rebates may be available for qualified machines.

Conserve Outside

Make the most of the water you will use in the spring and summer:

- Aerate lawns in the spring to better absorb water.
- Mulch planting beds to decrease evaporation.
- Select the right plants for the right place – contact SPU or see our website for information.
- Tune-up and improve your irrigation system – rebates may be available.
- Wash your cars at locations that recycle their water.

Note: For more information on home water conservation tips for inside and out, visit www.savingwater.org or call 684-7283 (684-SAVE)

Conserve at Work

Businesses and institutions can reduce water use and lower utility costs by adopting conservation practices and replacing inefficient equipment or operations.

- Check for leaks.
- Use a broom, instead of a hose, to routinely clean driveways and sidewalks
- Turn off water-using equipment when not in use, including dishwashers, garbage disposals, and food troughs.
- Upgrade equipment efficiency – rebates may be available.
- Increase employee awareness of water conservation.

POSSIBLE VOLUNTARY STAGE CUSTOMER WATER SAVING ACTIONS (Adapted from SPU 2006 WSCP)

The following voluntary actions are being requested of all customers:

SET A GOAL: Such as use 10% less water

Most customers can easily save 10% by choosing several items from the menu of water saving actions below. If you routinely do outdoor watering, select those actions first. Set a goal to reduce your water use by 10% from the amount you used during the same billing period last year. Most utility bills contain your water consumption for each billing period. Much of the 10% can probably be achieved through conservation actions that are wise to do all the time. If that is not sufficient, then the special curtailment actions listed here can be implemented during the duration of the supply problem.

REDUCE OUTDOOR WATER USE

Conservation Actions:

- Avoid **watering** between 10 AM and 7 PM to reduce evaporation.
- **Stop obvious water waste** such as gutter flooding, sidewalk and street watering, and fix leaks.
- **Never leave a hose running**, always use a shut-off nozzle.
- **Use a broom** rather than a hose or pressure washer to clean sidewalks and driveways.

Curtailment Actions:

- **Reduce lawn watering** (twice a week or less if possible).
- **Let your lawn go dormant.** Customers who choose to not water their lawns should water deeply once each rainless month to keep grass roots alive. To avoid runoff when you water, if the water puddles, cycle your sprinkler on and off until water is absorbed.
- **Refrain from filling** empty pools and hot tubs.
- **Turn off water features** and fountains.
- **Wash vehicles only at car washes that recycle their water.**

REDUCE INDOOR WATER USE

Conservation Actions:

- **Install a water efficient WaterSense toilet.** These toilets have proven to perform well and give long-term water savings. Replacing a frequently used old toilet with a new efficient toilet can save most households in utility bills. Check www.savingwater.org for WaterSense toilet models.
- **Install a high-efficiency clothes washer.** New washers are typically one-third more water efficient than old washers.
- **Wash only full loads in the clothes washer and dishwasher,** or choose an appropriate load-size setting for the number of items in the washer.
- **Turn off the tap** while brushing your teeth, hand-washing dishes or shaving.
- **Fix leaky faucets and toilets.** Put several drops of food coloring in your toilet tank. After 20 minutes, if you have color in the bowl, you have a slow leak that over time can amount to a lot of water.

- **Install an efficient showerhead.** New showerheads work well and use much less water than old high-flow models.
- **Install an efficient faucet aerator.** Replace your older bathroom faucet nozzle (aerator) with one that uses one gallon per minute or less.

Curtailment Actions:

- **Spend one minute less in the shower.** Try to limit showers to five minutes or less.
- **Flush your toilet less often.** Toilet flushing is the largest water use inside the home. As the saying goes, “If it’s yellow, let it mellow.”

REDUCE WATER USE AT WORK

There are a wide variety of opportunities for businesses and agencies to reduce their water use and operating expenses.

Conservation Actions:

- **Check cooling towers.** Cooling towers - and the ways that they regulate water use – represent real opportunities for improving water efficiency.
- **Check for and fix leaks.** Toilet and urinal leaks are very common. Investigate obvious or suspected leaks.
- **Use a broom,** instead of a hose or pressure washer, to routinely clean driveways and sidewalks.
- **Turn off water-using equipment** when not in use, including open hoses, dishwashers, garbage disposals, and food troughs.
- **Check air conditioners, refrigerators, and ice machines.** If your company's air conditioners or refrigerators use water-cooled condensers, investigate air-cooled equipment for possible efficiencies. Rebates are available. Visit www.savingwater.org.
- **Install water-efficient toilets, urinals and faucets** in public and employee restrooms. Replacing old toilets, urinals, and faucet aerators with efficient ones can produce substantial savings. Rebates are available. Visit www.savingwater.org.
- **Reuse process water.** Water used in industrial and manufacturing processes should be reused as often as possible. Rebates are available. Visit www.savingwater.org.
- Hospitality businesses can offer guests the option of clean linens each day.
- **Increase employee awareness of water conservation** through management memos or newsletter messages. Install signs that encourage water conservation in restrooms or work areas where water is used. For additional work-related conservation tips, call (206) 343-8505.

Curtailment Actions:

- **Reduce outdoor watering** (twice a week or less if possible). Rebates are available for smart irrigation technologies. Visit www.savingwater.org.
- **Minimize vehicle washing,** defer or use a water recycling car wash.
- **Turn off decorative water fountains.**
- **Serve water only on request** at restaurants. Avoid thawing with running water.

**For home water conservation tips, visit www.savingwater.org
or call (206) 684-7283 (684-SAVE)**

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APPENDIX D

Reclaimed Water Opportunities

Reclaimed Water

Chapter 5 of the current TSP discusses Cascade's current outlook on current and potential future uses of reclaimed water in the Cascade service area. This appendix provides additional background information, drawn from Cascade's prior (2004) plan. While some of the specific sites for potential use of reclaimed water may have changed in the interim, the overall opportunities for reclaimed water remain similar at this time.

Reclaimed water is defined by Chapter 90.46 RCW as "effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for a beneficial use or a controlled use that would not otherwise occur and is no longer considered wastewater."

Reclaimed water can be used for activities such as irrigation to aid water suppliers in meeting the needs of their customers by reducing the demands upon high-quality potable water supplies, especially during peak use times. The use of reclaimed water may also benefit the environment by decreasing the need for withdrawals from streams and groundwater, recharging aquifers that are in hydraulic continuity with streams, and potentially directly augmenting streamflows.

Sources of Reclaimed Water

Municipal wastewater treatment plants are the typical source of reclaimed water. The majority of water customers served by Cascade Members receive wholesale wastewater conveyance and treatment services provided by King County Department of Natural Resources and Parks, Wastewater Treatment Division (King County WTD). At this time King County WTD represents the sole potential generator of reclaimed water for use by Cascade Members. There are three categories of reclaimed water sources owned and operated by King County WTD, as described below.

South Treatment Plant

The South Treatment Plant, located in Renton (see Figure 6.1), is in close proximity to Tukwila and Skyway, and is therefore considered a logical source of reclaimed water supply for Cascade.

The South Treatment Plant's current design capacity for treating wastewater is 115 MGD on an average daily basis. Present flows average approximately 80 MGD. A planned expansion will increase plant capacity to 135 MGD by 2029.

A portion of the South Treatment Plant flows is currently treated to allow for reuse. One of Cascade's Members, the City of Tukwila, has been using Class A reclaimed water from this source since 1998. A supply line extends from the treatment plant to Fort Dent Park in Tukwila. The reclaimed water is used primarily for irrigation of ballfields at the park, as well as a few minor uses such as street sweeping. A delivery system has also been installed to the Foster Golf Links site for future use.

Brightwater

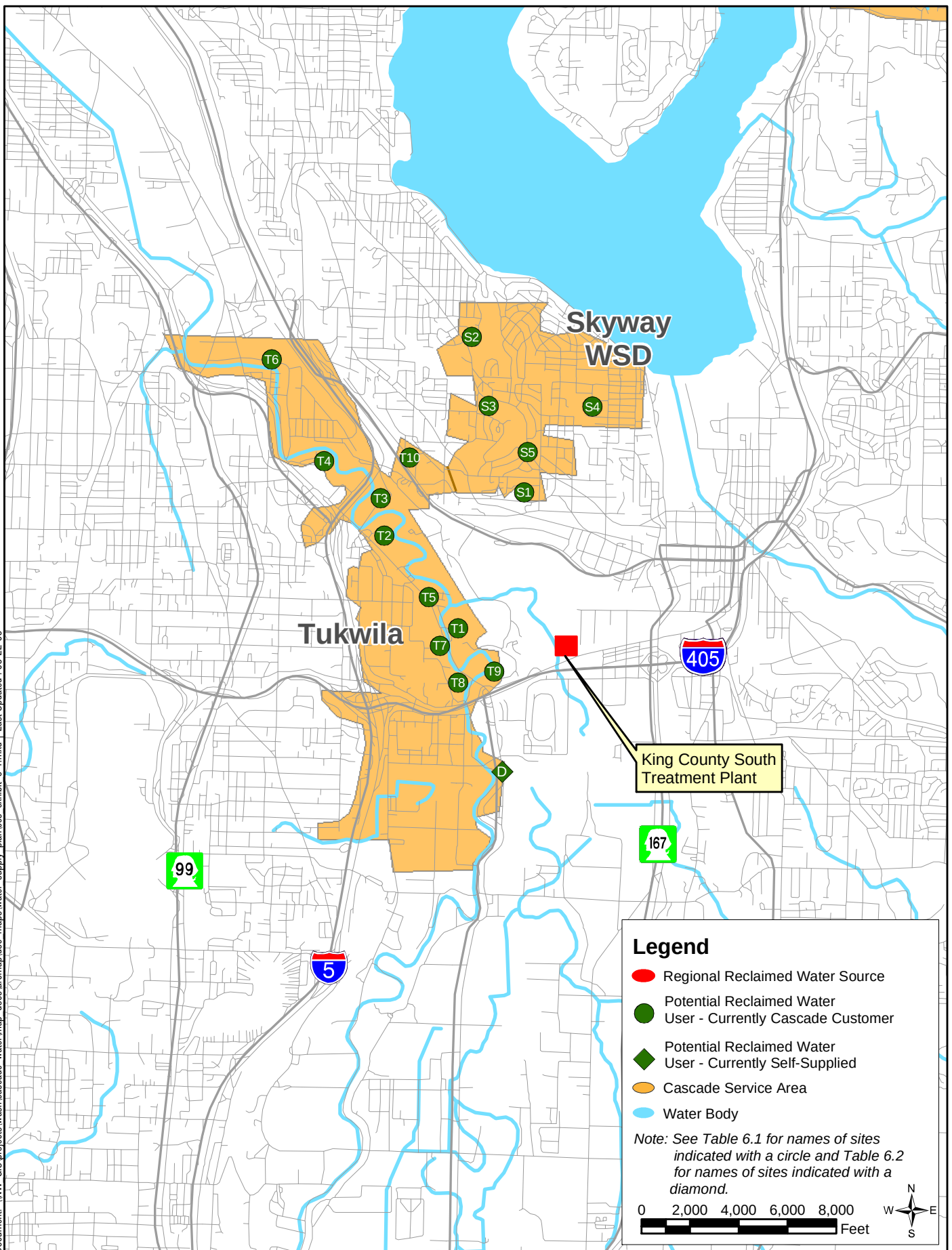
King County WTD recently developed the Brightwater Regional Treatment System, located in Snohomish County northeast of Woodinville (see Figure 6.2). Treatment plant start-up and operations began in September 2011, with the system scheduled to be completed in 2012.

The treatment capacity of Brightwater is anticipated to be 36 MGD, on an average daily basis. Plant expansions will increase capacity to 54 MGD by 2040.

A key feature of the Brightwater project is the planned additional treatment for a portion of the facility's flows, allowing for reuse at the plant site and throughout a sizeable service area. It is anticipated that approximately 10 MGD of reclaimed water will be available from the Brightwater facility. It is anticipated that this supply will be made available to the area west of the facility (along the Brightwater effluent corridor, which runs along the King/Snohomish County line to Puget Sound) and to the south (potentially into the Sammamish Valley). The area south of Brightwater includes the northern end of Cascade's service area.

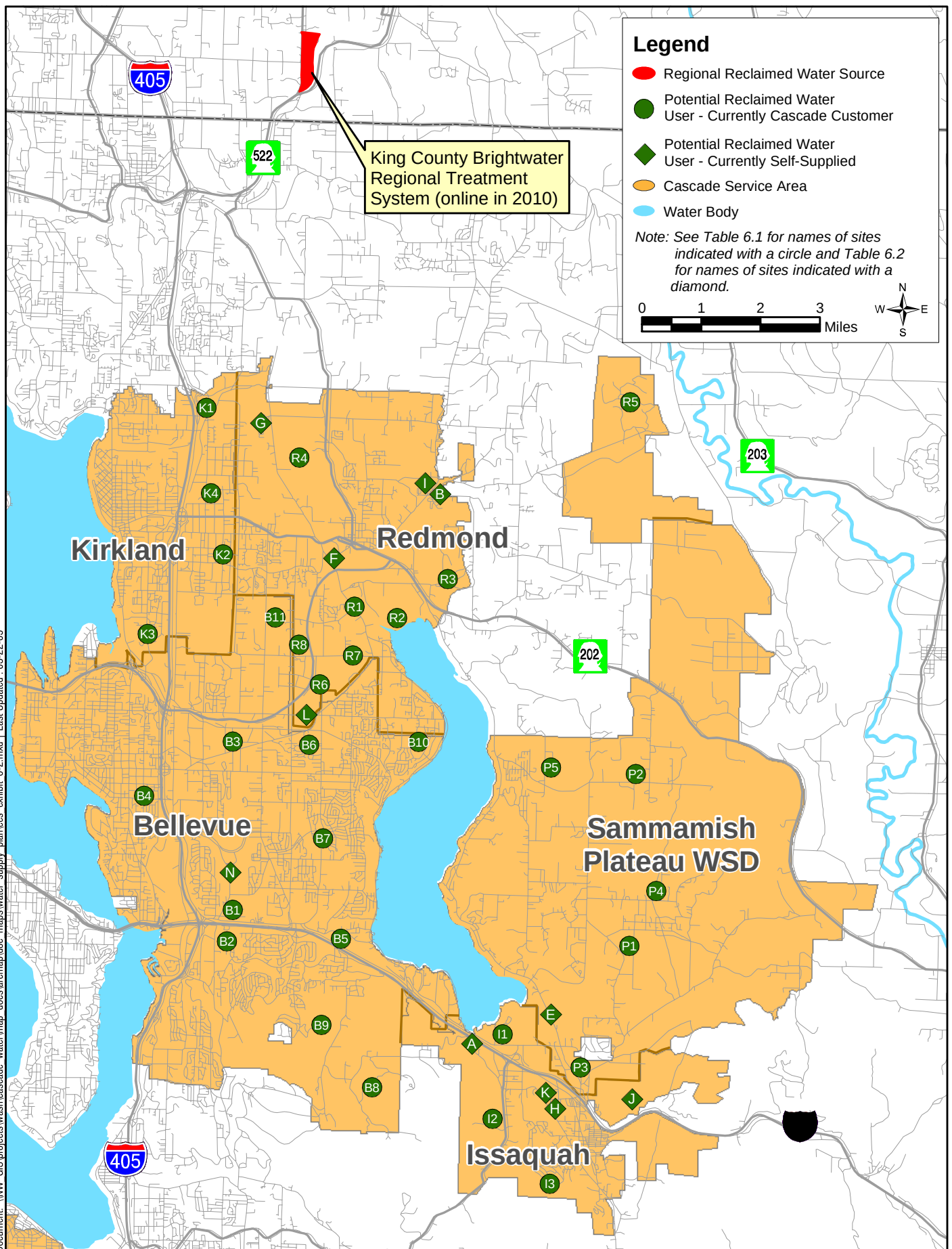
Satellite Facilities

King County WTD's South Treatment Plant and Brightwater Regional Treatment System are the two identified regional sources of reclaimed water supply. However, there is a potential for development of smaller, satellite reuse facilities designed to serve a more local need. King County has expressed a desire to explore the possibilities of constructing one or more satellite treatment plants in cooperation with local communities and/or water purveyors. One Cascade Member that has also shown interest in this concept is Covington Water District. Throughout 2007-2009, the District and the County jointly examined the feasibility of implementing a reuse system utilizing a satellite treatment facility. However, such a concept was determined to not be cost-effective for the near-term, and thus has not been advanced further.



Reclaimed Water Sources and Potential Users - Tukwila and Skyway WSD
FIGURE 6.1

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Reclaimed Water Sources and Potential Users - North Cascade Members

FIGURE 6.2

Applications of Reclaimed Water

Water utility planning includes evaluating the cost-effectiveness of various supply options. The feasibility of new sources of supply is partially based on the cost of developing such supplies and examining how these costs compare to existing supplies. Implementation of a water reuse program must also be viewed through this utility management lens when evaluating the feasibility of reuse versus other sources of supply. From this perspective of cost and feasibility, there are two broad categories of reuse programs: 1) service to existing water-using facilities and retrofit of existing systems; and 2) service to new development.

For a utility serving a highly developed area (i.e., a service area that is at or near buildout), a water reuse program will be almost exclusively of the first type, with service to existing customers. While there may be customers for whom the use of reclaimed water seems logical, as they use large quantities of water for non-potable purposes, the cost of delivery may be so great as to make it infeasible. Costs include the extension of water reuse pipelines to such customers and retrofits to the customer's plumbing, which can sometimes be quite extensive.

Many times, a reuse program is more feasible for those utilities that anticipate serving new development. Feasibility increases when provision of reclaimed water can be included in the early planning stages of both the future customer's onsite plumbing and the utility's infrastructure improvements. Early planning and coordination of such activities drastically reduces costs and will make reuse a more feasible option for a utility.

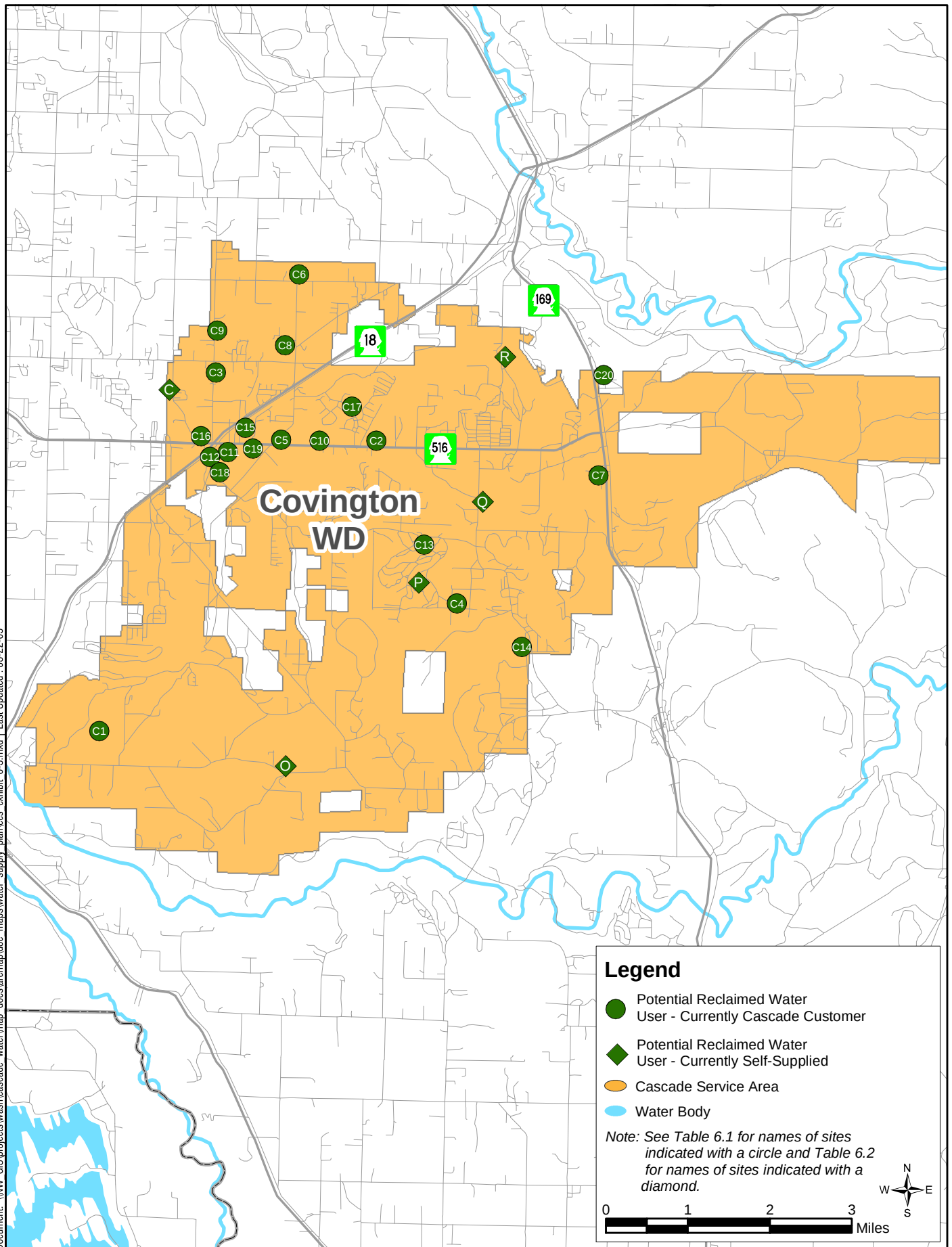
Cascade Members represent a blend of the above opportunities. This section identifies known and potential future applications of reclaimed water by existing Cascade customers. The primary applications of reclaimed water considered in this review are landscape irrigation and non-potable industrial use, as these constitute the largest components of municipal potable water demand that may be replaced by reclaimed water. Other, minor uses of reclaimed water are discussed where specifically identified by Cascade Members.

Application of reclaimed water service to new development is not specifically assessed, as it is challenging to estimate appropriate quantities of demand. However, new developments may also present opportunities for using reclaimed water.

This review is based primarily upon information provided by Cascade Members during preparation of Cascade's 2004 Transmission and Supply Plan, and supplemented by data contained in previous reuse marketing studies conducted by King County. Cascade Members were interviewed and asked to describe their water reuse planning activities, if any. This included identifying any reuse activities through 2004 as well as known planned opportunities or projects at that time. Furthermore, the Members were also asked to provide account information for their top ten largest water customers (i.e., historical usage). From these lists, those accounts were identified that represent irrigation or industrial uses suitable for consideration of reclaimed water. These represent the primary reuse opportunities that exist for Cascade over the next twenty years.

The information provided by the Members was then compared against previous studies performed by King County, in which potential reclaimed water application sites were identified. Where additional opportunities were identified, these are included.

Table 6.1 provides a summary of water demand information obtained for each identified site. Figure 6.1 through Figure 6.3 provide the location for each site specifically listed in the table. For further details of this review, see Chapter 6 of Cascade's 2004 TSP.



Reclaimed Water Sources and Potential Users - Covington WD
FIGURE 6.3

Table 6.1 Summary of Existing Sites with Potential for Reclaimed Water Application ⁽¹⁾

Customer	Map Key (see Fig 6.1-6.3)	2003 Total Consumption (ccf) ⁽²⁾	2003 Total Consumption (gal) ⁽³⁾	2003 Average Day Demand (gpd) ⁽⁴⁾	2003 Peak Season Demand (gpd) ⁽⁵⁾
Bellevue					
Bellevue Community College	B1	4,571	3,419,108	9,367	28,025
Bentall Capital/Five Newport	B2	10,040	7,509,920	20,575	61,557
Foothill Commons Apts.	B3	4,062	3,038,376	8,324	24,905
Double Tree Inn	B4	5,251	3,927,748	10,761	32,195
Boeing Computer Services	B5	5,145	3,848,460	10,544	31,545
Central Park East Apts.	B6	5,332	3,988,336	10,927	32,691
Colony Woods Apts.	B7	6,223	4,654,804	12,753	38,154
Montreux-Glacier Ridge	B8	14,413	10,780,924	29,537	88,368
Overlook at Lakemont	B9	4,023	3,009,204	8,244	24,666
Tam O'Shanter Golf Course	B10	10,066	7,529,368	20,628	61,716
Bellevue Municipal Golf Course ⁽¹⁰⁾	B11	N/A	N/A	N/A	61,716
Subtotal - Bellevue		69,126	51,5076,248	141,661	485,538
Covington					
Washington National	C1	72,024	53,873,952	147,600	441,590
Cedar Heights Jr. High	C2	9,876	7,387,248	20,239	60,551
Kentwood High School	C3	5,968	4,464,064	12,230	36,591
Kentlake High School	C4	5,124	3,832,752	10,501	31,416
Covington Medical Park	C5	4,704	3,518,592	9,640	28,841
Tahoma school district #4	C6	3,554	2,658,392	7,283	21,790
Glacier Park Elementary	C7	3,336	2,495,328	6,837	20,454
Crestwood Elementary	C8	3,289	2,460,172	6,740	20,165
Mattson Jr. High	C9	2,922	2,185,656	5,988	17,915
Jenkins Creek Elementary	C10	2,480	1,855,040	5,082	15,205
Covington Retail Assoc.	C11	2,474	1,850,552	5,070	15,168
Chevron - Carwash	C12	2,242	1,677,016	4,595	4,595
Remington Homeowners Assoc.	C13	1,861	1,392,028	3,814	11,410
Sawyer Woods Elementary	C14	1,771	1,324,708	3,629	10,858
Covington Apartments LLC	C15	1,632	1,220,736	3,344	10,006
King County Library System	C16	1,511	1,130,228	3,097	9,264
Cedar Valley Elementary	C17	1,416	1,059,168	2,902	8,682
Fred Meyer	C18	1,337	1,000,076	2,740	8,197
Covington Square N.E.	C19	1,075	804,100	2,203	6,591
Rock Creek Elementary	C20	1,064	795,872	2,180	6,524
Subtotal - Covington		129,660	96,985,680	265,714	785,813
Issaquah					
Port Blakely Communities	I1	13,716	10,259,568	28,108	84,095
Talus Residential Property	I2	4,645	3,474,460	9,519	28,479
Darigold	I3	50,000	37,400,000	102,466	102,466
Subtotal - Issaquah		68,361	51,134,028	140,093	215,040
Kirkland					
Lake Washington Technical College	K1	3,682	2,754,136	7,546	22,575
Rose Hill Car Wash	K2	3,657	2,735,436	7,494	7,494
Carillon Properties	K3	14,194	10,617,112	29,088	87,026
Costco	K4	5,725	4,282,300	11,732	35,101
Subtotal - Kirkland		27,258	20,388,984	55,860	152,196
Redmond					
Marymoor Park	R1	ND	ND	ND	1,100,000
TTM Technologies	R2	49,834	37,275,832	102,126	305,540
Genie Industries	R3	27,631	20,667,988	56,625	169,410
Willows Run Golf Course ⁽⁹⁾	R4	NA	NA	NA	320,000
Trilogy Golf Course	R5	45,165	33,783,420	92,557	276,913
Honeywell International	R6	23,492	17,572,016	48,143	144,033
Microsoft	R7	284,811	213,038,628	583,667	1,746,218
Nintendo	R8	10,982	8,214,536	22,506	67,332
Subtotal - Redmond		441,915	330,552,420	905,623	4,129,446

Table 6.1 Summary of Existing Sites with Potential for Reclaimed Water Application ⁽¹⁾ (cont.)					
Customer	Map Key (see Fig 6.1-6.3)	2003 Total Consumption (ccf) ⁽²⁾	2003 Total Consumption (gal) ⁽³⁾	2003 Average Day Demand (gpd) ⁽⁴⁾	2003 Peak Season Demand (gpd) ⁽⁵⁾
Sammamish Plateau					
Issaquah School District, Skyline	P1	5,316	3,976,368	10,894	32,593
Inglewood Junior High	P2	5,289	3,956,172	10,839	32,428
Timbers 3169, Simpson Housing	P3	4,644	3,473,712	9,517	28,473
Beaver Lake Ballfields	P4	4,238	3,170,024	8,685	25,984
East Sammamish Park	P5	3,318	2,481,864	6,800	20,343
Subtotal - Sammamish Plateau		22,805	17,058,140	46,735	139,821
Skyway					
King County Parks	S1	2,371	1,773,508	4,859	14,537
The Lakeshore	S2	2,290	1,712,920	4,693	14,040
Campbell Hill Elementary	S3	1,822	1,362,856	3,734	11,171
Dimmitt Middle School	S4	1,698	1,270,104	3,480	10,411
Bryn Mawr Elementary	S5	1,051	786,148	2,154	6,444
Subtotal - Skyway		9,232	6,905,536	18,919	56,603
Tukwila					
Fort Dent Park (6)	T1	ND	ND	ND	20,000
Foster Golf Links (7)	T2	ND	ND	ND	100,000
Seattle Rendering Plant (8)	T3	ND	ND	ND	60,000
Jorgesen Forge	T4	8,927	6,677,396	18,294	54,733
Boeing PSAM 12-0380	T5	19,770	14,787,960	40,515	121,213
Boeing PSAM 12-0370	T6	18,148	13,574,704	37,191	111,268
Fairway Center Office Park	T7	ND	ND	ND	ND
A.K. Pacific Erect Inc.	T8	ND	ND	ND	ND
Eriks West	T9	ND	ND	ND	ND
Towne and Country Suites	T10	ND	ND	ND	ND
Subtotal - Tukwila		46,845	35,040,060	96,000	467,214

Notes:

ND = No Data Provided or Available; NA = Not Applicable

- These sites represent either planned opportunities (where specifically noted) or potential opportunities based on analysis of the largest current irrigation and industrial water customers for each purveyor.
- From Cascade Member billing records, except where noted.
- Converted from ccf to gpd.
- Annual amount divided by 365 days per year.
- Converted from annual amount to average day demand during peak season. The following assumptions are made:
Irrigation sites - Peak season use only. Peak season assumed to be 122 days (4 months) long.
Industrial sites - Annual use divided by 365 days (full year).
- Currently served customer.
- Tukwila plans to provide reclaimed water to the golf course by 2010. The use of reclaimed water by the golf course will help offset demand from its water right on the Green River. As this will not reduce Tukwila's potable water demand, the amount associated with the golf course is not included in the reclaimed water demand forecast presented in Table 6.3.
- Tukwila plans to provide reclaimed water to the rendering plant by 2010.
- Willows Run Golf Course obtains some water from Redmond, though a majority of irrigation water used is obtained from its own Sammamish River supply.
The peak season demand shown here is obtained from the Brightwater Final Environmental Impact Statement – Appendix 3-D, Reclaimed Water Technology Review and Evaluation of Potential Water Reuse Opportunities (September 2003).
- Bellevue Municipal Golf Course obtains irrigation from a City-owned well that has a 100 gpm instantaneous water. No meter records were available for review. Therefore, peak season demand is assumed to be equal to that of Tam O'Shanter Golf Course, for purposes of this analysis

Potential Opportunities with Self-Supplied Water Users

A review of self-supplied water users located within Cascade Members' service areas was also conducted for the 2004 TSP to determine if there are large irrigation or industrial water uses not

presently served by Cascade that might benefit from use of reclaimed water. This is of interest to King County because of the possibility of reducing well withdrawals that might have local impacts on nearby streams. There may be an opportunity for Cascade Members to convey and deliver reclaimed water to new customers currently obtaining water from their own sources of supply.

To investigate the reclaimed water potential associated with self-supplied water users, an analysis of water right information was performed. Data contained within the Department of Ecology's Water Rights Application Tracking System (WRATS) database were reviewed for the areas served by Cascade Members. Only those irrigation and industrial water rights translating to potential water uses of 50,000 gpd or greater were considered. For landscape irrigation, this translates to water rights with instantaneous quantities greater than 100 gallons per minute (gpm) for groundwater rights and 0.23 cubic feet per second (cfs) for surface water rights, assuming maximum daily pumping/diversion times of 8 hours. In terms of industrial water rights, which are typically exercised year-round, this translates to an annual water right quantity of 56 acre-feet or greater.

Based upon the above criteria, the water rights review revealed that there are 41 records associated with irrigation water rights having points of diversion/withdrawal within Cascade Members' service areas. Thirty of these are surface water rights, with an associated total instantaneous quantity of 17.77 cfs. The remaining 11 rights are groundwater rights with an associated total instantaneous quantity of 4,112 gpm. In addition, there are water rights of 4.0 cfs and 160 gpm associated with a golf course located outside of, but adjacent to, the service area boundary of the Sammamish Plateau Water and Sewer District.

The review also indicated that there are 14 commercial/industrial water rights located within the area of interest. One of these is a surface water right for 5.2 cfs, while the others are groundwater rights with an associated total instantaneous quantity of 5,820 gpm.

For clarity purposes, only the largest of the identified self-supplied users are depicted on Figure 6.1. This includes surface water rights greater than 1.0 cfs, and groundwater rights greater than 500 gpm. Also included are four golf courses located within the Covington service area.

Although these sites did not meet the criteria described above for mapping, they are included because they may become pertinent to the satellite reuse program that Covington is considering.

Table 6.2 provides information regarding those sites depicted on Figures 6.1 to 6.3.

Table 6.2 Summary of Largest Currently Self-Supplied Water Users Located Within Cascade Member Service Areas		
<i>Surface Water Rights ⁽¹⁾</i>		
Map Key (see Fig 6.1-6.3)	Name of Water Right Holder	Qi (cfs) ⁽²⁾
A	King County Dept. of Natural Resources	5.2
B	Private Landowner (irrigation)	1.1
C	Private Landowner (irrigation)	1.0
D	Private Landowner (irrigation)	1.0
E	Private Landowner (irrigation)	1.0
F	Dickey Farms, Inc.	1.0
G	Private Landowner (irrigation)	1.0
<i>Groundwater Rights ⁽¹⁾</i>		

Map Key (see Figure 6.1-6.3)	Name of Water Right Holder	Qi (gpm) ⁽²⁾
H	Consolidated Dairy	1,100
I	Cadman Gravel Co.	1,000
J	Lakeside Gravel	1,500
K	Issaquah Creamery	500
L	United Control Corp.	1,000
M	Willows Run Golf Course ⁽³⁾	715
N	Sunset Hills Memorial Park	500
<i>Self-Supplied Golf Courses Located within Covington Service Area ⁽⁴⁾</i>		
Map Key (see Figure 6.3)	Name of Golf Course	Qi (gpm)
O	Jade Green	N/A
P	Druids Glen	N/A
Q	Elk Run	N/A
R	Lake Wilderness	N/A

Notes:

1. Based on analysis of water right information, as obtained from Department of Ecology's Water Rights Application Tracking System (WRATS), November 2004.
2. Qi = Maximum allowed withdrawal on an instantaneous basis. Only those water rights having Qi greater than or equal to 1.0 cfs (for surface water) or 500 gpm (for groundwater) are shown.
3. This site is shown on Figure 6.1 as item R4 (see Table 6.1), as the site also receives water from Redmond.
4. Information provided by Covington.

APPENDIX E

Demand Forecast



Water Demand Forecast Task 600



FINAL DRAFT

December 18, 2009

CDM

In association with

HDR

R·W·BECK

Cascade Water Alliance Water Demand Forecast

Task 600

Final Draft

December 18, 2009



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In association with



Table of Contents

1.0	BACKGROUND	1
2.0	WATER DEMAND FORECASTING APPROACH.....	2
3.0	DATA SOURCES AND ASSUMPTIONS	4
4.0	ECONOMETRIC MODELS	12
5.0	WATER DEMAND FORECAST.....	16
6.0	CONCLUSION	23

1.0 Background

The purpose of this document is to summarize the methodology, data assumptions and results of a comprehensive water demand forecast for the Cascade Water Alliance (Cascade).

The objective of this analysis was to forecast total water demand for the forecast period 2010 to 2060 for the combined utilities of Cascade. The water demand forecast is designed to serve as a basis for supply and infrastructure decision making, as well as financial planning. In addition, the water demand forecast model will estimate and communicate effects from major sources of uncertainty to assist Cascade decision-makers understand both the upside and downside risks in source and infrastructure planning.

A water demand forecast model (demand model) was estimated based on water billing and production data, demographic and socioeconomic data, weather, and water conservation for the eight utilities within the Cascade service area:

- City of Bellevue
- Covington Water District
- City of Issaquah
- City of Kirkland
- City of Redmond
- Sammamish Plateau Water and Sewer District
- Skyway Water and Sewer District
- City of Tukwila

A comprehensive database was developed, and organized into monthly time series (across historical years 1994 to 2008) and cross sectional (across utilities) data set. It should be noted that not all of the utilities had complete data from 1994 to 2008.

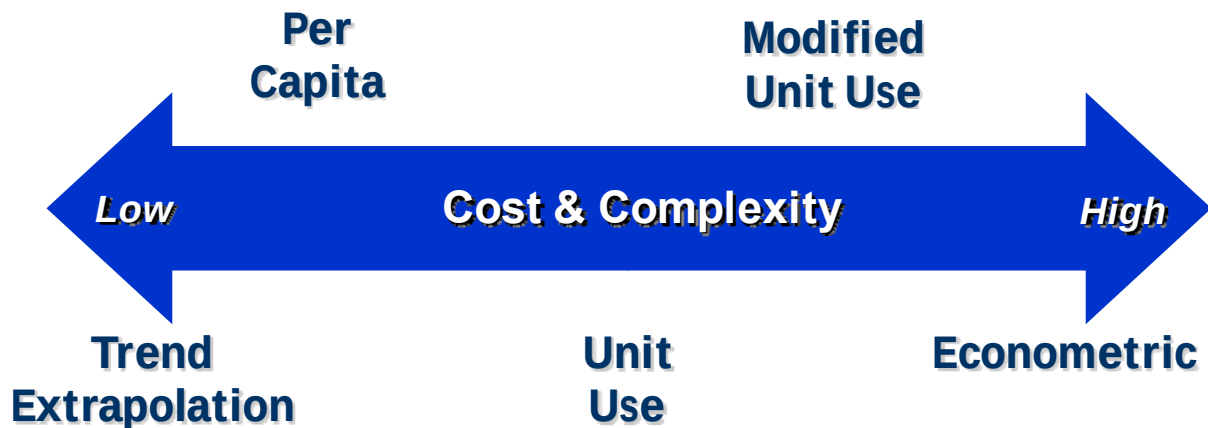
Section 2 reviews common water demand forecasting approaches and discusses the method employed for the Cascade demand model. Section 3 reviews the data used to develop the demand model and generate the water demand forecast. Section 4 presents the results of the statistical regression analyses, which serve as the basis for the demand model. Section 5 provides an overview of the water demand uncertainties, presents the demand forecast scenarios, and summarizes the demand forecast results.

2.0 Water Demand Forecasting Approach

2.1 Overview of Different Demand Forecasting Methods

Common approaches to forecasting water demands range from simple trend extrapolation to detailed econometric models (see Figure 1).

Figure 1. Common Water Demand Forecasting Approaches



The trend extrapolation method simply extends historical trends into the future. The advantage to this method is it is not time consuming to prepare and thus is very low cost to produce. The disadvantages are that it assumes the unlikely scenario that past trends carry into the future unchanged, it has no ability to “explain” water demands, and it cannot account for any changes in factors that influence demand, such as demographics or weather.

The per capita demand forecasting method assumes population is the primary driver in determining future demand. The approach takes historical total demand divided by population to get per capita use and multiplies it by the projected population to calculate future demand. The advantage of this methodology is it is simple to understand and is relatively low cost to produce. The disadvantages are that demand does not always mirror population growth and demographic, socioeconomic, and factors other than population are not accounted for.

A unit use methodology is more costly and complex than the two previous approaches. It is similar to the per capita method, but instead of a single population driver it uses multiple drivers to generate sector water demands (e.g., single-family, multifamily and non-residential). The unit use method involves dividing each sector’s water demand by the appropriate drivers (e.g. housing or employment) to calculate a per unit water demand value. Next, the unit use values are multiplied by the projected future number of units to derive a future unit use demand. The primary advantage of the unit use

methodology is that it allows for demand in each sector to be projected independently. The primary disadvantage is that important influencing factors such as weather, income, and price of water are not incorporated into the demand forecast.

A modified unit use methodology, such as the one used for the **Central Puget Sound Water Supply Forum's 2009 Regional Water Supply Outlook (2009 Outlook)**, applies factors from other empirical studies of water demands to adjust or modify the unit use rates over time to account for weather, income and price of water impacts.

As decisions regarding development of new water supplies and infrastructure become more complex and costly, many utilities across the country are seeing value in moving towards more sophisticated approaches for forecasting water demands. These econometric methods start with empirical statistical analysis of historical water demands and the factors known to influence water use. Then they use Monte Carlo simulation of key variables in order to produce a statistical range in water demands, which can help decision makers understand uncertainty and the implications of their planning.

To determine the most effective water demand forecasting method, three primary factors should be examined. First, what are the goals and objectives of the forecast? To answer this question one must understand the information needed by the planners or decision-makers as well as the ramifications of the decisions. Second, is there adequate data availability? This requires understanding what data is available, its quality, and the models the data will support. Finally, what are the budget and resources available? In order to select the proper forecasting methodology the financial constraints as well as the project schedule must factor into the decision.

2.2 Recommended Water Demand Forecasting Method for Cascade

Based on the importance of the decisions being made by Cascade, the availability of data, and the fact that much of the information from key utilities had already been collected for the **2009 Outlook**, CDM recommended that the econometric water demand approach with uncertainty analysis be used to develop the water demand forecast.

An econometric approach statistically correlates sector water demands with factors that influence those demands. The econometric model relies on regression analysis to compute coefficients or elasticities that describe how water use is influenced by a number of explanatory variables (such as weather, price of water, income, etc). For each explanatory variable, elasticity is statistically estimated. For example, a price elasticity of -0.10 implies that a ten percent increase in the real price of water will result in a one percent decrease in water demand.

The following is an example of an equation used to calculate sector water demand using an econometric approach:

$$E(y) = a + b_1x_1 + b_2x_2 + b_nx_n$$

Where:

$E(y)$ = the expected value of dependent variable (y) as estimated by the function

a = intercept, or the value of (y) when $x = 0$

b = coefficient of x , or the change in y given a change in x

x = value of the independent variable

Based on the available data, two statistical models would be generated, one for combined residential (single-family and multifamily) and one for non-residential. The reason for combining single-family and multifamily into one combined model is because the utilities had very different definitions of what constituted multifamily. The independent variables would therefore be:

- Residential Water Use (gallons per household per day)
- Non Residential Water Use (gallons per employee per day)

The explanatory variables that the statistical model will find relationships to water use are:

- Weather (temperature and precipitation)
- Income
- Price of Water
- Mix of Single-Family and Multifamily Households
- Mix of Industrial (Manufacturing) Employment
- Monthly Binary Variables to Capture Seasonal Variability
- Passive Conservation (that which has occurred from state plumbing codes)
- Active Conservation (that which utilities have implemented)

3.0 Data Sources and Assumptions

A database was built containing data for monthly production, billing, maximum temperature, precipitation, the number of single-family households served, the number of multi-family households served, employment, median household income, employment mix, marginal price, passive conservation, and active conservation for each of the eight utilities from 1990 to 2008 where data was available.

3.1 Water Production and Billing Data

Water billing and production data availability was not uniform for all CWA members. Billing and production data was collected by HDR from a variety of sources, including a Cascade utility survey, Seattle Public Utilities, and the Cascade Water Alliance.

Water production data was organized according to the source of the water. Data for water purchases from the Cascade Water Alliance/Seattle Public Utilities dated back to 1990 for some utilities and monthly data was complete across all utilities, where applicable, for the years 2000 to 2008. One utility, Covington, did not directly purchase water from Cascade Water Alliance/Seattle Public Utilities from 1990 to 2008.

Water production data from independent supplies was available beginning in 1990 for some utilities and was complete for all applicable utilities from 1995 to 2008. Three utilities, Bellevue, Kirkland, and Tukwila, did not acquire any water from independent supply production during the period 1990 to 2008.

Water billing data varied among Cascade Members. Monthly billing data supplied by Seattle Public Utilities was the primary source of data from 1994 to 2003 for the following utilities: Bellevue, Kirkland, Redmond, Skyway, and Tukwila. Complete monthly billing data was available for all utilities from 2006 to 2008.

Cascade utilities utilize bi-monthly customer billing cycles which involve reading customer meters at approximately one-month-long time intervals that overlap with two consecutive calendar months. A data smoothing technique was therefore needed in order to generate monthly water consumption. The following formula was used to estimate the monthly consumption during a particular month (Q_N) based on bi-monthly billing data:

$$Q_N = (0.25 * Q_{N-1}) + (0.5 * Q_{N-1}) + (0.25 * Q_{N-2})$$

Where:

Q_N = estimate of water consumed during month N

Q_N = estimate of water billed during month N

3.2 Weather

Base year and the historical normal monthly values for average maximum temperature and precipitation are used in forecasting future water use. Two weather stations, SeaTac and Landsburg, were used to represent the Cascade region. SeaTac weather data dated back to 1949, while Landsburg data dated back to 1931. Figure 2 presents the long-term normal values for average maximum temperature for the two weather stations, while Figure 3 presents the long-term normal values for precipitation. Temperature between the two stations is nearly the same, while precipitation is significantly higher for Landsburg.

Figure 2. Long-Term Normal Average Maximum Temperature for Sea Tac and Landsburg Weather Stations

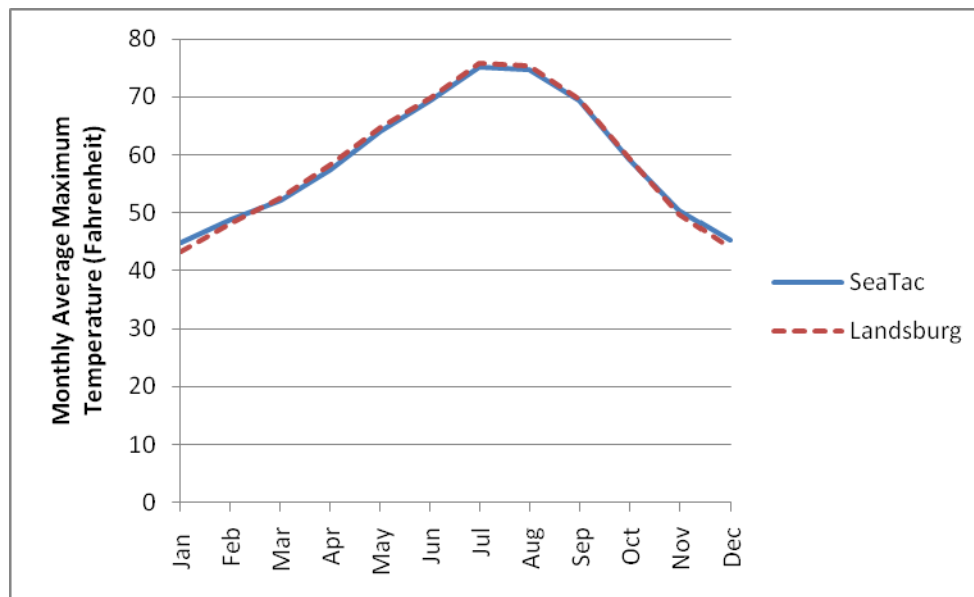
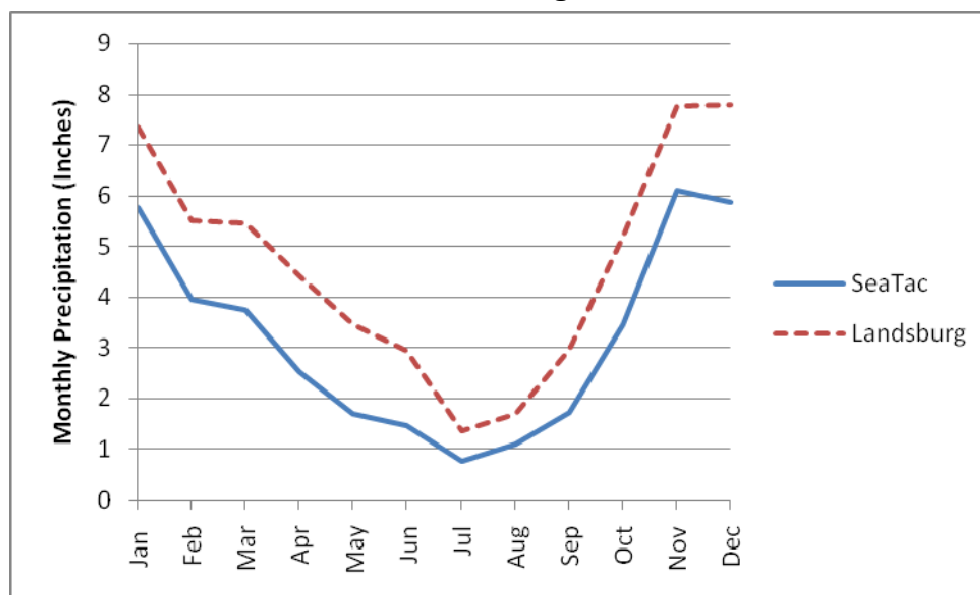


Figure 3. Long-Term Normal Precipitation for Sea Tac and Landsburg Weather Stations



Cascade utilities were assigned to a particular weather station based on geographic proximity to a station. Table 1 lists the assignment of utilities to weather stations.

Table 1 Cascade Utility Weather Station Assignments	
SeaTac Weather Station Utilities	Landsburg Weather Station Utilities
Bellevue	Covington
Kirkland	Issaquah
Redmond	Sammamish Plateau
Skyway	
Tukwila	

Temperature and precipitation are strong explanatory variables in predicting water use. Greater temperatures and lower precipitation results in greater water demands due to greater irrigation use and higher process water for industrial and commercial users.

3.3 Demographic and Socioeconomic Data

Demographic data used in the development a water use forecast for Cascade was obtained from the Puget Sound Regional Council (PSRC) from 2000 to 2040. PSRC produces historical and projected demographics at the Traffic Analysis Zone (TAZ) level. A TAZ is an area delimited by a state and/or local transportation official for tabulating traffic and planning related data. A TAZ typically consists of one or more census blocks, block groups, or census tracts. CDM aggregated TAZ level data to each of the Cascade utilities using GIS. Utility boundaries were overlaid against the TAZ boundaries, along with land use data, in order to determine which demographics corresponded to each of the eight Cascade utilities.

Because of the desire to produce a 50-year water demand forecast, CDM extended PSRC demographic projections from 2040 to 2060 using linear extrapolations. Table 2 presents the baseline projections of demographics for the Cascade service area.

Table 2 Baseline Projections of Demographics for Cascade						
Year	Population	Households			Employment	
		Total	Single Family	Multifamily	Total	Industrial
2007	357,059	144,481	96,144	48,337	338,152	35,695
2010	371,753	151,150	99,721	51,429	354,101	34,096
2020	423,808	178,798	113,220	65,578	414,296	29,886
2030	465,382	203,705	124,146	79,559	468,547	26,563
2040	507,661	229,508	135,666	93,842	511,342	24,322
2050	554,181	259,387	148,547	110,840	567,427	22,272
2060	605,408	294,074	162,979	131,095	620,523	20,865

Population

Although population as an independent variable is not used to predict water demands using the econometric approach, it is an important driver of other variables such as households and employment. The base year (2007) total population for the eight member utilities was 357,059. The utility with the largest population was Bellevue with 134,221 people, followed by Redmond with 54,811 people. Tukwila had the smallest population in 2007, at just over 7,000 people.

Population is projected to increase to over 605,000 by 2060, representing an average annual growth rate of 1.3 percent.

Households Served

The number of households served water by Cascade utilities is an important forecast driver for future residential water use. Total households are projected to increase from 144,418 in 2007 to just over 294,000 by 2060, representing an annual growth rate of 1.9 percent.

Because single-family homes use more water than multifamily homes, it was also important to track the growth between single-family and multifamily households. Single-family households are expected to increase at an annual rate of 1.3 percent, while multifamily households are expected to increase at an annual rate of 3.1 percent (almost double that of single-family).

Employment

Total employment is the forecast driver non-residential water use. Total employment in the Cascade service area in the base year (2007) is estimated to be 338,152 (or 94 percent of the total population). This does not mean that 94 percent of people living in the Cascade service area are employed. The Cascade service area is rich in employment opportunities, with many corporations and industry located here. People commute from Seattle, and from other counties such as Snohomish and Pierce, to work in Cascade's service area.

Employment in the area is projected to increase to just over 620,000 by 2060, representing an annual growth rate of 1.5 percent. But because industrial establishments use more water than commercial/institutional establishment, it was important to track industrial employment as well. Due to the changing economy of the region and the loss of many heavy manufacturing, industrial employment is projected to decrease by 42 percent by 2060 from the current level of 36,000.

Income

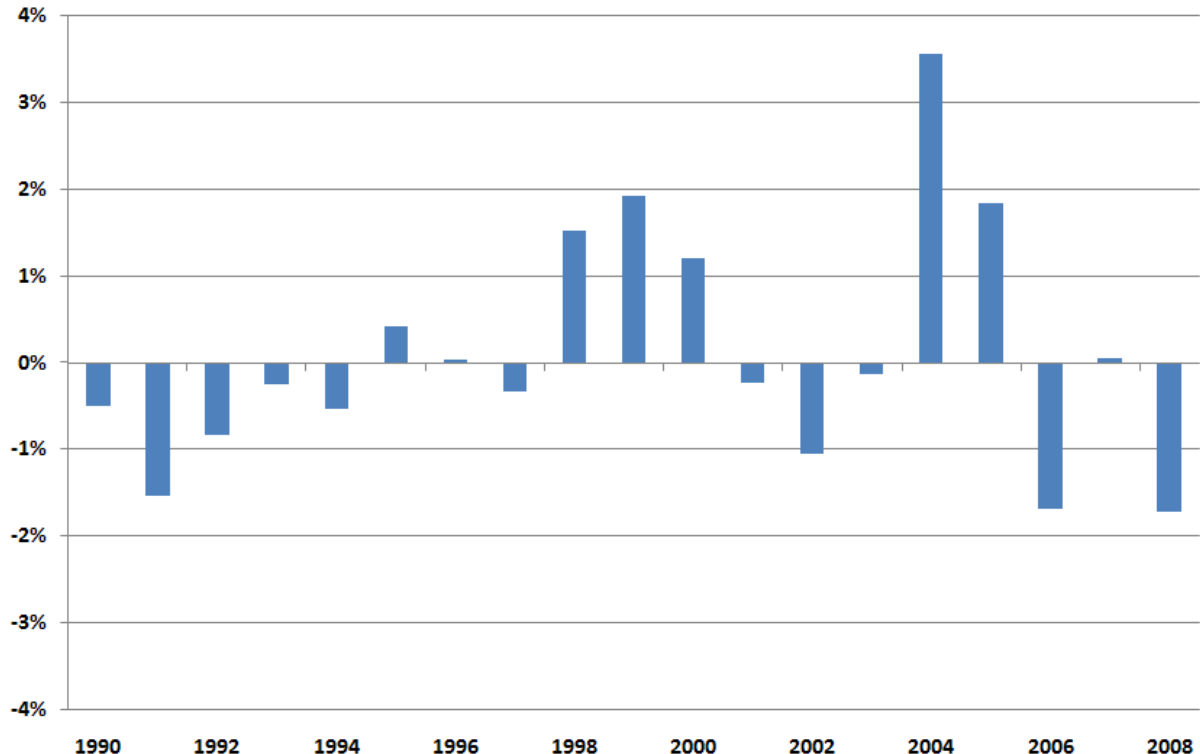
Household income is an important explanatory variable for predicting water demand. Empirical studies across the country for the last 20 years indicate as real (above inflation) incomes go up, so does residential water demand. Homes with greater

incomes tend to have bigger yards, irrigate more, have more water using fixtures and use those fixtures with greater frequency.

To generate household income for each of the eight utilities, CDM first used the historical PSRC household income data by quartile. Using this quartile data, CDM estimated the median household income for each utility in 1990 (adjusted to year 2000 dollars). This information was used to get an accurate spatial (across utility) representation of income.

To generate historical income growth from 1990 to 2008, CDM used the personal income data for King County generated by the Washington State Office of Financial Management. This data was adjusted to reflect real income in year 2000 dollars. The real growth rates in personal income were then applied to the 1990 household income by utility in order to get utility specific income data. Figure 4 shows the real income growth for the aggregate of the Cascade utilities from 1990 to 2008. From 1990 to 2000, real income grew by 3 percent, or just under 0.3 percent annually. This was considered to be a period of average economic growth according to the Office of Financial Management. From 2001 to 2008, real income only grew by 0.1 percent. This period was considered to be poor in terms of overall economic growth. Although population and employment continued to increase during this time, wages and the loss of manufacturing in the region produced stagnant income growth.

Figure 4. Annual Changes in Real Household Income for Cascade Service Area



Since no localized projections of personal or household income were available, CDM made baseline assumptions regarding real income growth into the future based on the historical income. From 2010 to 2020, the assumed real increase in income for the Cascade service area is 0.2 percent annually. After 2020, the assumed real increase in income will increase 0.4 percent annually by 2060.

Price of Water

The price of water at the margin is another explanatory variable in predicting both residential and non-residential water use. Empirical studies in the last 30 years indicate that as real marginal price increases, water use tends to decrease. The marginal price of water is determined by the commodity charge to the average customer for water and sewer service. It is an explanatory variable input into the database to forecast both residential and non-residential water demand. Each Cascade utility sets its own pricing structure with the marginal price of water based on the amount of water consumed per account. Pricing structures vary among Cascade utilities. Most have implemented block rate structures whereby the per unit price of water increases as water use increase. Some utilities also employ a higher per unit charges during the summer season as a way to conserve water during times of peak usage. One utility, Tukwila, implements neither a block rate structure, nor a summer season rate.

All Cascade utilities base their water pricing structures on the charge per hundred cubic feet (ccf) of water. To calculate the marginal price of water for a particular utility during a particular month, the water use factor (gallons per day per household/employee) was converted to hundred cubic feet per month.

For the purposes of this forecast the residential marginal price of water was determined using the mean water use factor for single family and multi-family household consumption. The mean single family water use factor was approximately 200 gallons per day (8.1 ccf per month). The mean multifamily water use factor was approximately 120 gallons per day (5 ccf per month). The non-residential marginal price was based on the per unit charge for the highest tier of use or the per unit charge in the absence of a tiered water pricing structure.

Marginal price data was converted to year 2000 dollars using the monthly Consumer Price Index (CPI). The real dollar amount, used to account for inflation, was calculated for the marginal price data and entered into the database for each utility for each month.

To calculate a residential marginal price for each utility, the single family and multi-family marginal price for each month was weighted by the number of single family and multifamily households respectively for each month and for each utility. Next, the base year marginal price was weighted by total households served across all utilities for each month to get an overall Cascade residential marginal price for each month. Finally, the twelve month baseline year marginal price average was calculated and used as the baseline year residential marginal price.

To project real increases in the marginal price of water, financial data and projected costs for Cascade were used. The demand model assumes a 1.4 annual percent increase in real marginal price for both the residential and non-residential sectors for the period 2007 to 2015. A 2 percent annual increase in marginal price is assumed from 2015 to 2025. A 1 percent annual increase in marginal price is assumed from 2025 to 2035. A 0.5 percent increase in marginal price is assumed from 2035 to 2050. The demand model assumes no real increases in price from 2050 to 2060.

3.4 Water Conservation

Passive Conservation

In 1992 Congress passed the Energy Policy Act of 1992 which, among other measures, set maximum flow rates for toilets, urinals, showerheads, and faucets sold in the United States. To estimate passive water conservation, the ratio of post 1992 households to total households was used. The theory is that newer homes will use less water than pre-1992 homes. By 2007, the percentage of post-1992 households was estimated to be 65 percent. Assuming remodeling rates and useful life of plumbing fixtures, it is estimated that 100 percent of households in Cascade's service area will be compliant with the 1992 plumbing codes by 2060.

Active Conservation

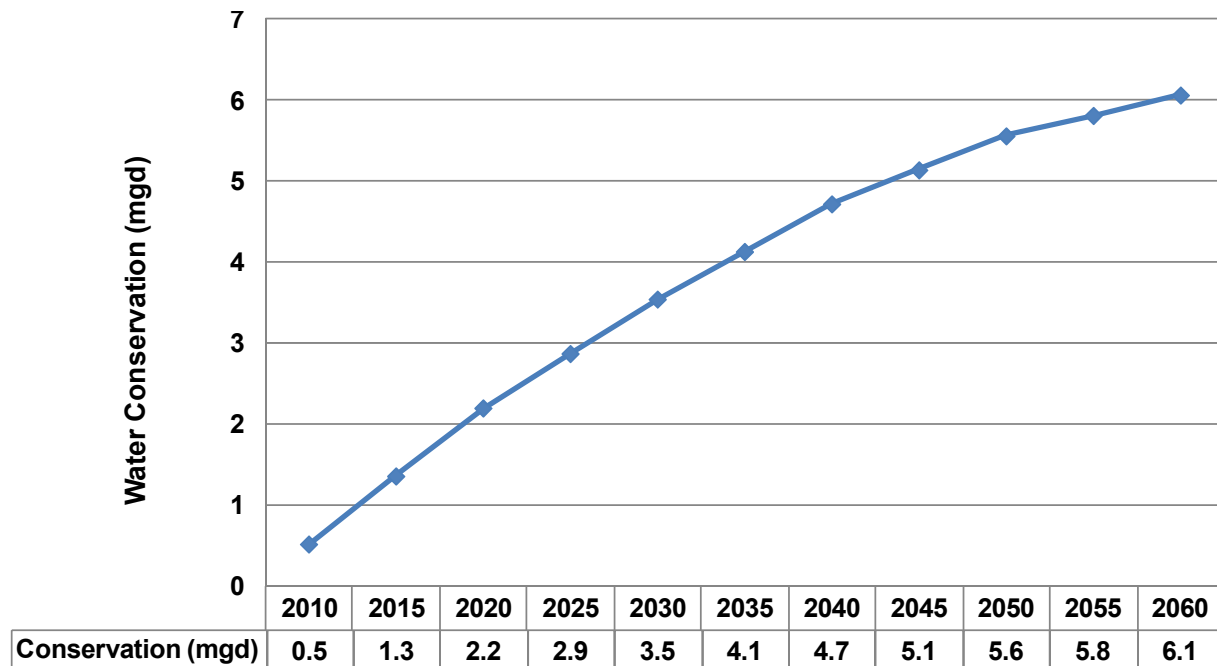
Active water conservation data was collected from individual utility water plans. For the water demand model, a variable called active conservation was created that reflected the number of residential and non-residential active conservation programs being implemented from 1994 to 2008.

Future levels of water conservation were based on active water conservation that Cascade is implementing currently (see Figure 5). This future active conservation is expected to increase from the current (2007) levels of 0.5 million gallons per day (mgd) to 6.1 mgd by 2060. This is considered in the demand forecast as a baseline level of active conservation. More aggressive conservation beyond these levels are evaluated as future water supply options for Cascade.

3.5 Non-Revenue Water

Non-revenue water is that which is not billed to water customers. It can represent water for fire protection, system flushing of mains, unaccounted water, and system losses. Non-revenue water was estimated by taking the difference between total water production and total water consumed (or billed). Using the utility data from 1994 to 2008, the weighted average non-revenue water was estimated to be 7.4 percent of total water production. This number is about average for utilities in the western United States. For forecast purposes, it is assumed that the non-revenue water will remain at 7.4 percent through 2060.

Figure 5. Projected Levels of Baseline Water Conservation for Cascade



4.0 Econometric Models for Cascade Forecast

To calculate the explanatory variable coefficients, a multivariate regression analysis was run using Statistics Analysis Software (SAS) to produce a model for both the residential and non-residential sectors. A log model was estimated to improve the overall fit of the data. In a log model, all variables represent the natural log of the raw data. The use of log variables is common practice in estimating econometric models.

The explanatory variable coefficients (or elasticities) derived from these statistical models will result in changes to per household and per employee water use rates over time. These modified use rates will then be multiplied by the number of projected households and employees (drivers) to determine the residential and non-residential water demands.

4.1 Residential Model

The baseline forecast utilizes a combined single family and multi-family residential model. The dependent variable for the model is the log of monthly residential household water use (gallons per home per day). Table 3 presents the estimated residential model, based on 924 observations derived from data from 8 member utilities. The model explains approximately 76 percent of the variation in water use among the residential water use observations.

Table 3 Residential Water Demand Statistical Regression Model				
Number of Observations			924	
Adj. R-Square			0.765	
Explanatory Variables	Parameter Estimate	Standard Error	t Value	Pr >t
Intercept	-0.6036	0.3654	-1.65	0.0989
January Indicator (0/1)	0.0342	0.0168	2.04	0.0421
February Indicator (0/1)	0.0274	0.0164	1.67	0.0957
April Indicator (0/1)	0.3964	0.0164	2.41	0.0160
May Indicator (0/1)	0.1154	0.0164	7.02	<.0001
June Indicator (0/1)	0.2675	0.0165	16.25	<.0001
July Indicator (0/1)	0.3776	0.0166	22.77	<.0001
August Indicator (0/1)	0.4335	0.0169	25.70	<.0001
September Indicator (0/1)	0.3254	0.0166	19.63	<.0001
October Indicator (0/1)	0.1708	0.0166	10.32	<.0001
November Indicator (0/1)	0.0415	0.0168	2.46	0.0140
Departure of log Precipitation from long-term	-0.0111	0.0058	-1.92	0.0546
Departure of log Maximum Temperature from	0.4506	0.1028	4.38	<0.001
log Percent Multifamily Households to Total	-0.1913	0.0095	-19.1	<.0001
log Median Household Income (year 2000 dollars)	0.4947	0.0339	14.59	<.0001
log Marginal Price of Water (year 2000 dollars)	-0.0404	0.0047	-8.67	<.0001
log Passive Conservation Indicator (% new homes	-0.0728	0.0386	-1.89	<.0594
log Active Residential Conservation (# of	-0.0309	0.0054	-5.75	<.0001

All of the variables in the model had the expected correct signs and were significant at the 10 percent level, with many of the variables significant at the one thousand of one percent level.

The weather components of the model include a monthly binary, the monthly precipitation departure from normal, and the monthly maximum temperature departure from normal. The monthly binary variables capture the effects of seasonality on residential water use. The binary variables for March and December were not significant and thus excluded from the model.

The demographic component of the residential model consists of a single variable, percent of total households that are classified as multifamily. This variable captures the effect of multi-family residential water use on the variation in total residential water use. The coefficient indicates that a one percent increase in the percent of multifamily households is estimated to produce a 0.19 percent decrease in residential water use.

The socioeconomic component of the model consists of two variables, median household income and marginal price. According to the model, median household income is the strongest indicator of the variation in residential water use. A one percent increase in median household income is estimated to lead to a 0.49 percent increase in residential water use. The marginal price variable is also a significant explanatory variable. The marginal price coefficient indicates that a one percent increase in price is estimated to produce a 0.04 percent decrease in residential water use.

The passive conservation indicator and the active conservation indicator are the two explanatory conservation variables in the residential model. Each of the two variables is statistically significant and both had the correct sign. A one percent increase in the passive conservation indicator is estimated to produce a 0.07 percent decrease in residential water use. A one percent increase in the active conservation indicator is estimated to produce a 0.03 percent decrease in residential water use.

4.2 Non-Residential Model

Table 4 presents the water demand model for the non-residential sector. The model is based on 910 observations and the four explanatory variables explain about 44 percent of the variation in water use among non-residential water use observations. All variables were significant and had the correct anticipated sign.

The socioeconomic component of the model is the marginal price variable. The model estimates show that a one percent increase in the non-residential marginal price of water is estimated to reduce non-residential water use by about 0.17 percent.

The demographic component of the model is the ratio of manufacturing employment to total employment. The manufacturing ratio is equal to the total number of manufacturing employees for a given month divided by the total number of employees for that month.

The model shows that a one percent increase in the manufacturing employment ratio is estimated to increase non-residential water use by almost 0.21 percent.

The observed maximum temperature is the explanatory weather variable in the non-residential model. The model shows a very strong relationship between maximum temperature and non-residential water use. The observed maximum temperature coefficient implies that a one percent increase in maximum temperature is estimated to produce a 1.4 percent increase in non-residential water use.

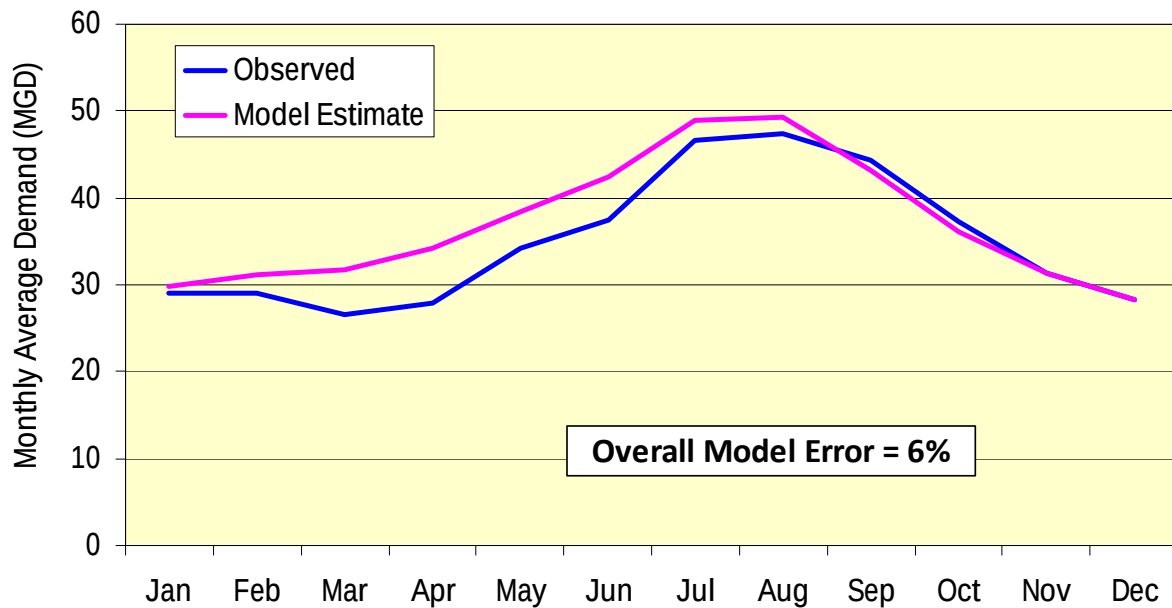
The conservation explanatory variable in the model is the count of active non-residential conservation programs. The model shows that a one percent increase in the number of active non-residential water conservation programs is estimated to produce a 0.05 percent decrease in the non-residential sector gallons per day.

Table 4 Non-Residential Water Demand Model				
Number of Observations				910
Adj. R-Square				0.4444
Explanatory Variables	Parameter Estimate	Standard Error	t Value	Pr > t
Intercept	-1.7232	0.2918	-5.91	<.0001
log Marginal Price of Water (year 2000 dollars)	-0.1757	0.0132	-13.27	<.0001
log Manufacturing Employment Ratio (% to total)	0.2147	0.0135	15.89	<.0001
log Maximum Temperature	1.4589	0.0715	20.41	<.0001
log Active Non-Residential Conservation (# of programs)	-0.0495	0.0180	-2.75	0.0060

4.3 Demand Model Verification

In order to test the overall accuracy of the combined residential and non-residential demand models, actual weather data and demographic data was input to the model for 2007. Then the results of the models were compared to actual water consumption for 2007. Figure 6 presents this comparison. As shown, the empirical demand models represent actual water consumption fairly well. Overall, the model error is approximately 6 percent.

Figure 6. Comparison of Demand Model Results to Actual Consumption for 2007



5.0 Water Demand Forecast

5.1 Uncertainty Approach and Assumptions

CDM developed a spreadsheet tool to forecast water demands, using the econometric models described in Section 4, along with projected demographic drivers and projected explanatory drivers. The software package called @Risk, which works in MS Excel, was utilized to produce probabilistic ranges in the demand forecast based on key uncertainties. For those variables that wish to be evaluated in terms of uncertainty, @Risk produces probability distribution function (PDF) using Monte Carlo simulation. Monte Carlo simulation involves random draws from either a predetermined range of data or estimated range of data using a selected distribution type (e.g., normal distribution, triangular, or skewed). @Risk also allows for correlations between certain variables to be estimated, which can impact the range of outputs. For example, temperature and precipitation are correlated (meaning when temperature increases, precipitation tends to decrease).

The variables that were included as part of the uncertainty analysis of water demand included:

1. Number of Households – Alternative PSRC demographic forecasts were used to establish lower and upper bound estimates, and @Risk was used to generate a normally distributed sample.

2. Total Employment – Alternative PSRC demographic forecasts were used to establish lower and upper bound estimates, and @Risk was used to generate a normally distributed sample.
3. Weather – Historical weather for the years 1949 to 2007 were used to generate a distribution of temperature and precipitation.
4. Price of Water – Upper and lower ranges around the baseline projection of marginal price of water were established by CDM, using professional judgment, and @Risk was used to generate a normally distributed sample.
5. Household Income – Upper and lower ranges around the baseline projection of household income were established by CDM, using professional judgment, and @Risk was used to generate a normally distributed sample.

Table 5 presents the projected ranges for these variables.

In addition, several alternative scenarios were tested as sensitivity in the water demand forecast:

Climate Change Scenario

In 2006, King County formed the Climate Change Technical Committee, made up of participants from King County, Seattle Public Utilities, Cascade Water Alliance, and other members. A technical report was generated that summarized a process used to select a represented sample from a dozen global circulation models and carbon emission scenarios. This sample of climate change was also used for the 2008 Regional Municipal Water Supply Outlook. The three represented climate change scenarios are:

- a. GISS_B1: “warm” regional climate change scenario with nearly the smallest increase in temperature, and nearly the largest decrease in precipitation
- b. ECHAM5_A2: “warmer” regional climate change scenario with mid-range increases in both temperature and precipitation
- c. IPSL_A2: “warmest” regional climate change scenario with large increase in temperature, and nearly the largest increase in precipitation

@Risk was then used randomly select from these three climate change scenarios in order to produce future estimates of temperature and precipitation. Table 6 presents a summary of how July temperature and annual precipitation change as a result of potential climate change.

Table 5
Ranges in Demographic, Socioeconomic and Weather Data
Used for Uncertainty Analysis of Water Demand

Year	Number of Total Households			Total Employment		
	Min Value	Mean Value	Max Value	Min Value	Mean Value	Max Value
2010	148,183	151,638	155,091	349,125	354,060	358,994
2020	172,684	178,936	185,187	405,691	414,739	423,783
2030	192,548	203,242	213,931	449,985	468,082	486,172
2040	214,573	229,378	244,179	483,611	511,582	539,538
2050	237,776	259,161	280,542	525,696	561,888	598,073
2060	265,114	294,722	324,325	571,551	620,908	670,242

Year	Real Price of Water (\$/HCF)			Real Household Income		
	Min Value	Mean Value	Max Value	Min Value	Mean Value	Max Value
2010	\$2.44	\$2.47	\$2.50	\$72,668	\$72,997	\$73,326
2020	\$2.76	\$2.92	\$3.08	\$73,462	\$74,285	\$75,107
2030	\$3.15	\$3.38	\$3.61	\$74,518	\$76,163	\$77,807
2040	\$3.19	\$3.65	\$4.11	\$75,517	\$78,479	\$81,439
2050	\$3.17	\$3.75	\$4.33	\$76,828	\$81,270	\$85,711
2060	\$3.06	\$3.75	\$4.44	\$77,743	\$84,159	\$90,573

Month	Average Monthly Max. Temperature (oF)			Monthly Precipitation (inches)		
	Min Value	Mean Value	Max Value	Min Value	Mean Value	Max Value
Jan	21.6	43.6	64.8	2.3	6.6	11.6
Feb	35.5	48.7	61.3	1.7	4.7	8.9
Mar	34.7	51.1	67.0	1.5	4.3	7.0
Apr	44.9	57.5	79.4	1.1	3.3	5.6
May	56.5	64.4	91.7	0.6	2.3	4.0
Jun	56.7	69.4	83.7	0.2	2.0	3.8
Jul	61.0	75.2	88.9	0.0	1.0	2.4
Aug	54.8	74.7	95.3	0.2	1.4	3.7
Sep	57.5	69.6	81.4	0.2	2.1	4.9
Oct	53.8	59.6	65.0	1.0	4.0	8.2
Nov	41.1	50.3	60.4	1.9	6.5	11.2
Dec	33.3	44.7	55.8	2.9	6.6	10.3
Ave/Total	46.0	59.1	74.6	13.7	44.8	81.5

Table 6
Projections of Temperature and Rainfall Based on Climate Change Scenarios

Year	Average Max. July Temperature (oF)			Mean Annual Precipitation (inches)		
	Low Scenario	Av. Scenario	High Scenario	Low Scenario	Av. Scenario	High Scenario
Current	75.2	75.2	75.2	44.8	44.8	44.8
2020	77.8	78.1	78.4	45.0	47.2	49.3
2040	78.7	79.0	79.5	45.3	47.8	50.2
2060	79.1	81.1	81.3	45.8	48.5	51.1

Regional Demand Contingency

One variable that Cascade wanted to test was regional demand contingency. This variable estimates the potential impact of additional demands for Cascade due to: (1) local supplies of water systems outside the eight Cascade members are compromised by contamination or regulatory actions; (2) Climate change leads to higher than expected demand throughout the region or reduced yield of existing regional or local supplies for water systems outside the eight Cascade members; or (3) growth in demand of local water systems not served by a regional supplier exceeds the capacity of local supplies. Any of these scenarios (or a combination of all three) could lead water systems in the region to request supplies from Cascade. This would represent an additional demand on top of the demands forecast by the econometric models discussed above. Therefore a demand contingency of 10 mgd was identified. The lower range of this regional demand contingency was set to 0 mgd, while the upper range was set at 20 mgd. A triangular distribution was assumed using @Risk to generate a sample. Table 7 presents the regional demand contingency.

Table 7 Regional Demand Contingency (mgd)			
Year	Low Range	Average Range	High Range
2010	0.0	0.0	0.0
2020	0.0	0.0	0.0
2030	0.0	0.3	2.5
2040	0.0	3.5	8.7
2050	0.0	6.8	14.0
2060	0.0	10.0	20.0

5.2 Demand Forecast Scenarios and Results

Working closely with Cascade, CDM developed three demand forecasting scenarios:

1. No climate change and no regional contingency water demands
2. With climate change and no regional contingency water demands
3. With climate change and with regional contingency water demands

For each of these demand forecast scenarios, a range of water demand forecasts are produced by the @Risk model. Table 8 summarizes the mean (or average) value of water demands for the three scenarios.

Table 8
Mean Water Demand Forecast Results (mgd)

Demand Forecast Scenario	2010	2020	2030	2040	2050	2060
No climate change, no regional demand contingency (baseline)	40.33	43.01	47.87	52.18	57.98	65.60
With climate change, no regional demand contingency	41.16	44.13	49.35	54.05	60.31	68.87
With climate change, with regional demand contingency	41.18	44.14	49.69	57.62	67.13	78.87

Climate change alone adds approximately 3 mgd of water demand to the baseline forecast scenario by 2060, while regional contingency alone adds 10 mgd of water demand by 2060. Table 9 presents the full range of water demand forecasts. The 95% level represents the demand which is expected to be exceeded 95 percent of the time, while the 5% level represents the demand which is expected to be exceeded 5 percent of the time.

Table 9
Full Range of Water Demand Forecast Results (mgd)

Year	No Climate Change, No Regional Demand Contingency				
	min	95%	mean	5%	max
2010	37.75	39.29	40.33	41.39	43.49
2020	39.36	41.52	43.01	44.50	46.93
2030	42.51	45.52	47.87	50.23	53.69
2040	43.75	48.93	52.18	55.41	60.23
2050	46.42	53.39	57.98	62.58	69.72
2060	51.47	59.27	65.60	72.11	80.93

Year	With Climate Change, No Regional Demand Contingency				
	min	95%	mean	5%	max
2010	38.56	40.08	41.16	42.26	44.74
2020	40.20	42.62	44.13	45.67	48.06
2030	43.51	46.95	49.35	51.80	55.33
2040	45.43	50.71	54.05	57.41	62.28
2050	49.55	55.65	60.31	65.05	71.52
2060	53.55	62.25	68.87	75.57	85.26

Year	With Climate Change, With Regional Demand Contingency				
	min	95%	mean	5%	max
2010	38.67	40.10	41.18	42.28	44.74
2020	40.39	42.61	44.14	45.71	48.06
2030	44.34	47.25	49.69	52.13	55.33
2040	47.71	53.49	57.62	61.77	67.12
2050	52.84	60.58	67.13	73.75	81.76
2060	57.59	69.38	78.87	88.44	99.40

Figures 7 through 9 present the full range in water demand forecasts for the three scenarios. The shaded area in these figures represents the entire range of the forecast, while the 95% and 5% exceedance represent the demands that could be exceeded 95 percent of the time or 5 percent of the time, respectively. As shown, the 95% and 5% exceedance forecasts are much tighter than the full range (shaded area). This is due to the normal (or bell shaped) distribution that is assumed for the demand drivers and explanatory variables shown in Table 4. Normal distributions assume that the bulk of the outcomes are clustered closer to the mean, and that the tails of the distribution are less probable.

Figure 7. Demand Forecast: No Climate Change, No Regional Contingency

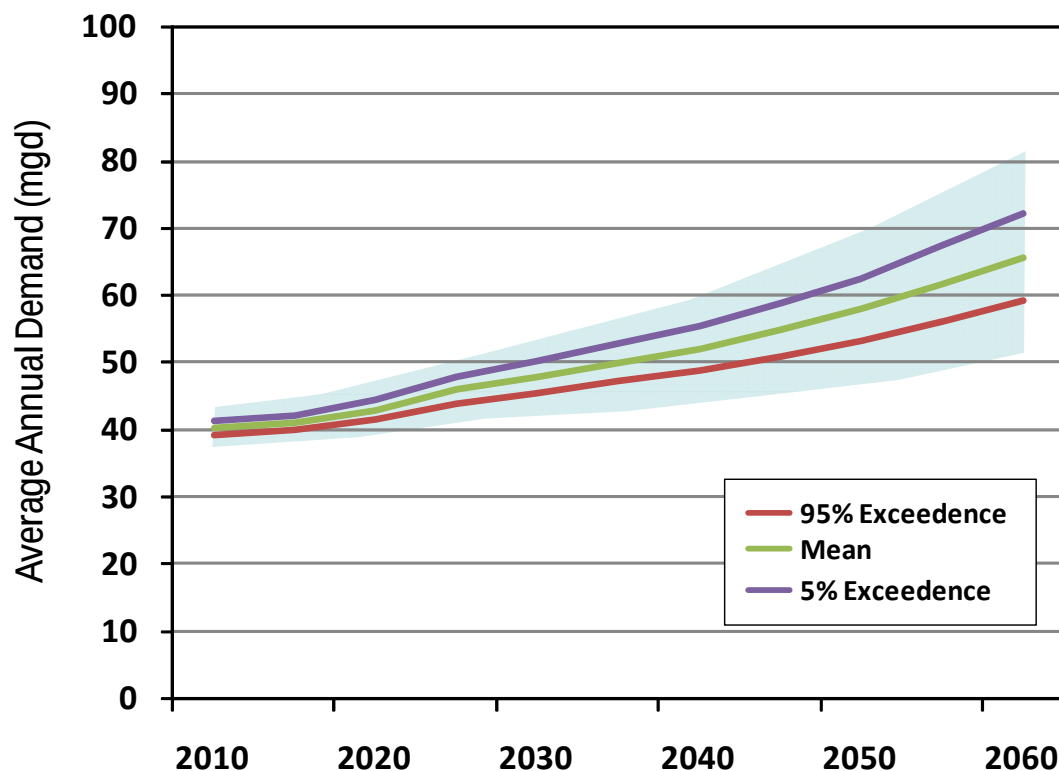


Figure 8. Demand Forecast: With Climate Change, No Regional Contingency

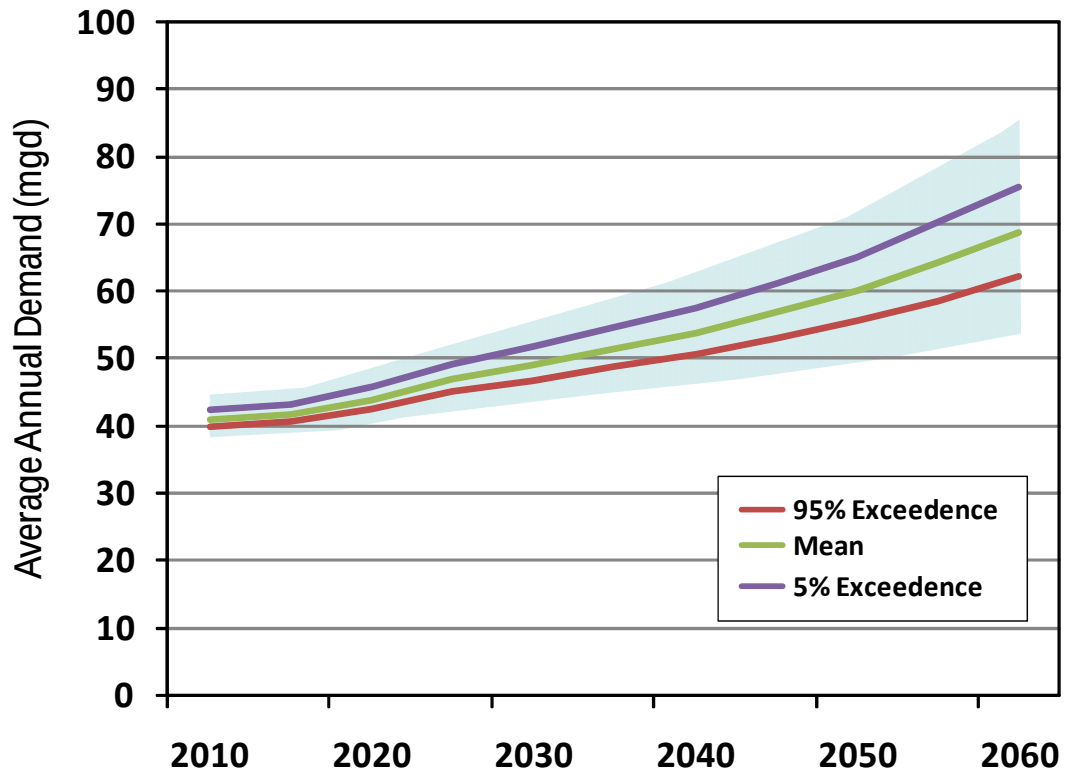
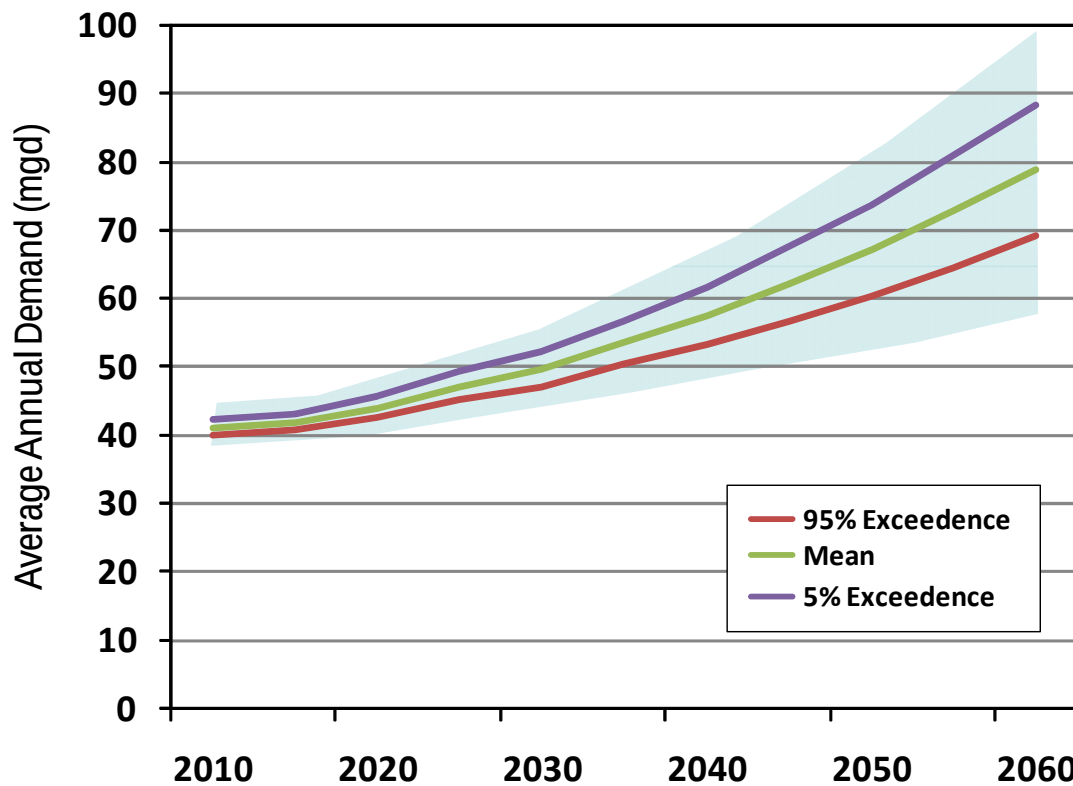


Figure 9. Demand Forecast: With Climate Change, With Regional Contingency



6.0 Conclusion

The comprehensive water demand forecast for Cascade indicates that the most likely range (90% confidence) without climate change or regional demand contingency is between 60 and 72 mgd by 2060. This range increases to 62 to 76 mgd by 2060 if climate change materializes as depicted in the three possible climate change models used in this study (note, there are approximately a dozen climate models vetted by the scientific community). When climate change and regional contingency are included, the most likely range in water demands is 69 to 88 mgd by 2060.

Also, it is important to understand that these statistical ranges in demand forecasts are based on a set of assumptions regarding data inputs. The range in data inputs may not reflect the entire possibility of outcomes. CDM relied on the best planning information available in setting these ranges, and only used professional judgment when planning information was not available. It is strongly recommended that these data inputs be revisited at least every 5 years in order to evaluate the short and long term trends of demographics, income and price of water. In addition, as future water conservation programs are implemented in the region, water usage may change (possibly dramatically). Therefore, Cascade should continue to monitor water demand trends in the service area.

Cascade Water Alliance
Revised Water Demand Forecast

October 18, 2010



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In association with



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Purpose

In December of 2009 a comprehensive water demand forecast was prepared for the Cascade Water Alliance (Cascade). The demand forecast utilized the latest demographic projections for the region developed by the Puget Sound Regional Council (PSRC) in 2006.

Water demands in Cascade's service area have been relatively flat for the past few years prompting the question that the demand forecast might be using overly optimistic assumptions regarding growth in the region, especially given the current economic recession.

As such, Cascade has requested that CDM and HDR re-examine the demand forecast and the associated demographic drivers to see what impact the current economic recession is having on the region's water use.

Approach

Given the urgency in needing this demand forecast re-assessment, a simplified approach for forecasting water demands was used based on the comprehensive analysis done back in December of 2009. This approach is as follows:

1. Revise projected households and employment projections based on reduced growth rates in earlier years to account for the economic recession
2. Utilize the unit use water factors for residential and non-residential sectors from the December 2009 demand forecast, which account for changes in price, income, mix of housing units and mix of employment
3. Apply the unit use water factors in step 2 to the revised projected demographics in step 1 to estimate the revised residential and non-residential water use
4. Apply the percent non-revenue water from the December 2009 forecast to the sub-total of residential and non-residential water use, then apply conservation from the December 2009 forecast in order to calculate the revised water demand forecast

Given the time urgency, the revised demand forecast will only be estimated for the baseline condition—meaning no probability analyses will be done. In other words, we are assuming no climate change, no variation in weather, no variation in price, income or demographics.

Revised Water Demand Forecast

Demographic Projections

Table 1 presents the PSRC demographic projections used in the December 2009 water demand forecast. These projections were based on PSRC's 2006 forecast model.

Table 1 Baseline Projections of Demographics for Cascade						
Year	Population	Households			Employment	
		Total	Single Family	Multifamily	Total	Industrial
2007	357,059	144,481	96,144	48,337	338,152	35,695
2010	371,753	151,150	99,721	51,429	354,101	34,096
2020	423,808	178,798	113,220	65,578	414,296	29,886
2030	465,382	203,705	124,146	79,559	468,547	26,563
2040	507,661	229,508	135,666	93,842	511,342	24,322
2050	554,181	259,387	148,547	110,840	567,427	22,272
2060	605,408	294,074	162,979	131,095	620,523	20,865

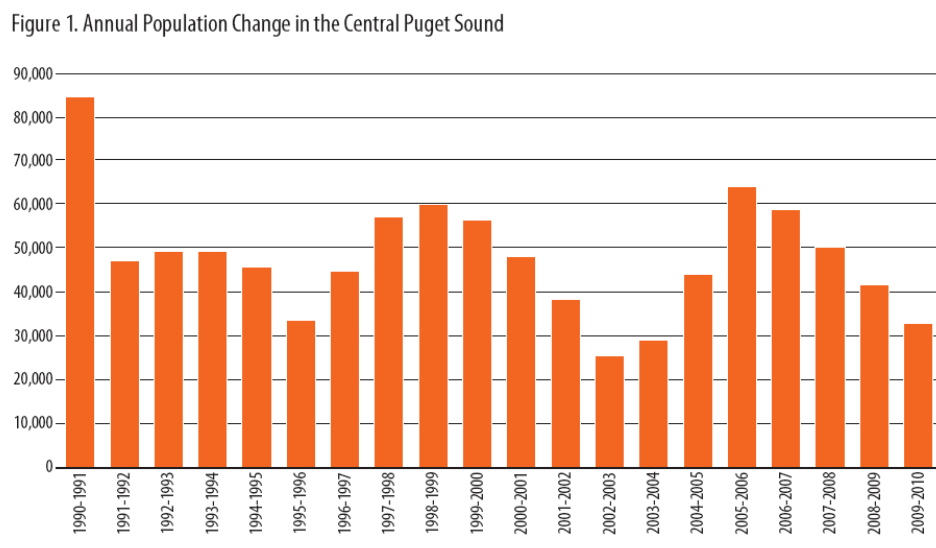
Source: PSRC demographic projections (2006), used in Cascade's Water Demand Forecast (Dec. 2009)

The average annual growth rates derived from these 2006 demographic projections are:

	<u>2007-2020</u>	<u>2021-2060</u>
Population	1.4%	1.1%
Housing	1.9%	1.6%
Employment	1.7%	1.2%

Two sources of recent data were used to compare the annual growth rates derived from Table 1 in order to determine the impact of the current economic recession on the region's growth: (1) a report on recent demographic trends from PSRC put out in September 2010 using recent Washington Office of Financial Management (OFM) population estimates; and (2) a revised forecast of equivalent residential units (ERUs) from Cascade's financial consultant, FCSG.

Figure 1 shows the overall annual population growth in the entire Puget Sound Region.



Source: U.S. Census Bureau, Washington State Office of Financial Management

As seen in this figure, annual population growth is half as much as it was in 2006 before the current economic recession. When King County is examined by itself, the annual growth rate from 2008 to 2010 averaged 1.3%, which is only 0.1% lower than PSRC's short-term demographic projections developed in 2006. The reason this difference is not larger given the significant drop in annual population growth shown in Figure 1, is because PSRC was showing much larger projected growth in Pierce and Snohomish Counties, both of which took significant hits in terms of recent growth due to the recession. This should be expected as King County is relatively built-out and has a stronger economic base in terms of employment.

However, Cascade's water demand forecast is not based on population, but on households and employment. And households and employment do not always follow the same trends in population, especially during economic recessions. During these economic downturns, people often stay with extended families or share housing as roommates rather than live alone. This results in greater persons per household, and fewer new homes. And higher unemployment during recessions translates into lower employment growth.

Since no updated housing and employment data existed at the time of this revised water demand forecast, another source of data was examined. Cascade's financial consultant FCSG has prepared an updated forecast of ERUs based on actual member data from 2005-2010. ERUs represent a combination of all new meters, residential and non-residential, converted to an equivalent residential meter size. Table 2 presents this data from 2005 to 2016.

Table 2
Equivalent Residential Units for Cascade

Member Utilities	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Bellevue	63,107	64,353	64,622	65,169	65,519	66,142	66,281	66,461	66,662	66,873	67,114	67,388
Covington	14,036	14,904	16,243	16,578	17,141	17,276	17,325	17,396	17,516	17,959	18,475	19,060
Issaquah	9,117	10,105	10,119	10,514	10,961	11,012	11,137	11,219	11,289	11,337	11,393	11,456
Kirkland	17,000	17,299	17,558	17,712	17,773	17,847	17,936	18,157	18,182	18,208	18,234	18,260
Redmond	27,614	28,677	29,324	29,749	30,251	30,634	31,027	31,283	31,797	32,345	32,986	33,725
Sammamish Plateau	20,155	20,674	20,848	20,954	21,153	21,289	21,520	21,826	22,176	22,547	22,981	23,481
Skyway	3,761	3,773	3,782	3,790	3,800	3,800	3,805	3,812	3,820	3,828	3,838	3,849
Tukwila	8,459	8,473	8,503	8,538	8,567	8,577	8,593	8,615	8,639	8,665	8,694	8,727
Total	163,247	168,258	170,997	173,002	175,163	176,575	177,625	178,769	180,081	181,762	183,715	185,946
% Growth		3.1%	1.6%	1.2%	1.2%	0.8%	0.6%	0.6%	0.7%	0.9%	1.1%	1.2%

Source: FCSG, 2010

As this data represents both residential and non-residential meters, the annual growth rates from 2010 to 2016 were applied to the 2007 housing and employment data in Table 1 in order to obtain a revised demographic projection through 2020. Beyond 2020, the long-term annual growth rates from the 2006 PSRC demographic projections were used. Table 3 presents the revised demographic projections for housing and employment compared to the 2006 PSRC projections.

Table 3
Revised Demographic Projections for Cascade

	PSRC Projections (2006)		Revised Projections (2010)	
	Housing	Employment	Housing	Employment
2007	144,481	338,152	144,481	338,152
2010	151,150	354,101	149,302	349,434
2020	178,798	414,296	168,864	386,514
2030	203,705	468,547	193,918	440,216
2040	229,508	511,342	219,930	482,117
2050	259,387	567,427	250,299	537,684
2060	294,074	620,523	285,859	590,169

As shown in Table 3, by the year 2060, total housing units is approximately 8,200 lower for the revised demographic projections; while employment is approximately 30,300 lower.

Water Unit Use Factors

Table 4 presents the water unit use factors that were derived from Cascade's December 2010 water demand forecast for residential and non-residential sectors. The significant reduction in residential unit use from 2010 to 2020 is mainly attributed to the significant increases in water price, as projected by FCSG in the earlier years of the forecast. The decrease in non-residential unit use throughout the forecast period is

mainly due to the expected decline in heavy manufacturing employment, as projected by PSRC.

Table 4
Unit Use Water Factors for Cascade

Year	Residential (Gal/Home/Day)	Non Residential (Gal/Employee/Day)
2010	181.6	28.8
2020	172.6	26.3
2030	177.6	24.3
2040	177.6	23.1
2050	177.6	22.1
2060	177.6	21.1

Source: Derived from Cascade's water demand forecast (Dec. 2009)

Water Demand Forecast

Applying the unit use water factors (Table 4) to the revised demographic projections (Table 3), and then applying the 7.4% non-revenue water from the Cascade member survey results in a revised water demand forecast without conservation. The previous water conservation estimates from the December 2009 forecast was then subtracted in order to develop a revised water demand forecast with conservation (see Table 5).

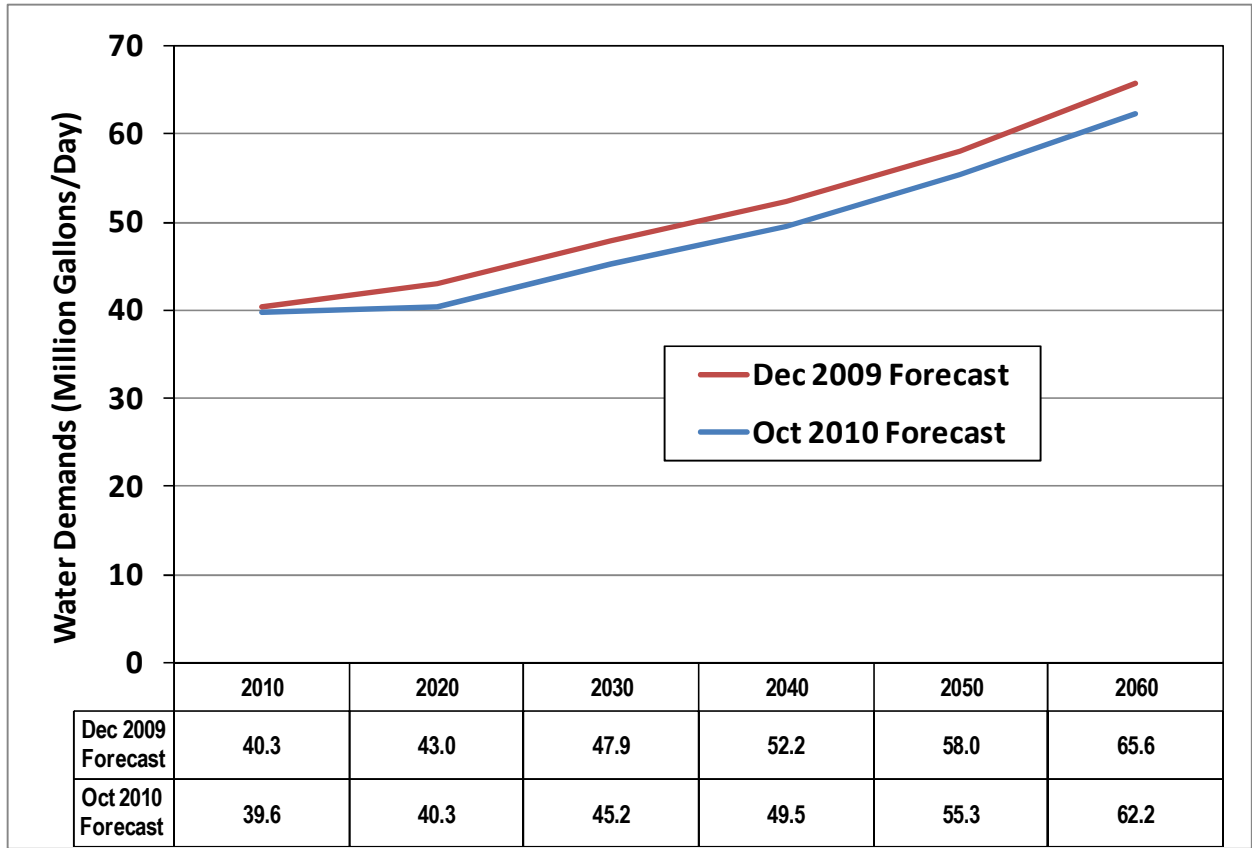
Table 5
Revised Water Demand Forecast for Cascade

Year	Without Conservation Forecast				Conservation (mgd)	Total with Conservation (mgd)
	Residential (mgd)	Non Residential (mgd)	Non Revenue (mgd)	Total (mgd)		
2010	27.1	10.1	3.0	40.1	0.5	39.6
2020	29.1	10.2	3.1	42.5	2.2	40.3
2030	34.4	10.7	3.6	48.7	3.5	45.2
2040	39.1	11.1	4.0	54.2	4.7	49.5
2050	44.5	11.9	4.5	60.8	5.6	55.3
2060	50.8	12.5	5.1	68.3	6.1	62.2

Figure 2 shows the comparison between the December 2009 (see Table 8 of that report) and October 2010 demand forecasts. The results indicate that water demands will continue to be relatively flat for the next 10 years if planned conservation is implemented successfully. Beyond 2020, water demands will increase by about 1.05 percent annually through 2060.

The difference between the December 2009 and October 2010 demand forecasts by 2060 is 3.4 mgd.

Figure 2. Comparison of Water Demand Forecasts for Cascade



Memorandum

Cascade Transmission and Supply Plan



To: TSP Project File (98140)
From: Andrew Graham
Date: November 28, 2011
Title: 2010 Adjustments to Demand Forecast

Forecasted water demands used in the Cascade Transmission and Supply Plan were developed in a stages from 2009 to 2010. These stages are summarized here as a record of the forecasting procedure.

2009 Demand Forecast

CDM prepared the initial demand forecast in 2010 using methods documented in the technical memorandum *Water Demand Forecast, Task 600* dated December 18, 2009. The memorandum includes forecasts with and without the effects of climate change. Monte Carlo techniques were used to generate a range of forecasts at the 95% (low forecast) and 5% (high forecast) certainty levels around the mean forecast. Based on past experience with forecasts rooted in Puget Sound Regional Council (PSRC) data, Cascade made a policy judgment to use only the lower portion of this range, from the 95% (low forecast) to the mean forecast, in its Transmission and Supply Plan.

2010 Updated Demand Forecast

Due to the “Great Recession” and related observations of a sharp decline in actual new connections, Cascade requested that the original forecast be adjusted to reflect actual demands in 2009 and revised growth expectations. CDM provided a revised forecast using methods documented in the technical memorandum *Revised Water Demand Forecast* dated October 18, 2010. The revised forecast was solely for the mean water demand curve (no uncertainty range), and did not include an adjustment for climate change. This approach was used in order to avoid the extensive work effort needed to generate a complete revised forecast with climate change and uncertainty included.

HDR performed rough calculations to generate an approximate range of demands from the 95% to mean; and including climate change. The procedure for doing this was as follows:

- 1.) The difference between the forecast with and without climate change from the 2009 technical memorandum was calculated for each decade of the forecast from 2010 to 2060.
- 2.) The climate change difference was reduced proportionately to reflect the lower mean forecast developed in 2010. For example if a demand value for a given decade in the 2010 forecast was 97% the level of the 2009 forecast, then the difference from climate change in that same year was also reduced to 97% of the original difference.

- 3.) The adjusted climate change value was added to the 2010 mean forecast, to yield a climate-change-adjusted 2010 mean forecast. See table below.

Year	Oct. 2010 Forecast w/o Climate Change (mgd)	Climate Change Adjustment	New Forecast with Climate Change		Dec. 2009 Forecast with Climate Change	2010 Reduction from Dec. '09 Forecast
2010	39.6	0.8	40.5		41.2	-0.7
2020	40.3	1.1	41.3		44.1	-2.8
2030	45.2	1.4	46.6		49.4	-2.7
2040	49.5	1.8	51.3		54.1	-2.8
2050	55.3	2.6	57.9		60.3	-2.4
2060	62.2	3.1	65.3		68.9	-3.6

- 4.) In order to provide a 95% demand curve (low forecast) for the revised 2010 forecast, HDR generated low values for each decade, proportional to the 2009 forecast. For example, for a given decade if the 2009 low climate-adjusted forecast was 92% of the mean climate-adjusted forecast, HDR applied this same ratio to the mean 2010 forecast in that same year.

APPENDIX F

Cascade Connections Group Summary Report

Cascade Water Connections Working Group



Summary Report

December 2010

TABLE OF CONTENTS

Introduction.....	1
Background.....	2
Development of Transmission and Supply Plan.....	2
Water Demand Projections.....	3
Formation of Working Group.....	5
Purpose and Objectives.....	5
Mission Statement.....	5
Principles of Participation.....	5
Roster of Members.....	7
Schedule of Meetings.....	9
Summary of Meetings.....	10
Conclusions.....	13
Appendix A – Personal Statement on the Process from the Facilitator’s Perspective	
Appendix B – Meeting Agendas and Summaries	
Appendix C – Evaluation Criteria and Weightings	

INTRODUCTION

Cascade completed its initial Transmission and Supply Plan (TSP) in 2004, outlining a program for Cascade to meet the future water supply needs of its members. As the name of the TSP implies, the plan includes an analysis of current and future water supply sources as well as the means for delivering those supplies. Over the course of five years, even though required by law, the need for an update of the TSP became increasingly apparent, as many factors evolved over that time. The desire for and benefits of greater regional collaboration also emerged. In that context, an updated TSP was initiated in 2009, along with the creation of a Working Group composed of regional stakeholders. The efforts of the group, named the Cascade Water Connections Working Group, are summarized in this report.

BACKGROUND

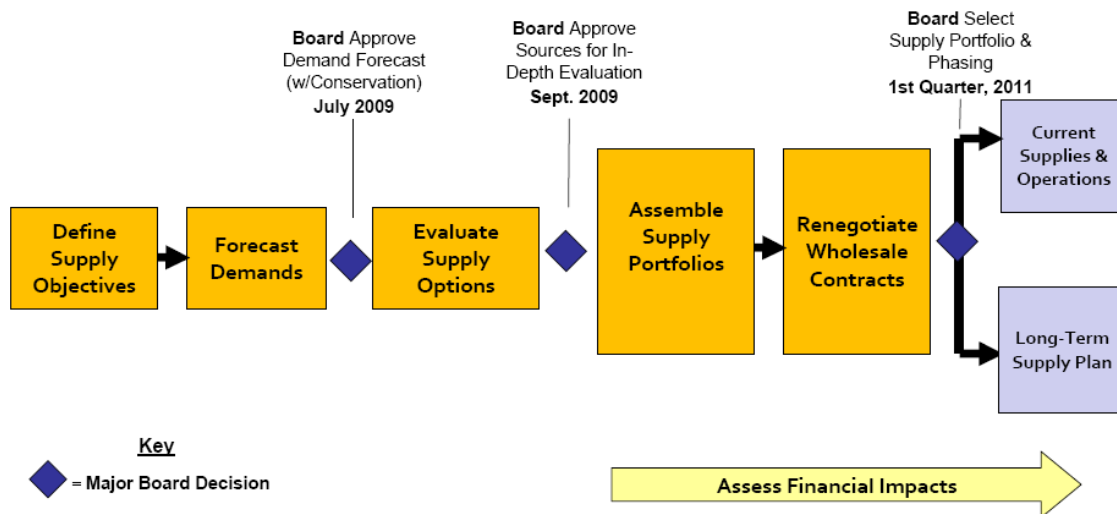
Development of Transmission and Supply Plan

The 2010 TSP is based on several explicit planning objectives. These objectives state that the 2010 Plan should:

- Consider a broad range of supply alternatives and project partnerships to identify a viable portfolio of water sources that can provide Cascade members with secure and reliable supplies through at least 2050
- Consider how investments in supply and infrastructure could serve other regional needs or improve the reliability of supply in the region
- Enable rates to be managed at acceptable levels over the short and long terms
- Provide flexibility to adjust to changing circumstances or new opportunities
- Recognize the declining nature of existing wholesale supply contracts
- Apply clear criteria and rationale for recommended actions and provide a sound basis for communication with all stakeholders in the region

A key feature of the TSP development process was a clearly stated set of milestones, with specific opportunities provided for the Working Group to provide its input at key decision points. A figure describing this approach appears below.

TSP Process and Milestones



Water Demand Projections

A big part of developing a Transmission and Supply Plan is determining how much water demand one is trying to satisfy, and with what assurances, in the face of long-term planning uncertainties. In turn, a significant factor in projecting water demand is determining how much water can be conserved, now and in the future, in order to reduce demand. Other obvious factors include population growth, income growth, plumbing and development codes, the size and type of new dwellings being built in the region (e.g., single family versus multi family) and the rate of formation of new households.

Throughout the development of the TSP, new data continued to suggest that many of these factors were pointing towards both a temporary and permanent softening of water demand. At the same time, conservation goals were being achieved ahead of planned schedules. As a result, the water demand curve remained a dynamic target up until the final adoption of the TSP. Connections Working Group members were kept apprised of these factors throughout their meetings and presented with updated demand curves as they were developed.

Given the Connections Working Group's regional diversity, the group was helpful in reviewing and providing feedback on the appropriateness of reduced demand curves as well as strategies for meeting that demand. Key issues considered by the group included the timing of development of Lake Tapps as a resource, the ramifications of building transmission lines that would interconnect water resources and utilities in the region, and the relative contribution to the supply portfolio of smaller alternative water sources that have yet to be developed.

Another dynamic element were ongoing negotiations between Cascade and the water utilities owned by Seattle and Tacoma related to Cascade purchasing temporary and permanent water supplies from those utilities. Generally, the softening of water demand for those utilities meant more water was potentially available in the near term for sale to Cascade.

Taken together, all of these interrelated and dynamic factors presented a challenging environment in which the TSP was developed and the Connections Working Group was called upon to provide its insights and feedback. Fortunately, the design of the Working Group had three features that served Cascade and the Connections Working Group well throughout the process. The first feature was that meetings were scheduled as needed, based on the milestones in the TSP development process. Instead of meeting at regular but arbitrary intervals, the group met whenever there was sufficient progress in the developmental steps of the TSP's preparation to present new information and issues for the Working Group's consideration and input. The second feature, and a hallmark noted by all of the group's members, was the exceptional degree of transparency and disclosure by Cascade and its technical team throughout the process. There were no "off-limit" questions, and any backup data or documents that members of the group thought were relevant were promptly made available. Thus, whatever information or issues that the group wanted to "drill down" into was accommodated and incorporated into the group's

agenda. The third feature was Cascade's decision to use a neutral facilitator to conduct the meetings, develop agendas, prepare meeting summaries and generally administer the Working Group throughout the process. By using an independent facilitator, Cascade was able to demonstrate its commitment to the transparency of the process, the independence of the Working Group and its trust in the collective wisdom offered by the group. Because of the unique vantage point of the neutral facilitator, Appendix A contains a brief set of observations by the facilitator about the Working Group process.

FORMATION OF WORKING GROUP

Purpose and Objectives

The Cascade Water Connections Working Group was convened to assist the Cascade Water Alliance in evaluating the Transmission and Supply Plan (TSP) to ensure that community, stakeholder and purveyor values and input were included in the supply and demand planning process. The Cascade Water Alliance sought the valuable participation and feedback of the members of the Connections Working Group in this planning effort. Members of the Connections Working Group were asked to provide input to Cascade staff at various milestones in the TSP supply and demand planning process. Specifically, the working group members were requested to review the draft list of water supply and transmission projects developed by the consultant team and suggest modifications if appropriate; provide feedback on the consultant team's evaluation of water demands and supply options; and summarize discussions at the conclusion of the process in the form of a comprehensive, written report to be presented to the Cascade Board of Directors.

The Mission Statement and Principles of Participation that follow are the ones that were presented to the Connections Working Group at its formation. Where the process ultimately did not strictly follow this plan, it has been modified as noted.

Mission Statement

The mission of the Cascade Water Connections Working Group is to assist the Cascade Water Alliance staff in evaluating the Transmission and Supply Plan (TSP) and to ensure that community, stakeholder and purveyor values and input are included in the planning process.

Principles of Participation

Role of Committee Members

The Cascade Water Alliance (Cascade) is asking participants of the Cascade Water Connections to assist Cascade and its planning consultants to review components of the TSP during its development. Working group members are being asked to:

- Become knowledgeable about regional water issues, including water supply resources, transmission facilities and regional water needs.
- Become familiar with Cascade and its role in regional water planning and water supply.
- Become familiar with Cascade's member agencies and water districts and the services they provide.
- Provide input to Cascade staff at various milestones in the TSP supply and demand planning process. Specifically, it is requested that working group members:
 - Provide feedback to the consultant team's evaluation of water demands and supply options.

- Review the draft list of water supply and transmission projects developed by the consultant team and suggest modifications if appropriate.
- Finalize feedback and forward in a comprehensive report to the Cascade Board of Directors.

Representation

Participants are being sought based upon several qualities:

- Willingness to work cooperatively with other working group members.
- Commitment to consistently attend the working group meetings.
- Ability to present the perspective of an organization or constituency.

Working group members are encouraged to report back to his or her respective constituency, when appropriate, to inform them about the working group's discussions and the progress of the TSP development. Meeting minutes will be prepared to facilitate this effort. Cascade staff and consultants will be available to assist in this communication process, if desired.

Discussion Process

Working group members agree to abide by the following discussion process:

- All perspectives are valued.
- One person speaks at a time.
- The preferred deliberation process is collaborative problem solving.
- In cases of non-consensus, alternative perspectives will be documented.
- Working group members treat each other with respect.
- A neutral third-party of Katz & Associates, Inc. will facilitate the meetings.

Meeting Attendance

For the process to work effectively, full participation of members will be essential. Working group members are asked to commit to attend meetings consistently. If a working group member becomes unavailable to attend a meeting, he or she may send an alternate to monitor that meeting. The alternate should be briefed by the working group member regarding the status of prior discussions and decisions, and should be able to faithfully represent the perspectives of the member for which they are serving as an alternate. Active participation by the alternate is permissible if the alternate does not impede the progress of the working group.

Support

A neutral third-party facilitator of Katz & Associates, Inc. will conduct all working group meetings. The role of the facilitator is to ensure all perspectives are heard through a collaborative discussion process. Cascade staff and consultants will provide technical and logistical support, including making presentations, answering questions, coordinating meetings and documenting meeting content. Meeting discussions may be audio taped to aid in the preparation of meeting summaries.

Meeting Agendas

Working group participation in establishment of agendas and matters of discussion will be encouraged. Cascade staff and the facilitator will be responsible for preparing the agendas in collaboration with working group members. At the conclusion of each meeting, staff and working group members will recommend items for inclusion in the next agenda and any action items requiring additional research. Agendas will be distributed by e-mail in advance of each meeting.

Timeline

The draft TSP will need to be completed by September 2010, and finalized by December 2010 [The draft TSP is actually being completed in 2011]. The working group will meet to review information, provide input and suggested modifications, if any, prior to key milestone points in the TSP process. To ensure consistency during this schedule, it will be important for the working group to address items presented at each meeting as fully as possible. Lengthy discussions on items for which a majority consensus cannot be reached should be limited.

Work Product

The working group will be asked to summarize its discussions at the conclusion of this process in the form of a written report. The written report will be prepared by the facilitator, in collaboration with working group members. A draft summary report will be presented to the working group for review and comment. It is suggested the report document the following:

- The scope and content of the working group's discussion.
- Feedback to Cascade staff regarding specific input related to supply options and regional water and transmission issues.
- Individual opinions and observations that may not be reflected in the main body of the report.

The working group's feedback will be presented to the Cascade Board at the conclusion of the working group's deliberations. This feedback will be a part of the overall background, research and technical findings that staff provides to the Cascade Board for their consideration and ultimate policy decision.

Roster of Members

Twenty-nine individuals participated in the Working Group as representatives of regional water planners and regulators, government, regulatory agencies, Tribes, the business community, local planning groups/downtown associations, employers, environmental groups, developers, academia, good government interests, and ratepayers. The full roster of Cascade Water Connections Working Group members is presented in Table 1.

Table 1: Connections Working Group Roster of Members

Name	Organization
Walt Canter	East King County Regional Water Association
Andrew Dunn	Washington State Department of Ecology
Ryan Harris	King County - Roads
Steve Hirschey	King County DNRP
Mark Howe	Microsoft
Bob James	Washington State Department of Health
Michael Johnson	Redmond Chamber of Commerce
Joan Kersnar	Seattle Public Utilities
John Kirner	Tacoma Water
Leslie Lloyd	Bellevue Downtown Association
Ralph Mason	Lake Tapps Community Council
Tim McDowd	Kirkland Neighborhood
Linda McCrea	Tacoma Water
Dave Monthie	King County DNRP
Meg Moorehead	Seattle City Council Staff
Beth Mountsier	King County Council's Physical Environment Committee
Bob Pancoast	East King County Regional Water Association
Paul Reitenbach	King County DDES
Lydia Reynolds-Jones	King County - Roads
Anna Rising	Kirkland Neighborhood
Ron Sheadel	Cedar River Water & Sewer District
Denise Smith	League of Women Voters
Sharon Steinbis	Sammamish Community
Sheila Strehle	Seattle Public Utilities
Dr. Leon Stucki	Lake Tapps Community Council
Jeannie Summerhays	Washington State Department of Ecology
Skip Swenson	Cascade Land Conservancy
Sue VanRuff	Maple Valley Chamber of Commerce
Don Wright	South King County Regional Water Association

Schedule of Meetings

As mentioned in the Background section, both the TSP development process and the opportunities for the Working Group to provide its input were based on a step-by-step set of milestones (See Figure 1). Consequently, there were several Working Group meetings in the beginning of the process (latter half of 2009) as several milestones were being achieved in relatively rapid succession. In 2010, the technical effort to develop and refine alternative portfolios of supply options involved an intensive and time-consuming process of analysis and iterative development. This resulted in meetings that were still milestone driven but spaced much farther apart. The resulting schedule of meetings of the Working Group is shown in Table 2.

Table 2: Meeting Schedule

Mtg #	Date and Time	Location	Topic
1	Tuesday, June 30, 2009 8 a.m. to 12 p.m.	Bellevue City Hall, Room 1E-108	Introductions Overview of Cascade and background on regional water resources
2	Thursday, August 13, 2009 9 a.m. to 12 p.m.	Bellevue City Hall, Room 1E-108	Supply alternatives Screening criteria
3	Thursday, September 10, 2009 8 a.m. to 11:30 a.m.	Kirkland City Hall, Peter Kirk Room	Short list of supply alternatives
4	Friday, December 11, 2009 8 a.m. to 11:30 a.m.	Bellevue City Hall, Room 1E-108	Short list of supply alternatives (continued) SEPA process
5	Thursday, April 15, 2010 8 a.m. to 11:30 a.m.	Bellevue City Hall, Room 1E-108	Initial supply portfolio alternatives
6	Friday, November 12, 2010 8 a.m. to 11:30 a.m.	Bellevue City Hall, Room 1E-108	Final water demand projections and supply portfolio alternatives

SUMMARY OF MEETINGS

A total of six meetings of the Connections Working Group was held from June 2009 to November 2010. Figure X, which outlines the steps in the TSP's development, provided the framework for identifying the appropriate points in the process where the Working Group's insights and feedback were needed to evaluate and modify, at Cascade's discretion the work accomplished to that point and review the planning for the next step in the TSP. Below is a brief summary of each meeting's purpose and outcomes.

Meeting 1 – June 30, 2009

The purpose of the first meeting was to clarify the group's mission, present an overview of the Cascade Water Alliance for those who were unfamiliar, and provide background information on regional water resources and the steps that would be followed in preparing a Transmission and Supply Plan, including the initial development of a water demand forecast. The group had many questions about the assumptions used in developing a forecast and requested more details be provided about the demand forecast sensitivities, scope and data sources. Staff agreed to provide this information before the next meeting.

Meeting 2 – August 13, 2009

The second meeting delved more deeply into the methods for developing water demand forecasts, introduced the water supply options that would be evaluated in the TSP, and presented an initial ranking of those options based on evaluation criteria developed by the technical team. Working Group members requested more detailed information on the supply options and discussed the significance and weighting of the evaluation criteria. Following that discussion, the group was asked to participate in an exercise to develop its own weighting of the criteria, similar to the exercise that was used by the Cascade Board and staff to develop theirs. Cascade staff indicated the group's weighting of the criteria would be used to perform an evaluation and ranking of the supply options and then compared to Cascade's rankings at the next meeting.

Meeting 3 – September 10, 2009

The third meeting focused in more detail on how the Cascade water supply option rankings were determined and compared them to the rankings that were produced by applying the criteria weighting developed by the Connections Working Group. The group observed that while some minor shifts in the supply option rankings occurred depending in which weightings were used, the top ranked supply options remained at the top and the bottom ranked options remained at the bottom. The group was also presented with alternative ways of evaluating the supply options in which financial factors were reduced or removed. This analysis produced rankings similar to the other two. The group then considered staff recommendations for eliminating the lowest ranked supply options from further consideration. Since the practical effect of this screening process was only to eliminate from consideration a small number of projects at the very bottom of the list, the group concluded the resulting list of options for inclusion in the next phase of the TSP evaluation was appropriate.

Meeting 4 – December 11, 2009

At the fourth meeting, an updated and refined demand forecast was presented. The primary meeting topic was a presentation of five combinations of different supply options that had been developed as alternative portfolios designed to meet that demand. Each portfolio presented the supply options phased in over the 50-year TSP planning horizon to show how supply would increase over time to meet the upward slope of the demand curve. Variations included how much water might be negotiated in purchase agreements with Seattle and Tacoma, when or if Lake Tapps was brought on line as a resource, and the inclusion or exclusion of additional resources such as reclaimed water. Given that a financial analysis of the portfolios was still under development and no ranking of the portfolios had been performed, the group's discussion centered primarily on clarifying the differences between the portfolios and making suggestions regarding the phasing of supply options.

Meeting 5 – April 15, 2010

The group was provided with an updated status on the securing of water rights for Lake Tapps and the negotiations with Seattle and Tacoma for additional water purchases in the future, both of which figure prominently in the viability and characteristics of the various supply portfolios. The group was then presented with the three portfolio alternatives that had been selected for continued evaluation. All three of those portfolios included Lake Tapps as a source, but varied as to when it was assumed Lake Tapps would begin supplying water, ranging from 2030 to 2060. The portfolios were compared to each other in terms of their relative strengths, looking at their benefits, drawbacks, risks and financial impacts. Risk was evaluated in a number of contexts, including the potential for impacts from seismic events, climate change, construction challenges, and ability to adapt to evolving demands. Key differences among the portfolios in terms of risk were highlighted, along with the potential for mitigating those risks. The Working Group asked a number of questions about how the risks were evaluated and how uncertainty was handled for factors such as cost, competition for resources, climate change and how much water might be available from Tacoma and Seattle in the final analysis. Cascade staff indicated they would come back to the Working Group when factors such as these and the securing of water rights for Lake Tapps were closer to being concluded so that a more definitive analysis of cost and risk could be provided. In the meantime, the general conclusion was that the portfolios that secured more water from Tacoma and Seattle and assumed a later date for Lake Tapps to begin supplying water had the least risk.

Meeting 6 – November 12, 2010

For the final meeting of the Connections Working Group, the Cascade technical team recapped how all of the original TSP planning objectives had been met and presented the adopted demand forecast for the TSP based on the best and latest available data. They also presented their conclusion that not only are all three of the supply portfolios presented at the last meeting viable, but that by sharing regional supplies, risk is reduced and costs are deferred. The remaining steps in finalizing the TSP for adoption by the Cascade Board were outlined, including the Board selecting an approved supply portfolio and receiving a report about the work of the Connections Working Group. To that end, a proposed outline for the report was presented by the group's facilitator and accepted by

the group. The facilitator then prepared a Working Group Report based on that outline, which was reviewed and commented on by the Working Group. In terms of the group's conclusions, members volunteered a number of lessons learned that were particularly focused on the process used to involve them in the development of the TSP. These conclusions are summarized in the next section, along with observations from the neutral facilitator.

CONCLUSIONS

The purpose of the Connections Working Group, as reflected in its mission statement, was primarily to serve as a sounding board for the technical team as it developed the Transmission and Supply Plan. The Working Group's feedback was provided incrementally at each milestone of the Plan's development and helped steer the direction of the TSP as it proceeded. As such, the Working Group did not develop final recommendations per se. However, members vocalized throughout the process and punctuated at the last meeting their belief that the working group had been an effective tool for vetting the Plan's development in the region. Specific observations about the working group approach included the following:

- Useful to do again
- Good model
- Good transparency with presenting research and options
- Graphics in handouts and presentations were strong and informative
- Chuck Clarke and Lloyd Warren did not actively participate; sometimes it was confusing what their involvement was [Response: Mr. Clarke was debriefed after every meeting and was shown everything]
- Milestone based meeting schedule was effective
- Summary report will be helpful in capturing conclusions from group
- Group was used to identify any red flags
- First experience with an "affirmation committee," meaning the group was used to evaluate and provide feedback on the technical work of the team preparing the TSP.
- Cascade responded to a new environment; used regional approach and collaboration to be successful
- It was a useful exploration of a broad regional tool
- It was useful to bring people from diverse backgrounds together and put them in "Cascade's chair;" everyone came together in conclusion
- Excellent process in which all group members were invited to come and give input; good opportunity for the state to observe and participate as well
- Cascade responded well to dynamic shifts in planning context, opportunities and constraints
- Made overall planning process more complete

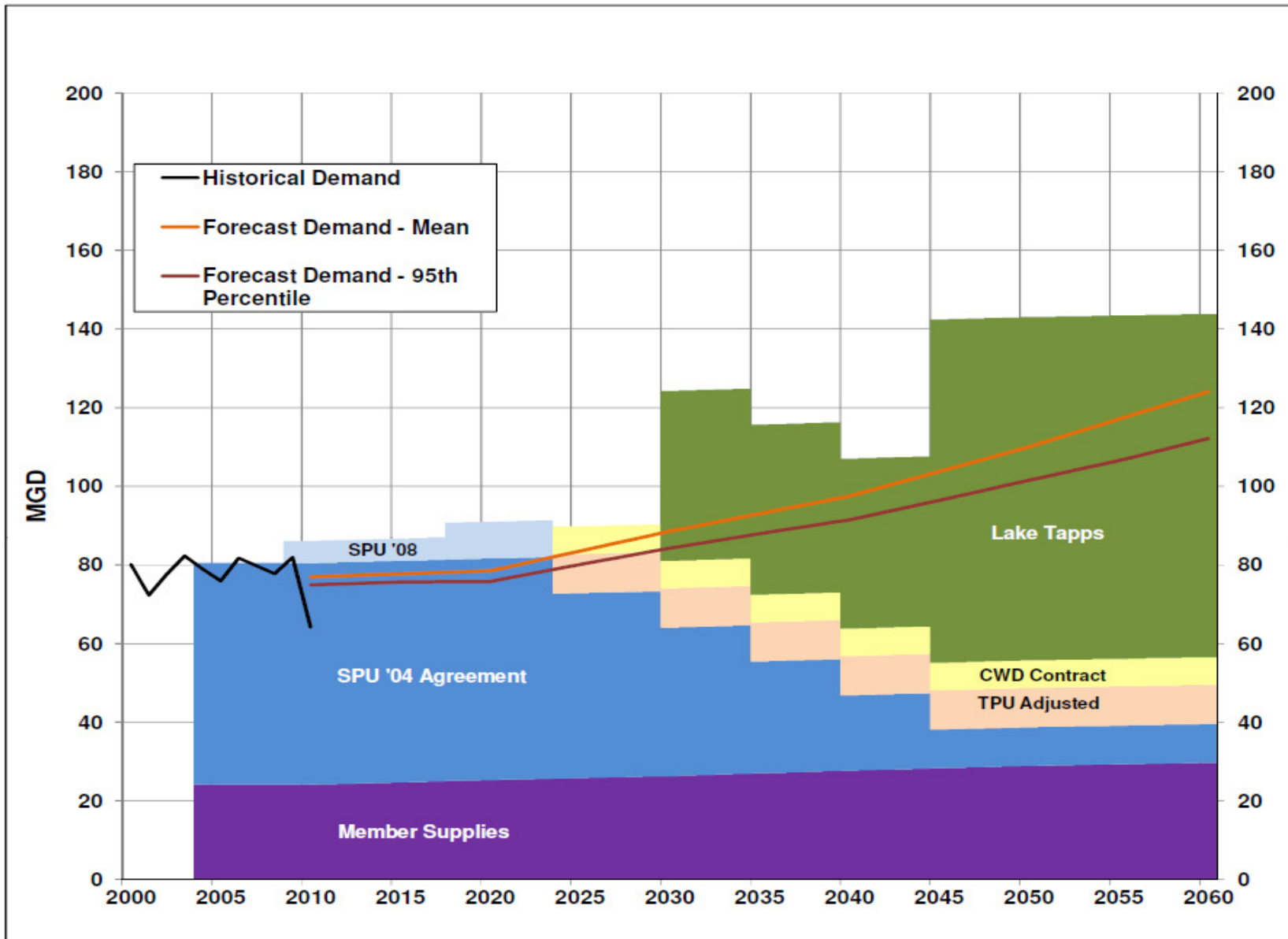
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APPENDIX G

Preferred Supply Portfolio

Cascade Supply Portfolio
Maximum Week Conditions

Cascade Supply Portfolio Maximum Week Conditions



Demand Components - Maximum Week (MGD)			
Year	Historical Demand (Actual)	Forecast Demand: Updated B Mean, with Peaking at 1.9 (Dec. 2010)	Forecast Demand: Updated B, Constructed 95%, peaking 1.9 (April 2011)
2000	80.12		
2001	72.30		
2002	77.62		
2003	82.30		
2004	78.96		
2005	75.90		
2006	81.74		
2007	79.74		
2008	77.72		
2009	81.90		
2010	64.17	76.95	74.93
2011		77.10	75.07
2012		77.25	75.21
2013		77.41	75.36
2014		77.56	75.50
2015		77.71	75.64
2016		77.86	75.66
2017		78.01	75.69
2018		78.17	75.72
2019		78.32	75.75
2020		78.47	75.78
2021		79.48	76.65
2022		80.48	77.51
2023		81.49	78.37
2024		82.50	79.23
2025		83.51	80.09
2026		84.51	80.92
2027		85.52	81.75
2028		86.53	82.58
2029		87.53	83.41
2030		88.54	84.23
2031		89.43	84.98
2032		90.33	85.72
2033		91.22	86.46
2034		92.11	87.21
2035		93.01	87.95
2036		93.90	88.65
2037		94.79	89.35
2038		95.68	90.05
2039		96.58	90.75
2040		97.47	91.45
2041		98.72	92.44
2042		99.98	93.44
2043		101.23	94.43
2044		102.49	95.43
2045		103.74	96.42
2046		104.99	97.44
2047		106.25	98.46
2048		107.50	99.47
2049		108.76	100.49
2050		110.01	101.51
2051		111.42	102.51
2052		112.82	103.51
2053		114.23	104.51
2054		115.63	105.51
2055		117.04	106.51
2056		118.45	107.64
2057		119.85	108.76
2058		121.26	109.89
2059		122.66	111.02
2060		124.07	112.14

Supply Surplus (Max Week)	
Mean Demand	95% Demand
1.50	1.50
4.56	4.56
(1.28)	(1.28)
0.72	0.72
2.74	2.74
4.14	4.14
21.87	21.87
9.06	11.08
9.02	11.06
8.99	11.04
8.96	11.02
8.93	11.00
8.90	11.09
8.86	11.19
12.55	15.00
12.52	15.09
12.49	15.17
11.58	14.41
10.67	13.65
9.77	12.89
7.23	10.50
6.33	9.74
5.42	9.01
4.51	8.28
3.61	7.55
2.70	6.82
35.67	39.98
34.92	39.37
34.16	38.77
33.41	38.16
32.66	37.56
22.60	27.66
21.85	27.10
21.10	26.54
20.34	25.98
19.59	25.42
9.54	15.56
8.40	14.69
7.27	13.81
6.14	12.94
5.00	12.06
38.64	45.96
37.51	45.06
36.38	44.17
35.24	43.27
34.11	42.37
32.97	41.47
31.65	40.55
30.32	39.64
29.00	38.71
27.67	37.79
26.34	36.87
25.02	35.83
23.69	34.78
22.37	33.73
21.04	32.69
19.71	31.64

Supply Components - Maximum Week (MGD)							
Year	Member Supplies	SPU Declining Block 2004	SPU Add'l 2008	TPU Total (Adjusted for 4-Cities)	Covington RWSS Surplus	Lake Tapps	Total Supply
2000	--	--	--	--	--	--	--
2001	--	--	--	--	--	--	--
2002	--	--	--	--	--	--	--
2003	--	--	--	--	--	--	--
2004	24.10	56.36	--	--	--	--	80
2005	24.10	56.36	--	--	--	--	80
2006	24.10	56.36	--	--	--	--	80
2007	24.10	56.36	--	--	--	--	80
2008	24.10	56.36	--	--	--	--	80
2009	24.10	56.36	5.58	--	--	--	86
2010	24.10	56.36	5.58	--	--	--	86
2011	24.22	56.36	5.58	--	--	--	86
2012	24.34	56.36	5.58	--	--	--	86
2013	24.46	56.36	5.58	--	--	--	86
2014	24.58	56.36	5.58	--	--	--	87
2015	24.70	56.36	5.58	--	--	--	87
2016	24.82	56.36	5.58	--	--	--	87
2017	24.94	56.36	5.58	--	--	--	87
2018	25.06	56.36	9.30	--	--	--	91
2019	25.18	56.36	9.30	--	--	--	91
2020	25.30	56.36	9.30	--	--	--	91
2021	25.40	56.36	9.30	--	--	--	91
2022	25.50	56.36	9.30	--	--	--	91
2023	25.60	56.36	9.30	--	--	--	91
2024	25.70	47.06	--	9.98	7.00	--	90
2025	25.80	47.06	--	9.98	7.00	--	90
2026	25.90	47.06	--	9.98	7.00	--	90
2027	26.00	47.06	--	9.98	7.00	--	90
2028	26.10	47.06	--	9.98	7.00	--	90
2029	26.20	47.06	--	9.98	7.00	--	90
2030	26.30	37.76	--	9.98	7.00	43.18	124
2031	26.44	37.76	--	9.98	7.00	43.18	124
2032	26.58	37.76	--	9.98	7.00	43.18	124
2033	26.72	37.76	--	9.98	7.00	43.18	125
2034	26.86	37.76	--	9.98	7.00	43.18	125
2035	27.00	28.46	--	9.98	7.00	43.18	116
2036	27.14	28.46	--	9.98	7.00	43.18	116
2037	27.28	28.46	--	9.98	7.00	43.18	116
2038	27.42	28.46	--	9.98	7.00	43.18	116
2039	27.56	28.46	--	9.98	7.00	43.18	116
2040	27.70	19.16	--	9.98	7.00	43.18	107
2041	27.82	19.16	--	9.98	7.00	43.18	107
2042	27.94	19.16	--	9.98	7.00	43.18	107
2043	28.06	19.16	--	9.98	7.00	43.18	107
2044	28.18	19.16	--	9.98	7.00	43.18	107
2045	28.30	9.86	--	9.98	7.00	87.25	142
2046	28.42	9.86	--	9.98	7.00	87.25	143
2047	28.54	9.86	--	9.98	7.00	87.25	143
2048	28.66	9.86	--	9.98	7.00	87.25	143
2049	28.78	9.86	--	9.98	7.00	87.25	143
2050	28.90	9.86	--	9.98	7.00	87.25	143
2051	28.98	9.86	--	9.98	7.00	87.25	143
2052	29.06	9.86	--	9.98	7.00	87.25	143
2053	29.14	9.86	--	9.98	7.00	87.25	143
2054	29.22	9.86	--	9.98	7.00	87.25	143
2055	29.30	9.86	--	9.98	7.00	87.25	143
2056	29.38	9.86	--	9.98	7.00	87.25	143
2057	29.46	9.86	--	9.98	7.00	87.25	144
2058	29.54	9.86	--	9.98	7.00	87.25	144
2059	29.62	9.86	--	9.98	7.00	87.25	144
2060	29.70	9.86	--	9.98	7.00	87.25	144

4-Cities Adjustments to TPU Supplies - Maximum Week					
Year	TPU contract Permanent	TPU Contract Reserved (converted to permanent)	TPU Total Contracted	4-Cities Allotment ¹	TPU Adjusted (TPU less 4-Cities)
2000	--	--	--	--	--
2001	--	--	--	--	--
2002	--	--	--	--	--
2003	--	--	--	--	--
2004	--	--	--	--	--
2005	--	--	--	--	--
2006	--	--	--	--	--
2007	--	--	--	--	--
2008	--	--	--	--	--
2009	--	--	--	--	--
2010	--	--	--	--	--
2011	--	--	--	--	--
2012	--	--	--	--	--
2013	--	--	--	--	--
2014	--	--	--	--	--
2015	--	--	--	--	--
2016	--	--	--	--	--
2017	--	--	--	--	--
2018	--	--	--	--	--
2019	--	--	--	--	--
2020	--	--	--	--	--
2021	--	--	--	--	--
2022	--	--	--	--	--
2023	--	--	--	--	--
2024	5.32	7.98	13.30	3.33	9.98
2025	5.32	7.98	13.30	3.33	9.98
2026	5.32	7.98	13.30	3.33	9.98
2027	5.32	7.98	13.30	3.33	9.98
2028	5.32	7.98	13.30	3.33	9.98
2029	5.32	7.98	13.30	3.33	9.98
2030	5.32	7.98	13.30	3.33	9.98
2031	5.32	7.98	13.30	3.33	9.98
2032	5.32	7.98	13.30	3.33	9.98
2033	5.32	7.98	13.30	3.33	9.98
2034	5.32	7.98	13.30	3.33	9.98
2035	5.32	7.98	13.30	3.33	9.98
2036	5.32	7.98	13.30	3.33	9.98
2037	5.32	7.98	13.30	3.33	9.98
2038	5.32	7.98	13.30	3.33	9.98
2039	5.32	7.98	13.30	3.33	9.98
2040	5.32	7.98	13.30	3.33	9.98
2041	5.32	7.98	13.30	3.33	9.98
2042	5.32	7.98	13.30	3.33	9.98
2043	5.32	7.98	13.30	3.33	9.98
2044	5.32	7.98	13.30	3.33	9.98
2045	5.32	7.98	13.30	3.33	9.98
2046	5.32	7.98	13.30	3.33	9.98
2047	5.32	7.98	13.30	3.33	9.98
2048	5.32	7.98	13.30	3.33	9.98
2049	5.32	7.98	13.30	3.33	9.98
2050	5.32	7.98	13.30	3.33	9.98
2051	5.32	7.98	13.30	3.33	9.98
2052	5.32	7.98	13.30	3.33	9.98
2053	5.32	7.98	13.30	3.33	9.98
2054	5.32	7.98	13.30	3.33	9.98
2055	5.32	7.98	13.30	3.33	9.98
2056	5.32	7.98	13.30	3.33	9.98
2057	5.32	7.98	13.30	3.33	9.98
2058	5.32	7.98	13.30	3.33	9.98
2059	5.32	7.98	13.30	3.33	9.98
2060	5.32	7.98	13.30	3.33	9.98

¹ Four cities quantity is 50% of allocated amounts, reflecting uncertainty in their future usage. Allocated amounts from letter dated Feb. 5, 2010 from Four Cities to Cascade (Clarke).

Member Independent Supply - Maximum Week (MGD)						
Year	Issaquah	Covington	Redmond	SammPlat	Skyway	Total
2000						
2001						
2002						
2003						
2004	3.33	7.80	3.51	8.89	0.57	24.10
2005	3.33	7.80	3.51	8.89	0.57	24.10
2006	3.33	7.80	3.51	8.89	0.57	24.10
2007	3.33	7.80	3.51	8.89	0.57	24.10
2008	3.33	7.80	3.51	8.89	0.57	24.10
2009	3.33	7.80	3.51	8.89	0.57	24.10
2010	3.33	7.80	3.51	8.89	0.57	24.10
2011	3.33	7.92	3.51	8.89	0.57	24.22
2012	3.33	8.04	3.51	8.89	0.57	24.34
2013	3.33	8.16	3.51	8.89	0.57	24.46
2014	3.33	8.28	3.51	8.89	0.57	24.58
2015	3.33	8.40	3.51	8.89	0.57	24.70
2016	3.33	8.52	3.51	8.89	0.57	24.82
2017	3.33	8.64	3.51	8.89	0.57	24.94
2018	3.33	8.76	3.51	8.89	0.57	25.06
2019	3.33	8.88	3.51	8.89	0.57	25.18
2020	3.33	9.00	3.51	8.89	0.57	25.30
2021	3.33	9.10	3.51	8.89	0.57	25.40
2022	3.33	9.20	3.51	8.89	0.57	25.50
2023	3.33	9.30	3.51	8.89	0.57	25.60
2024	3.33	9.40	3.51	8.89	0.57	25.70
2025	3.33	9.50	3.51	8.89	0.57	25.80
2026	3.33	9.60	3.51	8.89	0.57	25.90
2027	3.33	9.70	3.51	8.89	0.57	26.00
2028	3.33	9.80	3.51	8.89	0.57	26.10
2029	3.33	9.90	3.51	8.89	0.57	26.20
2030	3.33	10.00	3.51	8.89	0.57	26.30
2031	3.33	10.14	3.51	8.89	0.57	26.44
2032	3.33	10.28	3.51	8.89	0.57	26.58
2033	3.33	10.42	3.51	8.89	0.57	26.72
2034	3.33	10.56	3.51	8.89	0.57	26.86
2035	3.33	10.70	3.51	8.89	0.57	27.00
2036	3.33	10.84	3.51	8.89	0.57	27.14
2037	3.33	10.98	3.51	8.89	0.57	27.28
2038	3.33	11.12	3.51	8.89	0.57	27.42
2039	3.33	11.26	3.51	8.89	0.57	27.56
2040	3.33	11.40	3.51	8.89	0.57	27.70
2041	3.33	11.52	3.51	8.89	0.57	27.82
2042	3.33	11.64	3.51	8.89	0.57	27.94
2043	3.33	11.76	3.51	8.89	0.57	28.06
2044	3.33	11.88	3.51	8.89	0.57	28.18
2045	3.33	12.00	3.51	8.89	0.57	28.30
2046	3.33	12.12	3.51	8.89	0.57	28.42
2047	3.33	12.24	3.51	8.89	0.57	28.54
2048	3.33	12.36	3.51	8.89	0.57	28.66
2049	3.33	12.48	3.51	8.89	0.57	28.78
2050	3.33	12.60	3.51	8.89	0.57	28.90
2051	3.33	12.68	3.51	8.89	0.57	28.98
2052	3.33	12.76	3.51	8.89	0.57	29.06
2053	3.33	12.84	3.51	8.89	0.57	29.14
2054	3.33	12.92	3.51	8.89	0.57	29.22
2055	3.33	13.00	3.51	8.89	0.57	29.30
2056	3.33	13.08	3.51	8.89	0.57	29.38
2057	3.33	13.16	3.51	8.89	0.57	29.46
2058	3.33	13.24	3.51	8.89	0.57	29.54
2059	3.33	13.32	3.51	8.89	0.57	29.62
2060	3.33	13.40	3.51	8.89	0.57	29.70

Source: Cascade MemberWater Audits. Numbers were provided for 2008 and 2055 and interpolated for intervening years. Maximum week calculated as 90% of maximum day. Covington independent supply calculated as equal to projected demand in each year (see separate data on Covington surplus supply).

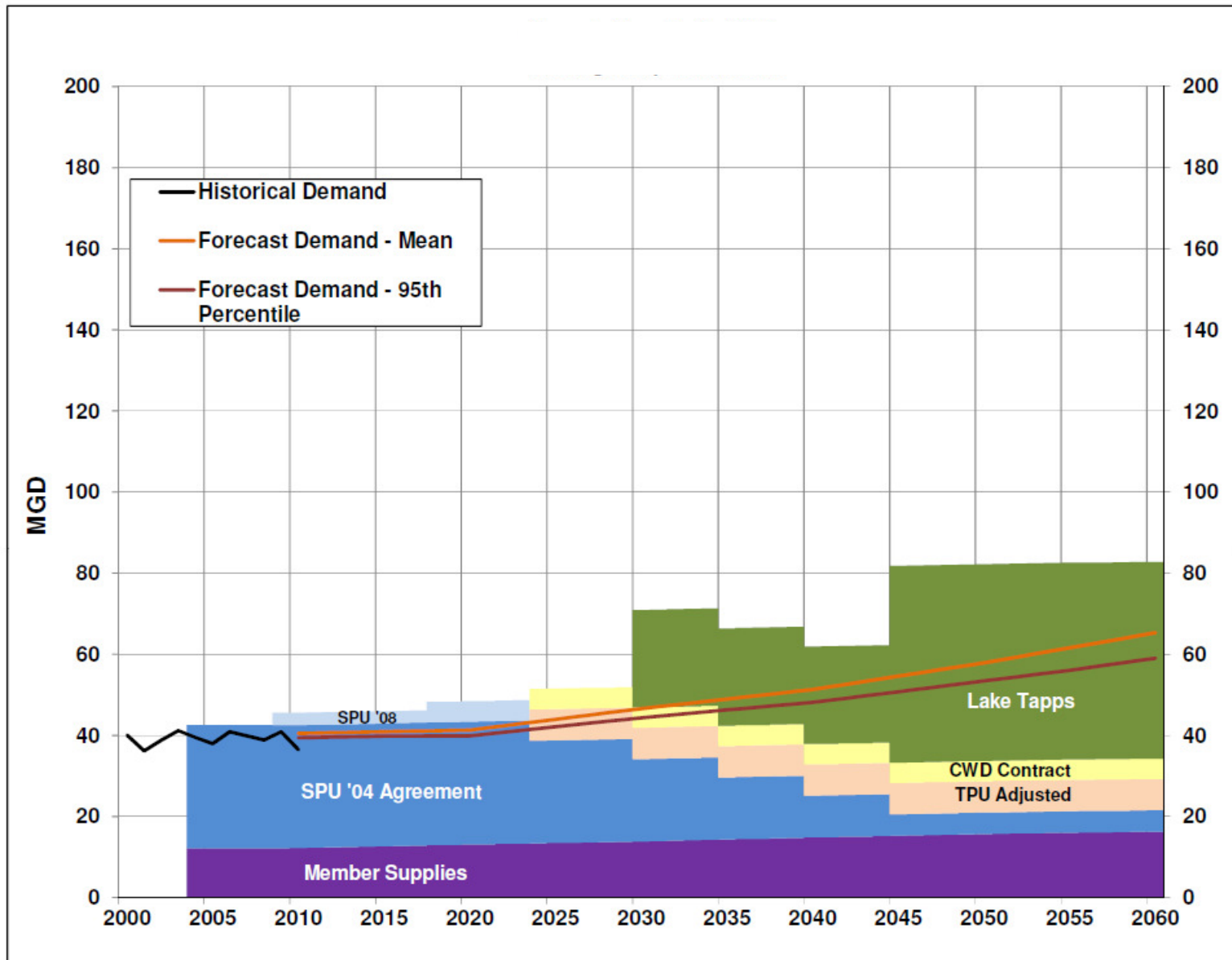
Covington Breakdown - Maximum Week (MGD)							
Year	Total Covington Demand	Covington Ground Water Supply	RWSS - Total Covington Share	Total Covington Supply	Covington's Surplus Supply	Cascade Contract for Covington Supply	Covington's Remaining Surplus
2000	--	--	--	--	--	--	--
2001	--	--	--	--	--	--	--
2002	--	--	--	--	--	--	--
2003	--	--	--	--	--	--	--
2004	7.80	6.58	16.50	23.08	15.28	--	15.28
2005	7.80	6.58	16.50	23.08	15.28	--	15.28
2006	7.80	6.58	16.50	23.08	15.28	--	15.28
2007	7.80	6.58	16.50	23.08	15.28	--	15.28
2008	7.80	6.58	16.50	23.08	15.28	--	15.28
2009	7.80	6.58	16.50	23.08	15.28	--	15.28
2010	7.80	6.58	16.50	23.08	15.28	--	15.28
2011	7.92	6.58	16.50	23.08	15.16	--	15.16
2012	8.04	6.58	16.50	23.08	15.04	--	15.04
2013	8.16	6.58	16.50	23.08	14.92	--	14.92
2014	8.28	6.58	16.50	23.08	14.80	--	14.80
2015	8.40	6.58	16.50	23.08	14.68	--	14.68
2016	8.52	6.58	16.50	23.08	14.56	--	14.56
2017	8.64	6.58	16.50	23.08	14.44	--	14.44
2018	8.76	6.58	16.50	23.08	14.32	--	14.32
2019	8.88	6.58	16.50	23.08	14.20	--	14.20
2020	9.00	6.58	16.50	23.08	14.08	--	14.08
2021	9.10	6.58	16.50	23.08	13.98	--	13.98
2022	9.20	6.58	16.50	23.08	13.88	--	13.88
2023	9.30	6.58	16.50	23.08	13.78	--	13.78
2024	9.40	6.58	16.50	23.08	13.68	7.00	6.68
2025	9.50	6.58	16.50	23.08	13.58	7.00	6.58
2026	9.60	6.58	16.50	23.08	13.48	7.00	6.48
2027	9.70	6.58	16.50	23.08	13.38	7.00	6.38
2028	9.80	6.58	16.50	23.08	13.28	7.00	6.28
2029	9.90	6.58	16.50	23.08	13.18	7.00	6.18
2030	10.00	6.58	16.50	23.08	13.08	7.00	6.08
2031	10.14	6.58	16.50	23.08	12.94	7.00	5.94
2032	10.28	6.58	16.50	23.08	12.80	7.00	5.80
2033	10.42	6.58	16.50	23.08	12.66	7.00	5.66
2034	10.56	6.58	16.50	23.08	12.52	7.00	5.52
2035	10.70	6.58	16.50	23.08	12.38	7.00	5.38
2036	10.84	6.58	16.50	23.08	12.24	7.00	5.24
2037	10.98	6.58	16.50	23.08	12.10	7.00	5.10
2038	11.12	6.58	16.50	23.08	11.96	7.00	4.96
2039	11.26	6.58	16.50	23.08	11.82	7.00	4.82
2040	11.40	6.58	18.50	25.08	13.68	7.00	6.68
2041	11.52	6.58	18.50	25.08	13.56	7.00	6.56
2042	11.64	6.58	18.50	25.08	13.44	7.00	6.44
2043	11.76	6.58	18.50	25.08	13.32	7.00	6.32
2044	11.88	6.58	18.50	25.08	13.20	7.00	6.20
2045	12.00	6.58	18.50	25.08	13.08	7.00	6.08
2046	12.12	6.58	18.50	25.08	12.96	7.00	5.96
2047	12.24	6.58	18.50	25.08	12.84	7.00	5.84
2048	12.36	6.58	18.50	25.08	12.72	7.00	5.72
2049	12.48	6.58	18.50	25.08	12.60	7.00	5.60
2050	12.60	6.58	18.50	25.08	12.48	7.00	5.48
2051	12.68	6.58	18.50	25.08	12.40	7.00	5.40
2052	12.76	6.58	18.50	25.08	12.32	7.00	5.32
2053	12.84	6.58	18.50	25.08	12.24	7.00	5.24
2054	12.92	6.58	18.50	25.08	12.16	7.00	5.16
2055	13.00	6.58	18.50	25.08	12.08	7.00	5.08
2056	13.08	6.58	18.50	25.08	12.00	7.00	5.00
2057	13.16	6.58	18.50	25.08	11.92	7.00	4.92
2058	13.24	6.58	18.50	25.08	11.84	7.00	4.84
2059	13.32	6.58	18.50	25.08	11.76	7.00	4.76
2060	13.40	6.58	18.50	25.08	11.68	7.00	4.68

Sources: Demand from CWD Water Supply Strategic Plan, Nov. 2009 (MWD calculated from ADD using peaking factor of 2.0 from CWD's 2007 Water System Plan); Supply adapted from TPU email (McMeen to Maxfield) Dec. 2011. Cascade contract based on discussions in Dec. 2011.

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Cascade Supply Portfolio
Average Annual Conditions

Cascade Supply Portfolio Average Day Conditions



Demand Components - Average Annual (MGD)			
Year	Historical Demand (Actual)	Forecast Demand: Updated B Mean, with Peaking at 1.9 (Dec. 2010)	Forecast Demand: Updated B, Constructed 95%, peaking 1.9 (April 2011)
2000	40.06		
2001	36.15		
2002	38.81		
2003	41.15		
2004	39.48		
2005	37.95		
2006	40.87		
2007	39.87		
2008	38.86		
2009	40.90		
2010	36.50	40.50	39.44
2011		40.58	39.51
2012		40.66	39.59
2013		40.74	39.66
2014		40.82	39.74
2015		40.90	39.81
2016		40.98	39.82
2017		41.06	39.84
2018		41.14	39.85
2019		41.22	39.87
2020		41.30	39.89
2021		41.83	40.34
2022		42.36	40.79
2023		42.89	41.25
2024		43.42	41.70
2025		43.95	42.16
2026		44.48	42.59
2027		45.01	43.03
2028		45.54	43.46
2029		46.07	43.90
2030		46.60	44.33
2031		47.07	44.73
2032		47.54	45.12
2033		48.01	45.51
2034		48.48	45.90
2035		48.95	46.29
2036		49.42	46.66
2037		49.89	47.03
2038		50.36	47.39
2039		50.83	47.76
2040		51.30	48.13
2041		51.96	48.65
2042		52.62	49.18
2043		53.28	49.70
2044		53.94	50.22
2045		54.60	50.75
2046		55.26	51.28
2047		55.92	51.82
2048		56.58	52.35
2049		57.24	52.89
2050		57.90	53.43
2051		58.64	53.95
2052		59.38	54.48
2053		60.12	55.00
2054		60.86	55.53
2055		61.60	56.06
2056		62.34	56.65
2057		63.08	57.24
2058		63.82	57.84
2059		64.56	58.43
2060		65.30	59.02

Supply Surplus (Avg. Annual)	
Mean Demand	95% Demand
3.01	3.01
4.54	4.54
1.62	1.62
2.62	2.62
3.63	3.63
4.62	4.62
9.04	9.04
5.05	6.12
5.06	6.13
5.06	6.14
5.07	6.15
5.07	6.17
5.08	6.24
5.09	6.31
7.09	8.38
7.10	8.45
7.11	8.52
6.65	8.14
6.20	7.77
5.75	7.39
8.02	9.74
7.57	9.36
7.11	9.00
6.66	8.64
6.21	8.28
5.75	7.93
24.30	26.57
23.93	26.27
23.55	25.98
23.18	25.68
22.81	25.39
17.43	20.09
17.06	19.82
16.69	19.55
16.31	19.28
15.94	19.01
10.56	13.73
9.99	13.30
9.42	12.86
8.84	12.42
8.27	11.99
27.20	31.05
26.62	30.60
26.05	30.15
25.48	29.70
24.90	29.25
24.33	28.80
23.65	28.34
22.98	27.88
22.31	27.42
21.63	26.96
20.96	26.50
20.26	25.95
19.56	25.40
18.86	24.84
18.16	24.29
17.46	23.74

Supply Components - Average Annual (MGD)							
Year	Member Supplies	SPU Declining Block 2004	SPU Add'l 2008	TPU Total (Adjusted for 4-Cities)	Covington RWSS Surplus	Lake Tapps	Total Supply
2000	--	--	--	--	--	--	--
2001	--	--	--	--	--	--	--
2002	--	--	--	--	--	--	--
2003	--	--	--	--	--	--	--
2004	12.19	30.30	--	--	--	--	42
2005	12.19	30.30	--	--	--	--	42
2006	12.19	30.30	--	--	--	--	42
2007	12.19	30.30	--	--	--	--	42
2008	12.19	30.30	--	--	--	--	42
2009	12.22	30.30	3.00	--	--	--	46
2010	12.24	30.30	3.00	--	--	--	46
2011	12.33	30.30	3.00	--	--	--	46
2012	12.42	30.30	3.00	--	--	--	46
2013	12.50	30.30	3.00	--	--	--	46
2014	12.59	30.30	3.00	--	--	--	46
2015	12.67	30.30	3.00	--	--	--	46
2016	12.76	30.30	3.00	--	--	--	46
2017	12.85	30.30	3.00	--	--	--	46
2018	12.93	30.30	5.00	--	--	--	48
2019	13.02	30.30	5.00	--	--	--	48
2020	13.11	30.30	5.00	--	--	--	48
2021	13.18	30.30	5.00	--	--	--	48
2022	13.26	30.30	5.00	--	--	--	49
2023	13.34	30.30	5.00	--	--	--	49
2024	13.41	25.30	--	7.73	5.00	--	51
2025	13.49	25.30	--	7.73	5.00	--	52
2026	13.56	25.30	--	7.73	5.00	--	52
2027	13.64	25.30	--	7.73	5.00	--	52
2028	13.72	25.30	--	7.73	5.00	--	52
2029	13.79	25.30	--	7.73	5.00	--	52
2030	13.87	20.30	--	7.73	5.00	24.00	71
2031	13.97	20.30	--	7.73	5.00	24.00	71
2032	14.06	20.30	--	7.73	5.00	24.00	71
2033	14.16	20.30	--	7.73	5.00	24.00	71
2034	14.26	20.30	--	7.73	5.00	24.00	71
2035	14.35	15.30	--	7.73	5.00	24.00	66
2036	14.45	15.30	--	7.73	5.00	24.00	66
2037	14.55	15.30	--	7.73	5.00	24.00	67
2038	14.64	15.30	--	7.73	5.00	24.00	67
2039	14.74	15.30	--	7.73	5.00	24.00	67
2040	14.83	10.30	--	7.73	5.00	24.00	62
2041	14.92	10.30	--	7.73	5.00	24.00	62
2042	15.01	10.30	--	7.73	5.00	24.00	62
2043	15.09	10.30	--	7.73	5.00	24.00	62
2044	15.18	10.30	--	7.73	5.00	24.00	62
2045	15.27	5.30	--	7.73	5.00	48.50	82
2046	15.35	5.30	--	7.73	5.00	48.50	82
2047	15.44	5.30	--	7.73	5.00	48.50	82
2048	15.53	5.30	--	7.73	5.00	48.50	82
2049	15.61	5.30	--	7.73	5.00	48.50	82
2050	15.70	5.30	--	7.73	5.00	48.50	82
2051	15.76	5.30	--	7.73	5.00	48.50	82
2052	15.83	5.30	--	7.73	5.00	48.50	82
2053	15.90	5.30	--	7.73	5.00	48.50	82
2054	15.96	5.30	--	7.73	5.00	48.50	82
2055	16.03	5.30	--	7.73	5.00	48.50	83
2056	16.07	5.30	--	7.73	5.00	48.50	83
2057	16.11	5.30	--	7.73	5.00	48.50	83
2058	16.15	5.30	--	7.73	5.00	48.50	83
2059	16.19	5.30	--	7.73	5.00	48.50	83
2060	16.23	5.30	--	7.73	5.00	48.50	83

4-Cities Adjustments to TPU Supplies - Average Annual					
Year	TPU Contract Permanent	TPU Contract Reserved (converted to permanent)	TPU Total Contracted	4-Cities Allotment ¹	TPU Adjusted (TPU less 4-Cities)
2000	--	--	--	--	--
2001	--	--	--	--	--
2002	--	--	--	--	--
2003	--	--	--	--	--
2004	--	--	--	--	--
2005	--	--	--	--	--
2006	--	--	--	--	--
2007	--	--	--	--	--
2008	--	--	--	--	--
2009	--	--	--	--	--
2010	--	--	--	--	--
2011	--	--	--	--	--
2012	--	--	--	--	--
2013	--	--	--	--	--
2014	--	--	--	--	--
2015	--	--	--	--	--
2016	--	--	--	--	--
2017	--	--	--	--	--
2018	--	--	--	--	--
2019	--	--	--	--	--
2020	--	--	--	--	--
2021	--	--	--	--	--
2022	--	--	--	--	--
2023	--	--	--	--	--
2024	4.00	6.00	10.00	2.27	7.73
2025	4.00	6.00	10.00	2.27	7.73
2026	4.00	6.00	10.00	2.27	7.73
2027	4.00	6.00	10.00	2.27	7.73
2028	4.00	6.00	10.00	2.27	7.73
2029	4.00	6.00	10.00	2.27	7.73
2030	4.00	6.00	10.00	2.27	7.73
2031	4.00	6.00	10.00	2.27	7.73
2032	4.00	6.00	10.00	2.27	7.73
2033	4.00	6.00	10.00	2.27	7.73
2034	4.00	6.00	10.00	2.27	7.73
2035	4.00	6.00	10.00	2.27	7.73
2036	4.00	6.00	10.00	2.27	7.73
2037	4.00	6.00	10.00	2.27	7.73
2038	4.00	6.00	10.00	2.27	7.73
2039	4.00	6.00	10.00	2.27	7.73
2040	4.00	6.00	10.00	2.27	7.73
2041	4.00	6.00	10.00	2.27	7.73
2042	4.00	6.00	10.00	2.27	7.73
2043	4.00	6.00	10.00	2.27	7.73
2044	4.00	6.00	10.00	2.27	7.73
2045	4.00	6.00	10.00	2.27	7.73
2046	4.00	6.00	10.00	2.27	7.73
2047	4.00	6.00	10.00	2.27	7.73
2048	4.00	6.00	10.00	2.27	7.73
2049	4.00	6.00	10.00	2.27	7.73
2050	4.00	6.00	10.00	2.27	7.73
2051	4.00	6.00	10.00	2.27	7.73
2052	4.00	6.00	10.00	2.27	7.73
2053	4.00	6.00	10.00	2.27	7.73
2054	4.00	6.00	10.00	2.27	7.73
2055	4.00	6.00	10.00	2.27	7.73
2056	4.00	6.00	10.00	2.27	7.73
2057	4.00	6.00	10.00	2.27	7.73
2058	4.00	6.00	10.00	2.27	7.73
2059	4.00	6.00	10.00	2.27	7.73
2060	4.00	6.00	10.00	2.27	7.73

¹ Four cities quantity is 50% of allocated amounts, reflecting uncertainty in their future usage. Allocated amounts from letter dated Feb. 5, 2010 from Four Cities to Cascade (Clarke).

Member Independent Supply - Average Annual (MGD)						
Year	Issaquah	Covington	Redmond	SammPlat	Skyway	Total
2000						
2001						
2002						
2003						
2004	1.35	3.90	2.20	4.50	0.24	12.19
2005	1.35	3.90	2.20	4.50	0.24	12.19
2006	1.35	3.90	2.20	4.50	0.24	12.19
2007	1.35	3.90	2.20	4.50	0.24	12.19
2008	1.35	3.90	2.20	4.50	0.24	12.19
2009	1.36	3.90	2.21	4.51	0.24	12.22
2010	1.37	3.90	2.22	4.52	0.24	12.24
2011	1.37	3.96	2.23	4.52	0.24	12.33
2012	1.38	4.02	2.23	4.53	0.25	12.42
2013	1.39	4.08	2.24	4.54	0.25	12.50
2014	1.40	4.14	2.25	4.55	0.25	12.59
2015	1.41	4.20	2.26	4.56	0.25	12.67
2016	1.42	4.26	2.27	4.57	0.25	12.76
2017	1.42	4.32	2.28	4.57	0.25	12.85
2018	1.43	4.38	2.29	4.58	0.25	12.93
2019	1.44	4.44	2.29	4.59	0.25	13.02
2020	1.45	4.50	2.30	4.60	0.26	13.11
2021	1.46	4.55	2.31	4.61	0.26	13.18
2022	1.47	4.60	2.32	4.62	0.26	13.26
2023	1.47	4.65	2.33	4.62	0.26	13.34
2024	1.48	4.70	2.34	4.63	0.26	13.41
2025	1.49	4.75	2.34	4.64	0.26	13.49
2026	1.50	4.80	2.35	4.65	0.26	13.56
2027	1.51	4.85	2.36	4.66	0.26	13.64
2028	1.52	4.90	2.37	4.67	0.27	13.72
2029	1.52	4.95	2.38	4.67	0.27	13.79
2030	1.53	5.00	2.39	4.68	0.27	13.87
2031	1.54	5.07	2.40	4.69	0.27	13.97
2032	1.55	5.14	2.40	4.70	0.27	14.06
2033	1.56	5.21	2.41	4.71	0.27	14.16
2034	1.57	5.28	2.42	4.72	0.27	14.26
2035	1.57	5.35	2.43	4.72	0.27	14.35
2036	1.58	5.42	2.44	4.73	0.28	14.45
2037	1.59	5.49	2.45	4.74	0.28	14.55
2038	1.60	5.56	2.46	4.75	0.28	14.64
2039	1.61	5.63	2.46	4.76	0.28	14.74
2040	1.62	5.70	2.47	4.77	0.28	14.83
2041	1.62	5.76	2.48	4.77	0.28	14.92
2042	1.63	5.82	2.49	4.78	0.28	15.01
2043	1.64	5.88	2.50	4.79	0.28	15.09
2044	1.65	5.94	2.51	4.80	0.29	15.18
2045	1.66	6.00	2.51	4.81	0.29	15.27
2046	1.67	6.06	2.52	4.82	0.29	15.35
2047	1.67	6.12	2.53	4.82	0.29	15.44
2048	1.68	6.18	2.54	4.83	0.29	15.53
2049	1.69	6.24	2.55	4.84	0.29	15.61
2050	1.70	6.30	2.56	4.85	0.29	15.70
2051	1.71	6.34	2.57	4.86	0.29	15.76
2052	1.72	6.38	2.57	4.87	0.30	15.83
2053	1.72	6.42	2.58	4.87	0.30	15.90
2054	1.73	6.46	2.59	4.88	0.30	15.96
2055	1.74	6.50	2.60	4.89	0.30	16.03
2056	1.74	6.54	2.60	4.89	0.30	16.07
2057	1.74	6.58	2.60	4.89	0.30	16.11
2058	1.74	6.62	2.60	4.89	0.30	16.15
2059	1.74	6.66	2.60	4.89	0.30	16.19
2060	1.74	6.70	2.60	4.89	0.30	16.23

Source: Cascade MemberWater Audits. Numbers were provided for 2008 and 2055 and interpolated for intervening years. Covington independent supply calculated as equal to projected demand in each year (see separate data on Covington surplus supply).

Covington Breakdown - Average Annual (MGD)							
Year	Total Covington Demand	Covington Ground Water Supply	RWSS - Total Covington Share	Total Covington Supply	Covington's Surplus Supply	Cascade Contract for Covington Supply	Covington's Remaining Surplus
2000	--	--	--	--	--	--	--
2001	--	--	--	--	--	--	--
2002	--	--	--	--	--	--	--
2003	--	--	--	--	--	--	--
2004	3.90	3.67	12.56	16.23	12.33	--	12.33
2005	3.90	3.67	12.56	16.23	12.33	--	12.33
2006	3.90	3.67	12.56	16.23	12.33	--	12.33
2007	3.90	3.67	12.56	16.23	12.33	--	12.33
2008	3.90	3.67	12.56	16.23	12.33	--	12.33
2009	3.90	3.67	12.56	16.23	12.33	--	12.33
2010	3.90	3.67	12.56	16.23	12.33	--	12.33
2011	3.96	3.67	12.56	16.23	12.27	--	12.27
2012	4.02	3.67	12.56	16.23	12.21	--	12.21
2013	4.08	3.67	12.56	16.23	12.15	--	12.15
2014	4.14	3.67	12.56	16.23	12.09	--	12.09
2015	4.20	3.67	12.56	16.23	12.03	--	12.03
2016	4.26	3.67	12.56	16.23	11.97	--	11.97
2017	4.32	3.67	12.56	16.23	11.91	--	11.91
2018	4.38	3.67	12.56	16.23	11.85	--	11.85
2019	4.44	3.67	12.56	16.23	11.79	--	11.79
2020	4.50	3.67	12.56	16.23	11.73	--	11.73
2021	4.55	3.67	12.56	16.23	11.68	--	11.68
2022	4.60	3.67	12.56	16.23	11.63	--	11.63
2023	4.65	3.67	12.56	16.23	11.58	--	11.58
2024	4.70	3.67	12.56	16.23	11.53	5.00	6.53
2025	4.75	3.67	12.56	16.23	11.48	5.00	6.48
2026	4.80	3.67	12.56	16.23	11.43	5.00	6.43
2027	4.85	3.67	12.56	16.23	11.38	5.00	6.38
2028	4.90	3.67	12.56	16.23	11.33	5.00	6.33
2029	4.95	3.67	12.56	16.23	11.28	5.00	6.28
2030	5.00	3.67	12.56	16.23	11.23	5.00	6.23
2031	5.07	3.67	12.56	16.23	11.16	5.00	6.16
2032	5.14	3.67	12.56	16.23	11.09	5.00	6.09
2033	5.21	3.67	12.56	16.23	11.02	5.00	6.02
2034	5.28	3.67	12.56	16.23	10.95	5.00	5.95
2035	5.35	3.67	12.56	16.23	10.88	5.00	5.88
2036	5.42	3.67	12.56	16.23	10.81	5.00	5.81
2037	5.49	3.67	12.56	16.23	10.74	5.00	5.74
2038	5.56	3.67	12.56	16.23	10.67	5.00	5.67
2039	5.63	3.67	12.56	16.23	10.60	5.00	5.60
2040	5.70	3.67	12.56	16.23	10.53	5.00	5.53
2041	5.76	3.67	12.56	16.23	10.47	5.00	5.47
2042	5.82	3.67	12.56	16.23	10.41	5.00	5.41
2043	5.88	3.67	12.56	16.23	10.35	5.00	5.35
2044	5.94	3.67	12.56	16.23	10.29	5.00	5.29
2045	6.00	3.67	12.56	16.23	10.23	5.00	5.23
2046	6.06	3.67	12.56	16.23	10.17	5.00	5.17
2047	6.12	3.67	12.56	16.23	10.11	5.00	5.11
2048	6.18	3.67	12.56	16.23	10.05	5.00	5.05
2049	6.24	3.67	12.56	16.23	9.99	5.00	4.99
2050	6.30	3.67	12.56	16.23	9.93	5.00	4.93
2051	6.34	3.67	12.56	16.23	9.89	5.00	4.89
2052	6.38	3.67	12.56	16.23	9.85	5.00	4.85
2053	6.42	3.67	12.56	16.23	9.81	5.00	4.81
2054	6.46	3.67	12.56	16.23	9.77	5.00	4.77
2055	6.50	3.67	12.56	16.23	9.73	5.00	4.73
2056	6.54	3.67	12.56	16.23	9.69	5.00	4.69
2057	6.58	3.67	12.56	16.23	9.65	5.00	4.65
2058	6.62	3.67	12.56	16.23	9.61	5.00	4.61
2059	6.66	3.67	12.56	16.23	9.57	5.00	4.57
2060	6.70	3.67	12.56	16.23	9.53	5.00	4.53

Sources: Demand from CWD Water Supply Strategic Plan, Nov. 2009; Supply adapted from TPU email (McMeen to Maxfield) Dec. 2011.
Cascade contract based on discussions in Dec. 2011.

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APPENDIX H

Tacoma Supply Agreement-10-2005

**AGREEMENT FOR THE
SALE OF WHOLESALE
WATER**

**BETWEEN
THE CITY OF TACOMA,
DEPARTMENT OF PUBLIC UTILITIES, WATER DIVISION**

AND

CASCADE WATER ALLIANCE

TABLE OF CONTENTS

<u>Subject</u>	<u>Page</u>
1 Definitions.....	2
2 Implementation Agreements and Exhibits to the Agreement	4
3 Effective Date and Term of the Agreement	4
4 Sale and Purchase of Wholesale Water.....	5
5 Commencement of Wholesale Water Deliveries	5
6 Wholesale Water Supply	5
7 Wholesale Water Quality, Delivery Pressure and Metering	7
8 Wholesale Service Connection and Interconnection Facilities.....	7
9 Pricing of Wholesale Water	8
10 Payments	10
11 Planning and Coordination	12
12 Termination of the Section 6.2 Water Deliveries	12
13 Water Management and Scheduling	13
14 Meter Ownership, Calibration and Maintenance	13
15 Wholesale Water Deliveries in Excess of Schedules.....	14
16 Sharing Water Shortages.....	15
17 Title and Risk of Loss.....	15
18 Regulatory Compliance.....	15
19 No Right or Claim to Water.....	15
20 Audit and Access to Records	16
21 Dispute Resolution.....	16
22 Uncontrollable Forces.....	16
23 Notices	17
24 Default of Obligation	17
25 Representations and Warranties	18
26 Assignment and Other Arrangements	18
27 Waivers	19
28 Amendments	19
29 Entire Agreement	19
30 Interpretation of Agreement	19
31 Governing Law and Venue	19
32 Duty of Good Faith	20
33 Counterparts	20

This Agreement for the Sale of Wholesale Water ("Agreement") between the City of Tacoma, Department of Public Utilities, Water Division (Tacoma) and Cascade Water Alliance ("Cascade"), is made and entered into effective this 13th day of October, 2005 (Effective Date). Tacoma and Cascade are sometimes referred to herein in the singular as "Party" and in the plural as "Parties".

WHEREAS, Tacoma is a municipality organized and operating under the laws of the State of Washington; and

WHEREAS, Cascade is a public nonprofit corporation established by Interlocal Contract under the authority of Chapter 39.34 RCW, the Interlocal Cooperation Act, and incorporated under Chapter 24.03 to further the interests of its members with respect to water supply and to work cooperatively with other water supply entities; and

WHEREAS, Tacoma and Cascade have the responsibility to plan, design, construct and operate water supply facilities to meet the municipal, commercial and industrial water supply needs of their respective customers and member organizations; and

WHEREAS, Tacoma, which has nearly completed the construction of its Second Supply Project, expects to have the supply capacity, together with Tacoma's other water resources, to meet Tacoma's projected water supply needs for the next fifty years, in addition to meeting a portion of the water needs of Tacoma's project partners, Lakehaven Utility District, Covington Water District and the City of Kent; and

WHEREAS, Cascade is contracting for, and has plans to construct additional water supplies to supplement its existing water supplies to meet its immediate and long-term water supply needs; and

WHEREAS, Tacoma and Cascade are each seeking cost effective ways to utilize available regional capacity, and to plan for water resources to meet the full future water supply needs of their respective customers; and

WHEREAS, Cascade could make beneficial use of available supply in Tacoma's Second Supply Project both permanently and in the near term until such time as other water resources are available to meet the needs of Cascade and its member utilities; and

WHEREAS, Cascade wishes to purchase from Tacoma, and Tacoma wishes to sell to Cascade a supply of water both permanently and for a finite period of years.

NOW, THEREFORE, the Parties agree as follows.

1. DEFINITIONS

1.1 When used with initial capitalization in this Agreement, the following terms shall have the meanings set forth below.

1.1.1 "Due Date" means the date by which payment of any invoice issued pursuant to section 10 of this Agreement is due to Tacoma, which date shall be the close of business on the thirtieth (30th) day after an invoice is issued, provided, however, that if such thirtieth day falls on a Saturday, Sunday or legal holiday observed by Tacoma, the Due Date shall be extended until the close of business of the next regular business day of Tacoma.

1.1.2 "Effective Date" shall have the meaning given such term in section 3.

1.1.3 "Flow Control Valve" means the valve located in the vicinity of the Point(s) of Delivery for Cascade that controls the volume of water that is delivered to Cascade.

1.1.4 "Howard Hanson Dam Additional Storage Project" or "Storage Project" shall have the meaning given such term in the Project Agreement.

1.1.5 "Implementation Agreement" means a written agreement executed by the Superintendent of Tacoma Water and the General Manager of Cascade setting out the understandings of the Parties regarding the implementation and administration of this Agreement as set forth in section 2.

1.1.6 "Initial Delivery Date" means the date on which Tacoma actually commences delivery of wholesale water pursuant to the terms of this Agreement.

1.1.7 "Interest Rate" means for each day that it is applied a rate equal to one-three hundred and sixty-fifth ($1/365$) of the prime interest rate for preferred customers established from time to time by the Bank of America, or such other bank as may be designated by the Parties, plus three (3) percentage points.

1.1.8 "Interconnection Facilities" mean the facilities, other than the Wholesale Service Connection, that need to be constructed by Cascade to take delivery of wholesale water through the Wholesale Service Connection and convey such water to Cascade's transmission main.

1.1.9 "Isolation Valve" means a positive shut off valve that shall be

installed at the location in each water system that is used to accept or deliver water through the Wholesale Service Connection.

1.1.10 “Minimum Monthly Bill” shall have the meaning given such term in section 9.2.

1.1.11 “Operating Year” means any consecutive twelve (12) month period commencing on each July 1st, and ending on the following June 30th.

1.1.12 “Peak Season” means the period starting June 1 and ending September 31 during each year during the Term.

1.1.13 “Peaking Factor” means the factor set forth in section 6.3.

1.1.14 “Project Agreement” means the Second Supply Project Agreement between the City of Tacoma and the City of Kent, Covington Water District and Lakehaven Utility District.

1.1.15 “Project Operator” means Tacoma in its role as the party responsible for the operation and maintenance of the Tacoma Second Supply Project.

1.1.16 “Requested Initial Delivery Date” means the date designated by Cascade pursuant to section 5.2 for Tacoma to commence delivery of wholesale water pursuant to section 6 of this Agreement.

1.1.17 “Second Diversion Right or Permit and First Diversion Claim” means those water rights that authorize Tacoma to divert and use water from the Green River (together, the Diversion Rights).

1.1.18 “Surcharge Rate” means a rate equal to four times the highest wholesale water rate for sales to Cascade for the period of excess use.

1.1.19 “TMC” means the City of Tacoma’s Municipal Code.

1.1.20 “Uncontrollable Force” means any event or occurrence that is beyond the reasonable control of a Party and which by the exercise of due diligence and reasonable foresight such Party could not have reasonably been expected to avoid or remove, and includes but is not limited to flood, earthquake, storm, accident, fire, lightning and other natural catastrophes, epidemic, war, labor or material shortage, strike or labor dispute, acts of terrorism or sabotage, and also includes restraint by an order of a court of competent jurisdiction or by regulatory authorities against any action taken or not taken by a Party, after a good faith effort by such Party to obtain: (a)

relief from such order; or (b) any necessary authorizations or approvals from any governmental agency or regulatory authority.

1.1.21 “Wholesale Service Connection” means a physical connection between water mains of the Parties to this Agreement, at a specifically identified point or points, where water will be transferred from one Party’s system to the facilities of the other Party.

1.1.22 “Wholesale Water Sales” means sales of water by Tacoma to entities that are not retail customers of Tacoma and which resell to end users the water that they purchase from Tacoma.

2. IMPLEMENTATION AGREEMENTS AND EXHIBITS TO THE AGREEMENT

2.1 The Superintendent of Tacoma Water and the General Manager of Cascade may, at their discretion, execute Implementation Agreements regarding the implementation or administration of this Agreement in a manner that does not affect the substantive rights of the parties under this Agreement.

2.2 The following exhibits, which are attached to this Agreement, are hereby made a part of and incorporated into this Agreement as if fully set forth herein:

Exhibit A - Map locating the Wholesale Service Connection, delivery meter and related facilities.

Exhibit B - Sample Weekly Operations Report

Exhibit C - Arbitration Procedures

The Superintendent of Tacoma Water and the General Manager of the Cascade are authorized to prepare Exhibits showing the Wholesale Service Connection and the location of the delivery meter upon the installation of those facilities and to adopt such Exhibits for purposes of this Agreement.

2.3 If and to the extent that there is a conflict between the terms set forth in an Implementation Agreement or in any of the foregoing Exhibits and those set forth in the body of this Agreement, the terms set forth in the body of this Agreement shall prevail.

3. EFFECTIVE DATE AND TERM OF THE AGREEMENT

3.1 This Agreement shall take effect when executed by the Parties, and shall remain in full force and effect until the date that Tacoma ceases making Wholesale Water Sales, unless terminated (in whole or in part) earlier in accordance with sections 11, 12 or 24 (“Term”). The Term of this Agreement may be extended by written agreement of the Parties.

3.2 All obligations incurred during the Term shall survive the termination or expiration of this Agreement.

4. SALE AND PURCHASE OF WHOLESALE WATER

4.1 For the Term of this Agreement, Tacoma agrees to sell and make available to Cascade, and Cascade agrees to accept delivery of and pay for quantities of wholesale water, all pursuant to the provisions of this Agreement.

4.2 The water sold by Tacoma to Cascade pursuant to this Agreement shall be water available from the Diversion Rights. The use made of such wholesale water shall be subject to the restrictions on the place of use applicable to the Diversion Rights, copies of which have been provided to Cascade by Tacoma.

5. COMMENCEMENT OF WHOLESALE WATER DELIVERIES

5.1 Tacoma shall stand ready to commence deliveries of the amounts of wholesale water set forth in section 6 not later than October 1, 2008. If the Howard Hanson Storage Project is not operational by October 1, 2012, then Tacoma may, based on Tacoma's forecast of its water supplies without the Howard Hanson Storage Project, reduce its obligation to sell water to Cascade under section 6.2 (including a reduction to zero deliveries) by providing written notice to Cascade of such reduction to its water deliveries not less than ninety (90) days prior to the date the adjusted deliveries will commence.

5.2 Except as provided in section 5.1 deliveries of wholesale water by Tacoma to Cascade pursuant to section 6 shall commence on the Requested Initial Delivery Date designated by Cascade by written notice provided to Tacoma not less than ninety (90) days prior to the Requested Initial Delivery Date, which date cannot occur prior to October 1, 2008.

6. WHOLESALE WATER SUPPLY

6.1 From the Initial Delivery Date until the date that Tacoma ceases making Wholesale Water Sales, Tacoma shall make available to Cascade at the Wholesale Service Connection wholesale water in the amount of four million gallons per day (4 MGD) at a uniform hourly delivery rate.

6.2 In addition to the wholesale water deliveries set forth in section 6.1, on and after the Initial Delivery Date, Tacoma shall make available to Cascade at the Wholesale Service Connection wholesale water in the following amounts:

6.2.1 From the Initial Delivery Date through December 31, 2026, six million gallons per day (6 MGD) at a uniform hourly delivery rate.

6.2.2 From January 1, 2027 through December 31, 2027, 4 million gallons per day (4 MGD) at a uniform hourly delivery rate.

6.2.3 From January 1, 2028 through December 31, 2028, three million gallons per day (3 MGD) at a uniform hourly delivery rate.

6.2.4 From January 1, 2029 through December 31, 2029, two million gallons per day (2 MGD) at a uniform hourly delivery rate.

6.2.5 From January 1, 2030 through December 31, 2030, one million gallons per day (1 MGD) at a uniform hourly delivery rate.

6.2.6 On and after January 1, 2031, Tacoma shall have no obligation to provide to Cascade and Cascade shall have no right to receive from Tacoma wholesale water deliveries pursuant to this section 6.2.

6.3 The wholesale water deliveries set forth in sections 6.1 and 6.2 may, as requested by Cascade, be increased during the Peak Season by a Peaking Factor of 1.33. For example, application of the Peaking Factor to the wholesale water deliveries set forth in section 6.1 would result in deliveries of 5.32 million gallons per day.

6.4 Cascade may request in writing that Tacoma investigate the feasibility of providing to Cascade wholesale water on a temporary basis in addition to the amounts set forth in sections 6.1 and 6.2. The written request from Cascade to Tacoma shall state with specificity the wholesale water amounts requested (including Peak Season deliveries), the requested commencement date and termination date of such deliveries. Upon receipt of such written request, Tacoma will review its water demand and supply forecasts expeditiously to determine if, in the sole judgment of Tacoma, it will have sufficient water supplies to fulfill the request for additional deliveries of wholesale water in whole or in part. In the event that Tacoma determines that it can fulfill, in whole or in part, the request of Cascade for additional deliveries of wholesale water, such additional deliveries shall be priced according to Tacoma's wholesale water rate, which additional supply shall be subject to the Surcharge Rate only if Cascade takes such temporary water in excess of the amounts which Tacoma has agreed to supply. Tacoma and Cascade shall, prior to the commencement of such additional deliveries, execute an agreement setting forth all of the terms and conditions applicable to such additional temporary deliveries.

7. WHOLESALE WATER QUALITY, DELIVERY PRESSURE AND METERING

7.1 The quality of wholesale water made available to Cascade pursuant to section 6 shall be in compliance with all applicable state and federal drinking water laws, regulations and standards, and at the pressures agreed to by the Parties.

7.2 The amounts of wholesale water made available to Cascade will be measured by a delivery meter located at or in the vicinity of the Wholesale Service Connection, as agreed to by the Parties.

8. WHOLESALE SERVICE CONNECTION AND INTERCONNECTION FACILITIES

8.1 All costs associated with the design and construction of the Wholesale Service Connection, including the water main, service pipe, automated remote valve shut off, meter(s), appurtenances and vaults, shall be the responsibility of Cascade. Tacoma shall be responsible for preparation of the design of the Wholesale Service Connection and for the cost of repair and maintenance of the Wholesale Service Connection up to and including the outlet of the meter. The meter(s) shall be located as close to the Wholesale Service Connection as possible. Tacoma will coordinate the design and construction of the Wholesale Service Connection with Cascade. All Wholesale Service Connections with Tacoma are required to have automated meter reading (AMR) installed on them. Cascade will be responsible for the costs of installing the phone connection for the AMR and the costs to install the equipment with the meter.

8.2 Cascade shall be responsible for designing, engineering, permitting, constructing and financing any and all Interconnection Facilities necessary for Cascade to accept delivery of the wholesale water made available by Tacoma pursuant to section 6.

8.3 Cascade will submit to Tacoma for review, revision and approval the designs, specifications and construction schedule for the Interconnection Facilities. Tacoma will not unreasonably delay its review of designs, specifications and construction schedules submitted to it by Cascade, and will not unreasonably withhold its approval of such designs, specifications and construction schedule.

8.4 Cascade will not commence construction of the Interconnection Facilities unless and until Cascade has received from Tacoma approved designs, specifications, and construction schedule (as such documents may be revised by Tacoma).

8.5 Cascade will construct and operate the Interconnection Facilities in a manner that is consistent with the provisions of all permits, regulatory approvals and agreements governing the construction and operation of the Second Supply Project.

8.6 Prior to the submission to Tacoma of designs, specifications and construction schedule for the Interconnection Facilities, Cascade and Tacoma will negotiate a mutually agreeable amount of compensation payable by Cascade to Tacoma for the use of any property, rights of way and for work performed by Tacoma staff and consultants in facilitating the construction of Interconnection Facilities, exclusive of the activities undertaken by Tacoma pursuant to section 8.3.

8.7 Cascade agrees that Tacoma owns the Isolation Valve directly off of the Tacoma system, piping from the Tacoma Isolation Valve to the meter, the meter vault and the meter and telemetry equipment, all as will be set forth on Exhibit A. Maintenance and operation costs for this equipment are the responsibility of Tacoma. Any capital costs related to this equipment, including upgrades or replacement and renewal are the responsibility of Cascade.

8.8 The Wholesale Service Connection shall be governed by the terms of this Agreement. No future Wholesale Service Connections shall be permissible without a subsequent and separate written agreement between the Parties. Neither Party shall be obligated to agree to or execute any agreement or permit with the other Party to construct additional Wholesale Service Connection(s).

9. PRICING OF WHOLESALE WATER

9.1 Commencing with the month in which deliveries of wholesale water to Cascade pursuant to section 6 begin, and for each month thereafter during the Term, Cascade will pay to Tacoma a monthly payment equal to the amount of wholesale water delivered in such month, as measured at the delivery meter, times the wholesale water service rate plus the readiness to serve charge as set forth in TMC Section 12.10.400 of the City of Tacoma Water Rates and Regulations (or the successor TMC Section), subject to Cascade's obligation to pay the Minimum Monthly Bill in accordance with section 9.2

9.2 Regardless of whether Cascade has or has not established a Requested Initial Delivery Date, Cascade shall for the period 2009 through 2026 pay not less than the Minimum Monthly Bill. The Minimum Monthly Bill shall be determined by multiplying the Minimum Daily Purchase Amount ("P") set forth below, times the number of days in each month ("D"), times the wholesale water service rate ("R"), ($P \times D \times R$ = monthly minimum payment).

<u>Calendar Year</u>	<u>Minimum Daily Purchase Amount (in MGD)</u>
2009	2.0
2010	2.0
2011	2.0
2012	3.0
2013	3.0

2014	3.0
2015	4.0
2016	4.0
2017	4.0
2018	5.0
2019	5.0
2020	6.0
2021	6.0
2022	7.0
2023	7.0
2024	8.0
2025	8.0

Provided, however, after the Initial Delivery Date, whenever Tacoma declares a supply curtailment or cannot otherwise deliver the minimum water supply Cascade shall be billed only for the water actually delivered.

9.3 In the event that the sum of the Minimum Monthly Bills for a calendar year exceeds the sum of the payments made by Cascade during such calendar year pursuant to Section 9.1, then Tacoma will bill Cascade in February of the immediately following calendar year during the period of 2010 through 2026 the amount by which the sum of the Minimum Monthly Bills for such calendar year exceeded the payments made pursuant to Section 9.1 during such calendar year.

9.4 The water service rate and the readiness to serve charge may be periodically adjusted and shall be applicable as set forth in the rate schedule as adopted by the Public Utility Board and Tacoma City Council.

9.5 Cascade shall pay Tacoma System Development Charges (“SDCs”) of \$16,484,000 for water supplied pursuant to section 6.1 as follows:

9.5.1 Within one-hundred and twenty (120) days of the Effective Date, Cascade will pay Tacoma an initial payment of twenty percent (20%) of the SDCs or \$3,296,800.

9.5.2 After such initial payment, the remaining balance of the SDCs will be paid in not more than ten (10) equal annual payments, with the first such payment due on the first anniversary of the Effective Date and thereafter on each successive anniversary until the SDCs are paid in full.

9.6. Cascade shall pay Tacoma a Capacity Reservation Fees (“CRFs”) of \$9,420,442 for water supplied pursuant to section 6.2 as follows:

9.6.1 Within one-hundred and twenty (120) days of the Effective Date, Cascade will pay Tacoma an initial payment of twenty percent (20%) of

the CRFs or \$1,884,088.

9.6.2 After such initial payment, the remaining balance of the CRFs will be paid in not more than ten (10) equal annual payments, with the first such payment due on the first anniversary of the Effective Date and thereafter on each successive anniversary until paid in full.

9.7 In addition to the annual payments pursuant to sections 9.5 and 9.6, Cascade will on the same date pay Tacoma interest calculated on a monthly basis (the first day of every month) on the outstanding unpaid balance of the SDCs and CRFs calculated using the prime interest rate, as reported by the Wall Street Journal ten days before the date that the monthly interest calculation is made, minus two percent (2%). Cascade may, at its election, prepay all or any portion of the SDCs and/or CRFs outstanding balance, in which case the interest accrued to the date of such prepayment shall also be paid to Tacoma, and the remaining unpaid balance shall be paid in equal installments.

9.8 If Tacoma exercises its option pursuant to section 5.1 to reduce water deliveries under section 6.2, then the CRFs payable under section 9.6 will be reduced proportionately. For example, if the total deliveries under section 6.2 are reduced by Tacoma by twenty percent (20%), then the total amount of CRFs payable under section 9.5 will be reduced by twenty percent (20%). Such reduction will be accomplished by first eliminating any CRFs not yet paid by CWA, and then by Tacoma refunding to Cascade any CRFs (or portions thereof) already paid starting with the most recent CRFs payment made by Cascade until such proportionate reduction is achieved. Any such refunds shall include interest calculated from the date of payment to the date of the refund, at the interest rate described in section 9.7. Any such refund shall be paid by Tacoma to Cascade within ninety (90) days of the notice issued pursuant to section 5.1.

9.9 An interest component will be paid by Tacoma to Cascade on the CRF payments eliminated or refunded pursuant to section 9.8. For the CRFs (or portions thereof) that are eliminated or refunded pursuant to section 9.8, the interest component will be calculated from the Effective Date to the date the payment of any refund is due pursuant to section 9.8. Such interest component will be the sum of the annual interest calculated for each of the years that the amount refunded or eliminated was outstanding, using the interest rate for each such year charged Cascade by Tacoma pursuant to section 9.7.

10. PAYMENTS

10.1 Tacoma shall prepare and forward to Cascade in the first week of each month during the Term an invoice for the payment of amounts due pursuant to this Agreement for the preceding month. Each such invoice shall set forth the payment due from Cascade to Tacoma. In addition, during the first week of each February during the

2010 through 2026 period, when required pursuant to section 9.3, Tacoma shall prepare and forward to Cascade an invoice for any amounts due to Tacoma under section 9.3.

10.2 Cascade may request from Tacoma, and Tacoma shall promptly provide to Cascade, any documentation or other information that Cascade may reasonably require to understand the nature of the costs contained in any invoice issued pursuant to this section 10.

10.3 Payment of any and all invoices forwarded to Cascade by Tacoma pursuant to this section 10 shall be due and payable by Cascade on or before the Due Date, with payment to be made by wire transfer or such other means as agreed to by Tacoma and Cascade.

10.4 If full payment of any invoice is not received by Tacoma on or before the Due Date, such payment shall be considered past due, and the unpaid amount of such invoice shall accrue interest at the Interest Rate. Further, if an invoice or any portion thereof remains unpaid for a period of thirty (30) days after the Due Date, Tacoma may elect to suspend deliveries due to Cascade pursuant to section 6 until Cascade has paid all amounts due and owing, and any late payment charges due thereon.

10.5 If Cascade disputes all or any portion of an invoice issued by Tacoma pursuant to this section 10, Cascade shall pay such invoice in full, and shall indicate in writing to Tacoma the portions of the invoice that Cascade disputes and the reasons therefore. The Parties shall make a good faith effort to resolve such dispute. If such efforts are unsuccessful, either Cascade or Tacoma may seek resolution of the dispute pursuant to section 21.

10.6 If the resolution of any dispute over an invoice, whether by agreement of the Parties or by dispute resolution pursuant to section 21, results in the payment of money from Tacoma to Cascade, such payment shall include an interest payment for the period commencing with the date the disputed invoice was paid, and ending on the date the payment resolving the dispute is made to the Cascade, calculated using the Interest Rate.

10.7 Cascade hereby covenants and agrees that it shall establish, maintain and collect rates or charges for water and other services, facilities and commodities sold, furnished or supplied by it to its members which shall be adequate to provide revenues sufficient to enable Cascade to make the payments required to be made pursuant to the terms of this Agreement, and to pay all other charges and obligations payable from or constituting a charge or lien upon such revenues.

10.8 Payments by Cascade of SDCs, CRFs or of amounts under each invoice issued pursuant to this section 10 shall constitute an operating expense for water purchased by Cascade.

11. PLANNING AND COORDINATION

11.1 Cascade will develop a long-term supply plan and acquire additional water supplies to establish a firm supply for its members. Cascade shall provide to Tacoma a copy of such long-term supply plan, which plan shall also demonstrate that Cascade has planned for and has the ability to develop sufficient water supplies for its members to replace the wholesale water deliveries set forth in section 6.2 upon the expiration of such water delivery obligation under this Agreement. If Cascade cannot demonstrate by December 1, 2015 to the satisfaction of Tacoma that it will develop sufficient replacement water supplies to replace the water sale set forth in section 6.2, then the water delivery obligation set forth in section 6.2 may be terminated in whole or in part by Tacoma no sooner than January 1, 2016 by providing Cascade written notice of such termination six months prior to date of termination established by Tacoma in such written notice. In such event, the water delivery obligation of Tacoma to Cascade under this Agreement shall be limited to the delivery obligation set forth in sections 6.1 and 6.3.

11.2 In the event that Tacoma exercises its right to terminate its entire delivery obligation under section 6.2 pursuant to section 11.1, then Tacoma will make a payment to Cascade not later than sixty (60) days after the effective date of such termination. If such termination occurs in 2016, the payment from Tacoma to Cascade will be the sum of \$4,148,111. If such termination occurs in any year subsequent to 2016, the payment due from Tacoma to Cascade shall be reduced by the amount of \$415,000 for each year after 2016 that such termination occurs. If Tacoma only terminates its delivery obligation under section 6.2 in part, then the payment due from Tacoma to Cascade will be prorated to reflect the percentage of the total water deliveries under section 6.2 that were terminated pursuant to section 11.1. For example, if twenty percent (20%) of the total water delivery obligation under section 6.2 is terminated pursuant to section 11.1, then the payment due by Tacoma to Cascade will equal twenty percent (20%) of \$4,146,111.

11.3 The Parties will seek to adopt conservation plans and to coordinate regional supply scheduling and other operational programs that promote efficient use of water supplies, facilities, financial and staff resources.

12. TERMINATION OF THE SECTION 6.2 WATER DELIVERIES

If after October 1, 2008 Tacoma has stood ready to serve water pursuant to Section 6 for a five year period, and during such period Cascade has not established a Requested Initial Delivery Date for the delivery amounts set out in section 6.2, then Tacoma may terminate its water delivery obligations under section 6.2 of this Agreement by providing Cascade written notice of such termination not less than one hundred eighty (180) days prior to the date of termination specified in such notice. In the event of such termination, Cascade shall not be obligated to make any further annual payments under section 9.6. The permanent supply purchased by Cascade under section 6.1 of this Agreement, and all payment obligations associated therewith, shall be unaffected by such termination.

13. WATER MANAGEMENT AND SCHEDULING

13.1 Not later than May 1 of each year during the Term prior to a year in which deliveries will be made pursuant to section 6, Cascade will submit to Tacoma a written draft operating plan for the next Operating Year. Each such draft operating plan will include, but not be limited to, the amount of Diversion Rights water that Cascade expects to receive pursuant to this Agreement in each week during the next Operating Year.

13.2 Scheduling Delivery of Wholesale Water within an Operating Year

13.2.1 Prior to 10:00 A.M. on any Thursday during each Operating Year, Cascade may submit to Tacoma, in the manner and in the form established by Tacoma, a schedule for wholesale water deliveries for the following seven (7) days. Such schedule shall contain at a minimum a uniform rate of water deliveries for each day of the schedule, and shall take effect on the day following the Thursday the schedule is submitted. Schedules so submitted shall remain in effect until replaced by a subsequent schedule submitted in accordance with this subsection 13.2.1. Tacoma shall take all reasonable actions required to ensure that the amount of wholesale water scheduled by Cascade is available to it.

13.2.2 Tacoma may revise schedules submitted pursuant to subsection 13.2.1, if and to the extent any such schedule calls for deliveries that are in excess of Cascade's rights under this Agreement or is inconsistent with Project operating constraints. Tacoma shall notify Cascade if its schedule is revised pursuant to this subsection 13.2.2. In the event that a change in circumstances necessitates a change to a schedule then in effect, Cascade may request a change to such schedule, and Tacoma shall take all reasonable actions to accommodate such schedule change.

13.3 As Project Operator, Tacoma reserves the right to revise schedules submitted by Cascade as Tacoma determines may be necessary to comply with permits, authorizations, regulations or orders applicable to the Project, or to deal with Uncontrollable Forces that affect the ability to fulfill such schedules. Tacoma will provide Cascade with as much notice as is practicable under the circumstances of any such revision, and Tacoma shall treat Cascade the same as other wholesale customers in making such revisions.

14. METER OWNERSHIP, CALIBRATION AND MAINTENANCE

14.1 The cost of installing the initial and any replacement delivery meter shall be borne by Cascade.

14.2 Tacoma shall be responsible for the calibration and testing of the delivery meter. No less frequently than once each year the delivery meter shall be tested for accuracy, and the results of such testing shall be made available to Cascade at no charge. The costs of the annual delivery meter test shall be billed to Cascade. In addition to the annual meter test, Cascade may test the delivery meter at any reasonable time and at Cascade's expense. The results of any additional delivery meter test shall be made available to Tacoma at no charge.

14.3 Tacoma shall establish the size and the flow range within which the delivery meter must operate. Should Tacoma determine that the delivery meter is operating outside the flow range so established, it shall notify Cascade in writing of such operation, and the size of the replacement meter needed to operate within the flow range. Tacoma shall provide Cascade an opportunity to discuss the problem with the existing delivery meter, and the need for the proposed replacement delivery meter. After providing such written notice, Tacoma may replace the faulty delivery meter and bill Cascade for the costs of procuring and installing such meter, and Cascade shall be obligated to pay such bill.

14.4 The Flow Control Valve for Cascade shall be owned by and shall be under the control of Cascade. Cascade shall be responsible for the operation and control of its Flow Control Valve. Upon reasonable notice to Cascade, Tacoma shall have the right to enter the meter and/or valve vault or vaults of Cascade for any reason related to this Agreement or the Project Agreement.

14.5 Tacoma shall have access to, but not control of, the control signals from each meter station, and access to the vault in which the delivery meter is located. The costs of equipment necessary to receive any such control signals shall be borne by Cascade.

15. WHOLESALE WATER DELIVERIES IN EXCESS OF SCHEDULES

15.1 Nothing in this Agreement shall prohibit Cascade from requesting, or Tacoma from agreeing to deliver, permanent wholesale water in excess of the limits set forth in section 6.

15.1.1 Such agreed upon deliveries will not be subject to the Surcharge Rate.

15.1.2 Unless otherwise agreed to by the Parties, such deliveries shall be priced in accordance with section 9.1; provided that additional permanent water shall be subject to a full SDC offset by a credit in the amount of any Capacity Reservation Fee paid for water supplied pursuant to section 6.2 converted to permanent supply.

15.2 Should Tacoma determine that Cascade is receiving deliveries of wholesale water at the Wholesale Service Connection in excess of its scheduled amounts, Tacoma shall notify Cascade of the excess deliveries, and Cascade shall promptly take the steps necessary to reduce its deliveries to amounts equal to its scheduled amounts, or to revise its schedules to reflect the level of deliveries it is receiving.

15.3 If Cascade has not taken action to revise its schedules or to reduce its deliveries to a level equal to its scheduled amounts within twenty-four hours of receiving notice from Tacoma pursuant to subsection 15.2, Tacoma may take any action it deems necessary to reduce the deliveries to a level equal to Cascade's scheduled amounts, and charge Cascade the Surcharge Rate for any excess deliveries made after the expiration of the twenty-four hour notice period.

16. SHARING WATER SHORTAGES

In the event there is a water shortage or drought that requires Tacoma to institute a water rationing or water use restriction program for Tacoma's retail customers, Tacoma will institute reductions to deliveries of wholesale water made pursuant to this Agreement that are comparable in magnitude and duration to those Tacoma imposes on its retail customers.

17. TITLE AND RISK OF LOSS

Title and risk of loss to wholesale water delivered by Tacoma to Cascade pursuant to section 6 of this Agreement will pass from Tacoma to Cascade when such wholesale water reaches that portion of the Interconnection Facilities owned by Cascade.

18. REGULATORY COMPLIANCE

Cascade understands and agrees that the operation of the Project, and the water available from the Diversion Rights is subject to permits, authorization, and the jurisdiction of regulatory agencies and courts with the authority to issue orders and regulations regarding the Project and the Diversion Rights water. Cascade understands and agrees that Tacoma as Project Operator must comply with all such valid permits, authorizations, orders and regulations, and that such valid permits, authorizations, orders and regulations may affect the ability of Tacoma to fulfill its wholesale water deliveries under this Agreement.

19. NO RIGHT OR CLAIM TO WATER

Cascade and each of its members agrees that they have only a contract right to wholesale water as set forth in section 6 of this Agreement, and further agrees they have no claim or right to a supply of water from Tacoma upon the expiration or termination of this Agreement on any basis whatsoever.

20. AUDITS AND ACCESS TO RECORDS

Upon reasonable prior notice to Tacoma, Cascade, or any consultant of Cascade, shall be given access during normal business hours to the books, records and accounts related to this Agreement in the possession of Tacoma at the location where such books, records and accounts are located. Tacoma shall not be obligated to collate, organize or analyze the information sought by Cascade or by Cascade's consultant. Cascade shall pay Tacoma its established rate for any documents reproduced for Cascade or its consultant.

21. DISPUTE RESOLUTION

21.1 Any and all disputes arising under this Agreement shall be resolved pursuant to this section 21.

21.2 The Parties shall make good faith efforts to resolve by informal discussion any dispute arising under this Agreement.

21.3 If at any time during the good faith efforts to resolve any dispute arising under this Agreement either of the Parties determines that such informal discussions will not result in a resolution of the issue(s) in dispute, such Party may initiate the dispute resolution process in accordance with Exhibit C. Any such dispute resolution process shall be conducted pursuant to the provisions of Exhibit C.

21.4 In the event that a Party moves to set aside or modify the final report of the referee in court, and that Party is not the prevailing party in the final disposition of the dispute through the judicial proceedings (including any appeals), then the moving Party will be obligated to pay all of the costs incurred by the other Party in the dispute resolution process (including any judicial proceedings), which costs shall include, but not be limited, to attorneys fees.

21.5 Pending resolution of any dispute, the Parties shall continue to fulfill their respective duties under this Agreement.

22. UNCONTROLLABLE FORCES

22.1 A Party shall not be in breach of this Agreement as a result of such Party's failure to perform its obligations under this Agreement, other than the obligation to pay money when due and owing, when such failure is due to an Uncontrollable Force, to the extent that such Party, despite the exercise of due diligence, is unable to remove such Uncontrollable Force. Nothing in this Agreement shall be construed to require any Party to prevent or settle any strike or labor dispute in order to obtain relief under this section 22.

22.2 Any Party subject to an Uncontrollable Force that may impair its performance under this Agreement shall notify the other Party as soon as practicable. Any

Party subject to an Uncontrollable Force shall be excused from performance under this Agreement only for the duration of and to the extent of the Uncontrollable Force. Any Party subject to an Uncontrollable Force shall take all reasonable actions to remove the Uncontrollable Force. Neither the occurrence of an Uncontrollable Force nor the provisions of this section 22 shall relieve any Party of its obligation to pay money when due under the terms of this Agreement.

22.3 Uncontrollable Force shall not relieve Cascade of its payment obligations hereunder, except that Cascade shall not be required to make payments pursuant to section 9.1 for more than 6 months after water deliveries from Tacoma cease, and Cascade's obligation to make payment under section 9.1 shall not be reinstated until monthly water deliveries from Tacoma re-commence.

23. NOTICES

23.1 All notices, requests, demands, waivers, consents and other communications required hereunder shall be in writing, and shall be delivered by one or more of the following means: (i) in person, (ii) by overnight delivery service, (iii) by first class mail with postage prepaid, (iv) by facsimile providing confirmation of completed transmission, or (v) by such other means as may be approved by the Parties. Service of any such notice, request, demand, waiver, consent or other communication shall be deemed to have been duly given and to have become effective upon receipt.

23.2 Any and all notices, demands, waivers, consents and other communications shall be forwarded to each of the Parties at the following addresses:

To Tacoma: Water Superintendent
Tacoma Water
P. O. Box 11007
Tacoma, WA 98411

To Cascade: Manager
Cascade Water Alliance
1400 112th Avenue S.E. – Suite 220
Bellevue, WA 98004

23.3 Either Party may change the address to which notices shall be sent by giving notice of such change in accordance with subsection 23.1.

24. DEFAULT OF OBLIGATION

24.1 If Cascade fails to make any payment in full when due under this Agreement for a period of ninety (90) days or more after the Due Date, Tacoma shall make written demand upon Cascade to make payment in full within ten (10) days of the

date of such written demand. If the failure to pay is not cured with the ten (10) day time period, Cascade shall be deemed to be in default.

24.2 In addition to the remedies provided in section 10, if Cascade has been in default of payment for a period of sixty (60) days or more, then Tacoma may terminate this Agreement by providing Cascade with written notice not less than six (6) months prior to the date of termination set forth in such written notice.

25. REPRESENTATIONS AND WARRANTIES

25.1 The Parties hereby represent and warrant to one another the following:

25.1.1 Each Party is duly authorized and validly existing under the laws of, and is authorized to exercise its powers, rights and privileges and is in good standing in, the State of Washington, and has full power and authority to carry on its business as presently conducted and execute this Agreement and perform the transactions on its part contemplated by this Agreement.

25.1.2 The execution, delivery and performance of this Agreement, and the consummation of the transactions contemplated hereby have been duly authorized by the appropriate board or council, and no other act or proceeding on the part of any Party is necessary to authorize this Agreement, or the transactions contemplated hereby.

25.1.3 The execution, delivery and performance by each of the Parties of this Agreement does not: (a) contravene any law; or (b) conflict with or result in a breach of or default under any material agreement or instrument to which any Party is a party or by which it is bound.

25.1.4 There are no actions, suits, claims or proceedings pending or, to the best of each Party's knowledge, threatened against either Party that is likely to impair the consummation or the transactions contemplated hereby.

25.1.5 This Agreement, when executed and delivered, will constitute a valid and binding obligation of each Party, and will be enforceable against each such Party in accordance with its terms.

26. ASSIGNMENT AND OTHER ARRANGEMENTS

The rights and obligations of this Agreement may not be sold, assigned or otherwise transferred in whole or in part by Cascade or Tacoma without the prior written consent of the other, which consent shall not be unreasonably withheld; provided that should Cascade dissolve, then Tacoma will extend to any individual member of Cascade,

or any combination thereof, the right to assume Cascade's rights and obligations under this Agreement.

27. WAIVERS

Except as otherwise provided herein or as agreed to by the Parties, no provision of this Agreement may be waived except as documented or confirmed in writing. Any waiver at any time by a Party of its rights with respect to a default under this Agreement or with any other matter arising in connection therewith, shall not be deemed a waiver with respect to any subsequent default or matter. Either Party may waive any notice or agree to accept a shorter notice than specified in this Agreement. Such waiver of notice or acceptance of shorter notice by a Party at any time regarding a notice shall not be considered a waiver with respect to any subsequent notice required by this Agreement.

28. AMENDMENTS

No change, amendment or modification of any provision of this Agreement shall be valid unless set forth in a written amendment to this Agreement signed by the Parties.

29. ENTIRE AGREEMENT

This Agreement sets forth the entire agreement of the Parties, and supersedes any and all prior agreements with respect to the subject matter of this Agreement. The rights and obligations of the Parties hereunder shall be subject to and shall be governed by this Agreement.

30. INTERPRETATION OF THE AGREEMENT

The Parties participated in the drafting of this Agreement. In interpreting this Agreement, no inference shall be drawn against either Party as the drafter of this Agreement. The headings used herein are for convenience of reference only, and shall not affect the meaning or interpretation of this Agreement.

31. GOVERNING LAW AND VENUE

This Agreement shall be governed by and construed in accordance with the laws of the State of Washington (regardless of the laws that might otherwise govern under applicable principles of conflicts of law of such state). Except in respect of a lawsuit or judicial action or proceeding commenced by a third party in another jurisdiction, the Parties (i) agree that any lawsuit, judicial action or proceeding arising out of or relating to this Agreement must be heard in the Superior Court of the State of Washington, in and for the County of Snohomish or Thurston, or the United States District Court for the Western District of Washington, (ii) waive any objection to the laying of venue of any such suit, action or proceeding, (iii) irrevocably submit to the jurisdiction of any such

court in any such lawsuit or judicial action or proceeding, and (iv) consent to service of process by mail in respect to any such lawsuit or judicial action or proceeding.

32. DUTY OF GOOD FAITH

The Parties agree that in taking actions or making determinations required or provided for under this Agreement, each Party shall act in fairness and in good faith.

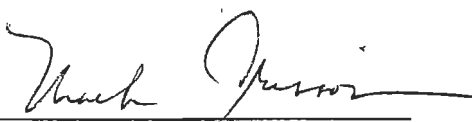
33. COUNTERPARTS

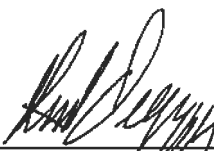
This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the Parties have duly executed this Agreement on the date first above written.

City of Tacoma
Department of Public Utilities

Cascade Water Alliance:

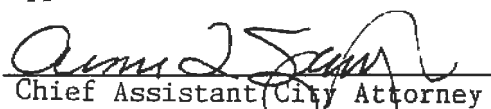
By: 

By: 

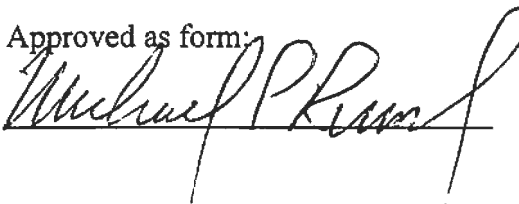
Title: Director of Utilities

Title: Chair

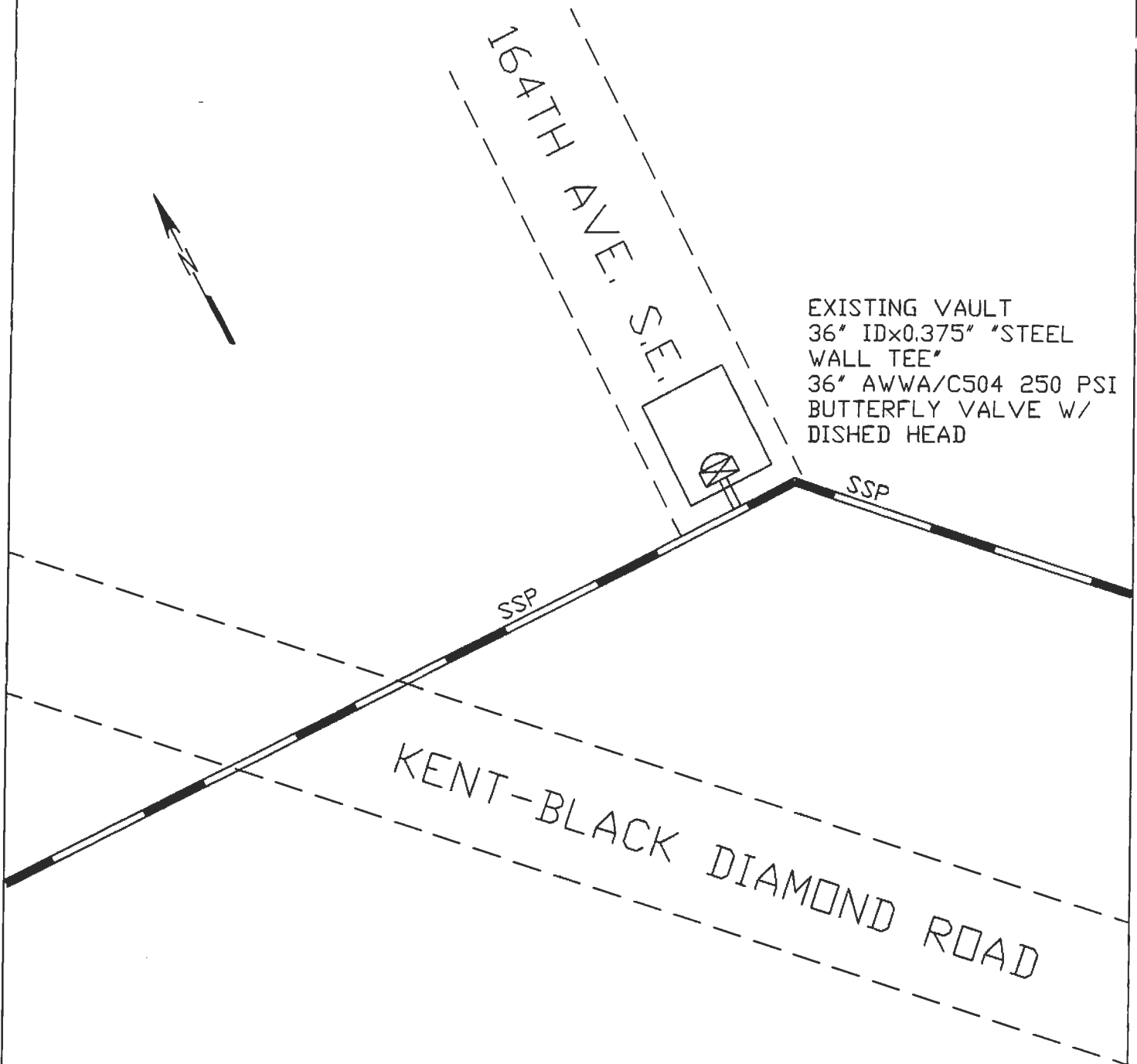
Approved as form:


Chief Assistant City Attorney

Approved as form:



CONCEPTUAL WHOLESALE SERVICE CONNECTION TO CASCADE WATER ALLIANCE



DEPARTMENT OF PUBLIC UTILITIES

TACOMA WATER

Date 2/30/05 Project SSP W.D. _____

Design PML
 Drawn SRL
 Digitize SRL
 Check _____

 MANAGER

EXHIBIT 'A'

SCALE
N.T.S.

DRAWING

SAMPLE WEEKLY OPERATIONS REPORT

Exhibit 'B'

SSP Weekly 8 AM Operations Report

WEEK OF 12/26/2005 TO 1/1/2006

	Monday 29	Tuesday 30	Wednesday 31	Thursday 1	Friday 2	Saturday 3	Sunday 4
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INSTANTANEOUS SOURCE DATA

Howard Hanson Reservoir	-FEET						
Green River at Palmer	-CFS						
Limit at Palmer	-CFS						
Green River at Auburn	-CFS						
Limit at Auburn	-CFS						
Reservoir Inflow	-CFS						
Available 2nd Water Right Diversion	-MGD						

24 HOUR SOURCE DATA

TOTAL DIVERSION	-MG						
1ST DIVERSION							
2ND DIVERSION							
HEADWORKS FLOW METER, P-1	-MG						
HEADWORKS FLOW METER, SSP	-MG						
NF WELLS	-MG						

WATER QUALITY DATA (P5 at Headworks)

TURBIDITY (Max.) RIVER	-NTU						
FINISHED WATER	-NTU						
WATER TEMP. (Min.)	-F						
FLUORIDE (Ave.)	-mg/L						
CL RESIDUAL (Ave.)	-PPM						
UVT	%						
PH (Ave.)							

PARTICIPANT DELIVERY (previous day)

TACOMA	METER TOTAL	-MG					
	ADJUSTED TOTAL	-MG					
SW 356TH & 15 AVE SW		-MG					
WHOLESALE CUSTOMER METERS		-MG					
CASCADE WATER ALLIANCE		-MG					
KENT	METER TOTAL	-MG					
	ADJUSTED TOTAL	-MG					
217th Ave SE 288th ST		-MG					
124TH AVE SE & SE 296TH ST		-MG					
120TH AVE SE & SE 296TH ST		-MG					
COVINGTON WD	METER TOTAL	-MG					
	ADJUSTED TOTAL	-MG					
22048 SE 288th St		-MG					
188TH AVE SE & SE 304TH ST		-MG					
148TH AVE SE & SE 296TH ST		-MG					
LAKEHAVEN UD	METER TOTAL	-MG					
	ADJUSTED TOTAL	-MG					
44th AVE. S. & 313th SST		-MG					
1ST WAY S & S 332ND ST		-MG					
SW 356TH ST & 15TH AVE SW		-MG					
TOTAL OF ALL DELIVERY METERS		-MG					
DIFFERENCE FROM SSP METER		-MG					
	% OF TOTAL						
TACOMA 2nd Div SHARE		-MG					
TACOMA O&M SHARE		-MG					
KENT 2nd div / O&M SHARE		-MG					
COVINGTON WD 2nd div / O&M SHAR		-MG					
LAKEHAVEN UD 2nd div / O&M SHAR		-MG					

PARTICIPANT SCHEDULES (previous day)

TACOMA PROJECT	-MG						
TACOMA 1ST DIV	-MG						
KENT PROJECT	-MG						
KENT 1ST DIV	-MG						
COVINGTON WD PROJECT	-MG						
COVINGTON WD 1ST DIV	-MG						
LAKEHAVEN UD PROJECT	-MG						
LAKEHAVEN UD 1ST DIV	-MG						

SCHEDULE DEVIATIONS (previous day)

TACOMA	-MG						
KENT	-MG						
COVINGTON WD	-MG						
LAKEHAVEN UD	-MG						

Exhibit C – Dispute Resolution Procedures

The following procedures shall govern the resolution of any dispute arising under the Agreement between the Parties that cannot be resolved by good-faith negotiations between the Parties, unless the Parties mutually agree to use different procedures to resolve a specific dispute by executing a document setting forth such different procedures. The Parties agree that these dispute resolution procedures are intended to be used in conjunction with and governed by R.C.W. 4.48, and both Parties hereby waive their right to a trial by jury for any dispute arising under this Agreement.

1. The Party that believes that continued good-faith negotiations will not produce a resolution of the issue(s) that is the subject of such negotiations will notify the other Party in writing that they are invoking the dispute resolution procedures of this Exhibit C.
2. Within twenty (20) days of the date of such notice invoking the dispute resolution procedures of this Exhibit C, the Parties shall meet and select an individual to recommend to the court as referee of the dispute resolution process in accordance with R.C.W. 4.48.020. The Parties shall select an individual who is qualified as a juror as provided by statute, competent as a juror between the Parties, a duly admitted and practicing attorney, and has experience presiding over civil litigation of contract disputes. The Parties will use the following procedure to select the recommended referee:
 - 2.1 Each Party will make a list of three individuals that are qualified pursuant to section 2 to serve as referee and exchange such list with the other Party. If the Parties agree upon a person from either list, or if both Parties list the same person, that person will be the recommended referee.
 - 2.2 If the Parties are unable to agree upon a referee after exchanging their respective lists, they will make a joint list setting forth all six candidates from the two lists.
3. Upon the selection of the recommended referee, or the creation of the joint list pursuant subsection 2.2, the Party that invoked the dispute resolution procedures shall file a complaint in the superior court of the appropriate county as set forth in section 31 of the Agreement, setting forth the issues(s) in dispute, and the other Party shall file an answer to such complaint. Not later than twenty (20) days after the filing of the answer, the Parties shall jointly file a motion, with the Agreement (including Exhibit C) attached, with the court requesting an order of reference that:
 - 3.1 Directs that the issue(s) raised by the complaint and answer be resolved pursuant to R.C.W. 4.48 by reference to a referee;

- 3.2 Appoints pursuant to R.C.W. 4.48.020 either the recommended referee selected by the Parties pursuant to 2.1, or a single referee from the joint list prepared pursuant to subsection 2.2; and
- 3.3 Directs the referee conduct the proceeding in accordance with the procedures set out in sections 4-10 of this Exhibit C.
4. In accordance with R.C.W 4.48.060, the Parties hereby waive their rights to discovery and cross-examination, and direct that the proceeding be conducted in the same manner as a motion for summary judgment as follows:
- 4.1 The Parties shall present their respective positions by written briefs and affidavits, and without testimonial evidence or cross-examination;
- 4.2 Oral argument will be conducted before the referee; and
- 4.3 The burdens of proof and persuasion that pertain in a civil trial shall apply, rather than those that apply to motions for summary judgment.
5. After appointment of the referee, the Parties shall endeavor in good faith to prepare for the referee a joint statement of facts and the questions to be decided in the proceeding. In the absence of an agreed to joint statement of facts and questions to be decided, each Party may include its own statement of facts and questions to be decided in its initial brief.
6. Within ninety (90) days after the submission of the joint statement of facts and questions to be decided, or within ninety (90) days after the appointment of the referee if the Parties cannot agree to a joint submission of facts and questions to be decided, each Party shall submit to the referee a one page statement of the proposed resolution and/or award it seeks for each of the issues in dispute, and its initial brief. The statement and initial brief (excluding any attached affidavits or evidentiary documents) shall not exceed fifty (50) 8 ½ x 11" double spaced pages with 1 ½ inch margins, number 12 point type face. The statement and initial brief shall be filed simultaneously by e-mail and regular mail with the referee and opposing Party.
7. Within thirty (30) days after the date the Parties filed their initial briefs, the Parties shall file their respective reply briefs with the referee and the opposing Party. The reply briefs (excluding any attached affidavits or evidentiary documents) shall not exceed twenty-five (25) 8 ½ x 11" double spaced pages with 1 ½ inch margins, number 12 point type face. The reply briefs shall be filed simultaneously by e-mail and regular mail with the referee and opposing Party.
8. After the reply briefs have been filed, if the referee deems that additional responses are needed, then the referee may request the Parties file a

supplemental brief only as to those specific matters or questions raised by the referee. Such supplemental briefs shall be limited to fifteen (15) 8 ½ x 11" double spaced pages with 1 ½ inch margins, number 12 point type face, and filed at such time as requested by the referee. Any such supplemental briefs shall be filed simultaneously by e-mail and regular mail upon the referee and opposing Party.

9. When all briefs have been filed, the referee will schedule oral argument on the issue(s) in dispute.
10. After the completion of oral argument, the referee will prepare his/her proposed report in accordance with R.C.W. 4.48.70 and shall provide a copy of the proposed report to the Parties, who shall have the right to suggest changes and modifications to the proposed report, all in accordance with R.C.W. 4.48.110. The referee will file the final report with the court within twenty (20) days of the completion of the process under R.C.W.4.48.110.
11. Either Party may move the court to modify or set aside, in whole or in part, the final report of the referee. If the court modifies or sets aside, in whole or in part, the final report of the referee and makes another reference, then this Exhibit C shall also apply to such reference.
12. Except as provided in section 21 of the Agreement, each Party shall be responsible for its own costs of the dispute resolution process (including any judicial proceedings), and the Parties shall each pay one-half of the other costs of the dispute resolution proceeding, including the fees of the referee. The fees of the referee shall be established in accordance with R.C.W. 4.48.100.

APPENDIX I

Lake Tapps Water Rights



File NR R2-29935
WR Doc ID 22232

State of Washington RESERVOIR PERMIT

PRIORITY DATE
9/15/2000

WATER RIGHT NUMBER
R2-29935

MAILING ADDRESS
CASCADE WATER ALLIANCE
11400 SE 8TH ST STE 440
BELLEVUE WA 98004

SITE ADDRESS (IF DIFFERENT)

Purpose and Quantity

PURPOSE	STORAGE QUANTITY			ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON- ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Municipal	46700		AF	46700		01/01 - 12/31

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Pierce	Lake Tapps	White River	10-Puyallup-White

Place of Use

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

The place of use for this water right is the combined service areas described in the most recent Water System Plans approved by the Washington State Department of Health for Cascade Water Alliance, City of Seattle and the City of Tacoma.

Location of Impounding Structure

Dike Number	Location	Washington ID Number
1	NW1/4NW1/4 S9, TWP20N R5E	WA418
2A	NE1/4SE1/4 S5, TWP20N R5E	WA419
2B	NW1/4SW1/4 S4, TWP20N R5E	WA420
3	NE1/4SW1/4 S4, TWP20N R5E	WA421
4	W1/2SE1/4 S4 & NW1/4NE1/4 S9, TWP20N R5E	WA296
4A*	N1/2NE1/4 S9, TWP20N R5E	WA296
5*	NE1/4NE1/4 S9, TWP20N R5E	WA422
6*	SW1/4NW1/4 S10, TWP20N R5E	WA423
7	SW1/4NW1/4 S10, TWP20N R5E	WA435
8	E1/2NW1/4 S10, TWP20N R5E	WA424

WATER RIGHT PERMIT

9	NE1/4NW1/4 S10, TWP20N R5E	WA425
10	NE1/4NW1/4 & NW1/4NE1/4 S10, TWP20N R5E	WA426
11*	W1/2NE1/4 & SE1/4NE1/4 S10, TWP20N R5E	WA427
12	SE1/4SE1/4 S10, TWP20N R5E	WA428
13	NW1/4SW1/4 S27, TWP20N R5E	WA429
14	NW1/4NE1/4 S26, TWP20N R5E	WA430
15	SE1/4NW1/4 & SW1/4NE1/4 S26, TWP20N R5E	WA431

Legal Subdivisions Of Lands In Which The Submerged Area Is To Be Located

Lake Tapps Reservoir, located in Sections 4, 5, 8, 9, 10, 14, 15, 16, 17, 21, 22, 23, 27 and 28, T. 19 N., R. 5 E.W.M.

Construction of Impounding Structure

HEIGHT OF DAM	LENGTH ON TOP (ft)	WIDTH ON TOP (ft)
Varies from 5 to 45 Feet	Varies from 240 to 2870 feet	Varies from 19 to 70 feet
SLOPE OF FRONT OR WATER SIDE (ft horizontal)	SLOPE OF BACKSIDE (ft horizontal : one ft vertical)	
Varies from 2.1:1 to 5.5:1	Varies from 1.4:1 to 2:1	
HEIGHT OF DAM ABOVE WATER LINE AT NOPL (ft)		
Varies from 1.6 to 9.2 feet		
TYPE OF DAM AND CONSTRUCTION MATERIALS		

Earthen embankments originally constructed in 1910-1911. No new dam construction required.

LOCATION AND APPROXIMATE DIMENSIONS OF SPILLWAY INCLUDING CREST LENGTH

Not applicable

LOCATION, SIZE AND TYPE AND OUTLET VALVE AND OUTLET CONDUIT STRUCTURE

The outlet from Lake Tapps is located in the SW¼ NE¼ of Section 8, T. 20 N., R. 5 E.W.M. It consists of a 2,842-foot long, 12-foot-diameter concrete tunnel that leads to a concrete penstock forebay located in the SW¼ NE¼ of Section 7, T. 20 N., R. 5 E.W.M. The water then enters three steel penstocks, 8 feet in diameter, and 2,135 feet in length that delivers water to the powerhouse. Two of the three steel penstocks are tapped to provide water to a fourth 8-foot-diameter steel penstock that is 1,791 feet long. The powerhouse discharges to the tailrace. The tailrace is trapezoidal in cross-section with a base width of 34 feet and a containment height of 9 to 10 feet. The tailrace is concrete-lined for the first 45 feet and then timber-lined for the next 65 feet and the last 2,400 feet leading to the White River are unlined.

NUMBER OF ACRES SUBMERGED WHEN RESERVOIR IS FILLED TO NOPL	MAXIMUM DEPTH (FEET) AT NOPL	APPROXIMATE AVERAGE DEPTH (FEET)
2700	90	25

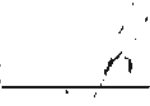
Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
Started	Completed	December 31, 2060

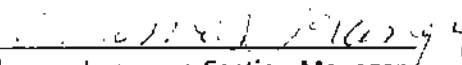
This Permit Subject to Cancellation

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or to give notice to the Department of Ecology on forms provided by the Department documenting such compliance.

Given under my hand and the seal of this office at Lacey, Washington this 10th day of DEC, 2010

OK 

Department of Ecology

By 
Thomas Loranger, Section Manager



File NR S2-29920(A)
WR Doc ID 22232

State of Washington WATER RIGHT PERMIT

PRIORITY DATE
6/20/2000

WATER RIGHT NUMBER
S2-29920(A)

MAILING ADDRESS
CASCADE WATER ALLIANCE
11400 SE 8TH ST STE 440
BELLEVUE WA 98004

SITE ADDRESS (IF DIFFERENT)

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
1000	CFS	54300

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION		ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	RATE	NON-ADDITIVE	ADDITIVE	NON-ADDITIVE	
Municipal	1000				02/15 - 07/01 ^a
Municipal	400				07/02 - 09/15 ^b
Municipal	150				09/16 - 02/14 ^c

REMARKS

- From February 15 until Refill Date or July 1, whichever is earlier.
- From Refill Date until September 15 or Fall Drawdown Date, whichever is later.
- From the Fall Drawdown Date to February 15.

Diversion rates are further subject to refill schedule described Provision No. 2.

Ecology has issued two separate Reports of Examination corresponding to application S2-29920: one corresponds to the Lake Tapps Reservoir Water Rights and Supply Project [permit S2-29920(A)] and the other corresponds to the Regional Reserved Water Program [permit S2-29920(B)]. Water quantities from the two permits are additive. The two permits have the same priority date, but the permit for S2-29920(A) is superior in priority. Both of the permits are evaluated in one Investigator's Report.

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Pierce	White River	Puyallup River	10-Puyallup-White

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
WHITE RIVER DIVERSION DAM	0619021006	NA	19N	06E	02	NE	47.170344	-122.004333

Datum: NAD83/WGS84

Place of Use (See Attached Map)

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

The place of use for this water right is the combined service areas described in the most recent Water System Plans approved by the Washington State Department of Health for the Cascade Water Alliance, the City of Seattle and the City of Tacoma.

Proposed Works

Lake Tapps Water Rights and Supply Project

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
December 31, 2040	Within 15 Years of Begin Construction Date	December 31, 2060

The development schedule is as follows:

- Begin construction within 30 years of the issuance of the permits
- Complete construction within 15 years of the beginning of construction
- Achieve full beneficial use of the allocated quantities within 50 years of issuance of the permits.

The Begin Construction Date is the date when Permit Holder has received all necessary major permits for the construction of the water treatment plant and transmission system and commenced work on facilities considered to be significant permanent elements of the project or excavation for project foundations or pipelines.

The Completion of Construction Form may be filed after the water treatment plant is completed, tested and capable of treating the full capacity and a transmission system is available in accordance with Permit Holder's Water System Plan, including appropriate agreements to use other entities' transmission systems, sufficient to transport the full amount of water to the appropriate delivery points.

Permit Holder is advised that a notice of Proof of Appropriation of water (under which the final certificate of water right is issued) should not be filed until the quantity of water allocated by this authorization, to the extent water is required, has been put to full beneficial use.

Provisions:

The Permit Holder must meet the provisions and conditions of this section. These provisions and conditions apply at permit issuance, except as noted in the individual condition.

1. Minimum Flow

The Permit Holder may divert water from the White River to Lake Tapps Reservoir, subject to the schedule of maximum diversion rates provided below in Condition 2, only if the diversion does not reduce the instream flow of the White River below the Minimum Flow established in Table 1.

Compliance with the Minimum Flows shown in Table 1, shall be measured at U.S. Geological Survey ("USGS") gage 12099200 – White River above Boise Creek at Buckley gage (referred to as the "Buckley Gage"), or other appropriate gage subject to review and approval by the Washington State Department of Ecology ("Ecology") in accordance with Condition 21.

The Permit Holder may divert up to 20 cfs of water from the headgate and through the fish screens when the flow is below the Minimum Flow, set out in Table 1, due to natural flow conditions.

Table 1. Minimum Flow

<u>Time Period</u>	<u>Minimum Flow</u>	<u>Time Period</u>	<u>Minimum Flow</u>
January 1-14	650 cfs	July 1-23	800 cfs
January 15-31	525 cfs	July 24-31	650 cfs
February 1-14	550 cfs	August 1-6	650 cfs
February 15-29	500 cfs	August 7-31	500 cfs
March 1-14	550 cfs	September 1-14	500 cfs
March 15-31	725 cfs	September 15-30	500 cfs
April 1-14	775 cfs	October 1-14	500 cfs
April 15-30	825 cfs	October 15-31	500 cfs
May 1-14	875 cfs	November 1-14	500 cfs
May 15-31	875 cfs	November 15-30	550 cfs
June 1-14	800 cfs	December 1-14	550 cfs
June 15-30	800 cfs	December 15-31	600 cfs

2. Schedule of Maximum Diversion Rates

If the instream flow of the White River at the Buckley Gage (or other appropriate gage subject to review and approval by Ecology in accordance with Condition 21) exceeds the Minimum Flow established in Condition 1, then the Permit Holder may divert water from the White River into Lake Tapps Reservoir in a manner consistent with the following schedule and amounts:

- a) Beginning no earlier than February 15, and continuing until Lake Tapps Reservoir is refilled to Normal Full Pool (as defined in Condition 5), or until July 1, whichever is earlier ("Refill Date") water may be diverted from the White River in an amount not to exceed 1000 cfs;

- b) Beginning on the Refill Date until September 15 or the subsequent date the Permit Holder commences drawing down the water level of Lake Tapps Reservoir, whichever is later ("Fall Drawdown Date"), water may be diverted from the White River in an amount not to exceed 400 cfs; and
- c) Beginning on the Fall Drawdown Date until February 15 water may be diverted from the White River in an amount not to exceed 150 cfs.

3. Releases from Reservoir

The Permit Holder shall limit releases from Lake Tapps Reservoir into the tailrace canal to not more than 50 cfs, except when Lake Tapps Reservoir is being drawn down, in accordance with Condition 2.c above.

4. Ramping Rates

The diversion from the White River and the release from Lake Tapps Reservoir through the tailrace canal shall at all times be operated so that;

- a) The ramping rate does not exceed one inch per hour (increase or decrease) as measured respectively at the Buckley Gage (or other appropriate gage subject to review and approval by Ecology in accordance with Condition 21) and USGS gage 12101100 – Lake Tapps Diversion at Dieringer; and
- b) Between February 16 and June 15 of each year down ramping shall not be permitted between one hour before sunrise and one hour after sunset.

5. Recreational Lake Levels

The Permit Holder shall maintain lake levels in Lake Tapps Reservoir according to the schedule established below. "Normal Full Pool" is defined as a reservoir water level between 541.0 feet and 542.5 feet National Geodetic Vertical Datum 1929 ("NGVD 29") as measured at USGS gage 12101000 – Lake Tapps near Sumner.

- a) The Permit Holder shall maintain Normal Full Pool from April 15 through September 30 of each year until 30 years of the issuance of the permit or Permit Holder's commencement of the use of Lake Tapps Reservoir for municipal water supply, whichever comes later.
- b) Thereafter, the Permit Holder shall:
 - i) Maintain Normal Full Pool from April 15 through September 15; and
 - ii) Maintain Normal Full Pool from September 16 through September 30 of each year more than ninety percent (90%) of the time, measured by the number of days (i.e., no more than fifteen (15) days in a rolling ten (10) year period of time) below the lower parameter of the Normal Full Pool, starting with the first calendar year in which lake levels fall below the lower parameter of the Normal Full Pool.
- c) The Permit Holder shall make reasonable efforts to maintain Normal Full Pool through October 31 in all years.

- d) Within the above-described time periods, operational variances may be required due to forecasts or available precipitation, any necessary milfoil control, or the terms and conditions of this authorization or of applicable law.

The schedule of lake levels and the definition of Normal Full Pool may be modified. Permit Holder shall submit any proposal for modification to Ecology for review and approval in accordance with Condition 21. The proposal shall include documentation that Permit Holder has completed an appropriate consultation or negotiation process with stakeholders and other interested parties.

6. Protect Puyallup River Minimum Instream Flows in Spring

During projected minimum instream flow shortfalls at USGS gage 12101500 – Puyallup River at the Puyallup from February 15 through March 31 of each year, the Permit Holder shall reduce the quantity of flow diverted from the White River up to the amount of water actually being withdrawn from Lake Tapps Reservoir for municipal water supply purposes (i.e., up to a maximum annual quantity of 5,900 acre feet). The Permit Holder shall develop an operating protocol for diversions from the White River to Lake Tapps Reservoir, for review and approval by Ecology in accordance with Condition 21. The protocol shall incorporate appropriate stream flow gaging and modeled travel time to estimate when diversions should be reduced to provide additional flow at the Puyallup gage. This condition shall apply when water is first withdrawn from Lake Tapps Reservoir for municipal water supply purposes.

7. Minimization of Powerhouse Leakage

To the extent practical, the Permit Holder shall minimize leakage from the former White River Hydroelectric Project powerhouse beginning not later than when water is first withdrawn from Lake Tapps Reservoir for municipal water supply purposes. Within 5 years of permit issuance, the Permit Holder shall submit a plan for minimizing powerhouse leakage to Ecology for review and approval in accordance with Condition 21.

8. Streamflow Monitoring

Within two (2) years of the issuance of the permit, the Permit Holder shall submit to Ecology a plan to install, operate, maintain, and report from streamflow gages necessary to monitor the minimum flows and staff gages to monitor the ramping rates required by this permit. The plan shall include at a minimum gages at the following locations:

- Canal Diversion
- White River above Boise Creek at Buckley gage (or other appropriate gage subject to review and approval by Ecology in accordance with Condition 21)
- Tailrace Release
- Lake Tapps water surface elevation (on a daily basis)

The plan shall describe the method of collecting and recording the flow and ramping rate data, and include a provision for periodically providing that data to Ecology, Washington Department of Fish and Wildlife (“WDFW”), National Oceanic and Atmospheric Association National Marine Fisheries Service (“NOAA Fisheries”), U.S. Fish and Wildlife Service (“USFWS”), USGS, the Puyallup Tribe of Indians, and Muckleshoot Indian Tribe. The Permit Holder shall prepare the plan after providing a draft and opportunity to comment to Ecology, WDFW, NOAA Fisheries, USFWS, USGS, the Puyallup Tribe of Indians and Muckleshoot Indian Tribe. The final plan shall be submitted to Ecology for review and

approval in accordance with Condition 21. The plan shall be implemented, including installation and operation of all gages, within one year after approval by Ecology.

The Permit Holder shall use the most accurate gaging equipment and methodology as determined by the USGS. At least every five (5) years, Permit Holder shall evaluate the adequacy of the stream flow monitoring gages. The Permit Holder shall maintain the above streamflow gages for the duration of this project.

9. Maintenance of Diversion Canal Fish Screens

The Permit Holder shall maintain the fish screens in the diversion canal so that they continue to meet or exceed their design specifications for fish passage and all applicable federal or state requirements.

10. Annual Compliance Summary Report

On an annual basis, the Permit Holder shall submit to Ecology a report summarizing and documenting compliance with the conditions of this permit. At a minimum, the report shall include compliance with the Minimum Flows for the White River, ramping rates, maximum diversion rates, recreational lake levels, and reductions of diversion during spring for the Puyallup River Minimum Instream Flow, as well as emergency operations, and any non-compliance with conditions of this permit. Annual reports shall document compliance with mitigation requirements over a calendar year and shall be submitted to Ecology by February 15 of the subsequent year.

11. Tailrace Study

The Permit Holder shall conduct the following studies regarding the tailrace canal of Lake Tapps Reservoir.

- a) A study of the tailrace releases from Lake Tapps to determine if releases are causing or contributing to non-attainment of designated uses and water quality criteria violations in the lower White and Puyallup Rivers. If the study determines discharge from Lake Tapps is adversely affecting water quality, the Permit Holder shall develop and implement a plan to improve tailrace water quality.
 - i. Study Schedule: Within five (5) years of permit issuance, the Permit Holder shall submit a Quality Assurance Project Plan ("QAPP") for the water quality study to Ecology for review and approval in accordance with Condition 21. For guidance on preparing QAPPs, see Ecology Publication No. 04-03-030. The study period shall not exceed five (5) years. The final report for the study shall be submitted to Ecology within one hundred eighty (180) days after the end of the study period, or as specified by Ecology in its QAPP approval. The water quality study should include, but not necessarily be limited to, continuous monitoring of temperature and dissolved oxygen in tailrace releases and instream locations to be identified in the QAPP.
 - ii. Tailrace Water Quality Plan: If the water quality study concludes, or if Ecology determines, that tailrace releases from Lake Tapps are causing or contributing to non-attainment of designated uses or water quality criteria violations in the Lower White and Puyallup Rivers, the Permit Holder shall develop and implement a plan to improve water quality in tailrace releases. The plan shall provide for an adequate period of monitoring to determine the success of the plan in improving water quality of tailrace releases.

A draft plan shall be submitted to the following for review and comment: the agencies and parties to the 1998 Agreement on the Allocation of the Puyallup River TMDL Reserve Capacity of Biochemical Oxygen Demand ("BOD") and Ammonia or any successors in interest, Puyallup Tribe of Indians, Muckleshoot Indian Tribe, and NOAA Fisheries. The final plan shall be submitted to Ecology for review and approval in accordance with Condition 21 within one year from submittal of the final study report.

Upon receipt of the final plan, Ecology may issue an order approving or modifying the plan, and the Permit Holder shall implement the plan.

- b. A study to assess the relationship between salmonids and the tailrace canal. Within one hundred eighty (180) days of the completion of Condition 7 above (Minimization of Powerhouse Leakage), Cascade shall begin a study to assess the occurrence of entry, delay, stranding, and/or delayed migration of salmonids in the tailrace canal. If the study determines that adverse conditions are occurring and remediation is necessary, the Permit Holder shall develop and implement a plan to improve conditions. The plan shall include consideration of a tailrace barrier. Prior to implementation, the Permit Holder shall submit the plan to Ecology for review and approval in accordance with Condition 21.

12. Department of Health Water System Planning

The water appropriated under this application will be used for public water supply. The State Board of Health rules require public water supply owners to obtain written approval from the Department of Health's Office of Drinking Water Supply, prior to any new construction or alterations of a public water supply system.

13. Shortage Management Plan

No later than two (2) years after this authorization to make use of public water becomes effective, Permit Holder shall adopt and submit to Ecology a shortage management plan intended to reduce and minimize the need for water for municipal water supply purposes when the region is experiencing dry or drought conditions.

14. Fish Screens on Outlets from Lake Tapps Reservoir

Within five (5) years of permit issuance, the Permit Holder shall install fish screens on any outlets from Lake Tapps Reservoir, if required and warranted based on scientific studies. Prior to construction, the Permit Holder shall submit a plan for installation, operation, and maintenance of the fish screens to WDFW for approval or modification. Fish screens shall be installed, operated, and maintained according to the plan approved by WDFW.

15. Measuring and Reporting Water Use

An approved measuring device shall be installed and maintained for the Lake Tapps water supply withdrawal pipeline to the water treatment plant in accordance with the rule "Requirements for Measuring and Reporting Water Use", chapter 173-173 WAC.

Water use data shall be recorded daily. The maximum monthly rate of diversion/withdrawal and the monthly total volume shall be submitted to Ecology in digital format by January 31 of each calendar year.

The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, Water Resource Inventory Area ("WRIA"), Permit/Certificate/Claim No., source name, annual quantity used including units, maximum rate of diversion including units:

- Monthly meter readings including units;
- Peak monthly flow including units;
- Department of Health WFI water system number and source number(s);
- Purpose of use; and
- Open channel flow or pressurized diversion.

Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

Chapter 173-173 WAC describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition Ecology for modifications of some of the requirements. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements."

16. Existing Rights

This authorization to make use of public water granted by the State of Washington is subject to existing water rights, including any existing rights held by the Tribes or the United States for the benefit of Tribes under treaty or settlement.

17. Use of Claim

This permit is expressly conditioned on the use of water under Claim No. 160822 to satisfy recreational, lake level, aquatic habitat, water quality, and other regulatory beneficial uses and the conditions of this permit.

18. Combined Diversion Not to Exceed Limits

The combined instantaneous diversion of water from the White River for municipal water supply under this authorization and under the rights the Permit Holder claims under Claim No. 160822 shall not exceed the limits established for additional purposes under the change decision in Claim No. 160822.

19. Trust Water Donation

No later than two (2) years after this authorization to make use of public water becomes effective, the Permit Holder shall submit to Ecology an application to make a permanent donation of a portion of Claim No. 160822 to the State's Trust Water Program.

20. Emergency Operations

Permit conditions regarding or affecting operation of Lake Tapps Reservoir and related facilities do not apply and shall be waived to the extent that emergency conditions require or as ordered by a court or by a

state or federal agency with jurisdiction. The Permit Holder shall notify Ecology of any emergency operations in accordance with Condition 21. Emergency conditions mean a temporary circumstance or condition caused by a natural disaster, accident or physical damage, or other extraordinary event that is not avoidable by the exercise of reasonable diligence. Emergency conditions do not include droughts or long term changes in hydrologic conditions.

21. Ecology Review and Approval Process

This provision defines two processes for communicating with Ecology for compliance with the provisions of this water right, including conditions 1, 2, 4, 5, 6, 7, 8, 11, and 20.

1. Notify Ecology

Permit Holder shall provide notice in writing to Ecology's Southwest Regional Office Water Resources Program Supervisor, or other staff identified by Ecology, and shall ensure that Ecology receives the notice. This provision does not limit Ecology's legal authority to act. This provision applies to the requirement to notify Ecology in Condition 20.

2. Ecology Review and Approval

Permit holder shall submit the required information for Ecology's review, comment, and approval. The information shall be submitted in writing to Ecology's Southwest Regional Office Water Resources Program Supervisor, or other staff identified by Ecology, and Permit Holder shall ensure that Ecology receives the information. Ecology shall review the submitted information and respond to the Permit Holder in a timely manner. This provision applies to the requirements for review and approval by Ecology in Conditions 1, 2, 4, 5, 6, 7, 8, and 11.

22. Adaptive Management

Based on the analyses conducted to evaluate this water right, Ecology is confident the project can achieve its instream flow, recreational lake level, and municipal water supply objectives on a reliable basis. The conditions of this water right provide the Permit Holder flexibility to adapt to a wide range of hydrologic conditions and still meet those objectives.

In the event that instream flow, recreational lake level, or municipal water supply objectives are not reliably met, Ecology shall consult with the Permit Holder to consider the reasons the objectives are not being met and identify possible operational changes in conformity with the conditions of this water right.

If necessary, Ecology may also convene, or direct the Permit Holder to convene, a process through which input is sought from stakeholders and other interested parties to identify possible operational changes which will result in the achievement of instream flows, recreational lake levels, and municipal water supply on a more reliable basis.

Consideration of operational changes will include, but not be limited to, the adaptive management measures identified in Section 12.3 of the Final Environmental Impact Statement. Additionally, the Permit Holder will work with other interested parties to secure funding for capital improvement projects if capital improvements are needed to meet the objectives of the project.

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or to give notice to the Department of Ecology on forms provided by the Department documenting such compliance.

Given under my hand and the seal of this office at Lacey, Washington this 10th day of Dec. 2010.

Department of Ecology

OK 

By 
Thomas Loranger, Section Manager



File NR S2-29920(B)
WR Doc ID 46978

State of Washington WATER RIGHT PERMIT

PRIORITY DATE
6/20/2000

WATER RIGHT NUMBER
S2-29920(B)

MAILING ADDRESS
CASCADE WATER ALLIANCE
11400 SE 8TH ST STE 440
BELLEVUE WA 98004

SITE ADDRESS (IF DIFFERENT)

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE
10

UNITS
CFS

ANNUAL QUANTITY (AF/YR)
5060

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Municipal	10		CFS	5060		01/01 - 12/31

REMARKS

Ecology has issued two separate Reports of Examination corresponding to application S2-29920: one corresponds to the Lake Tapps Reservoir Water Rights and Supply Project [permit S2-29920(A)] and the other corresponds to the Regional Reserved Water Program [permit S2-29920(B)]. Water quantities from the two permits are additive. The two permits have the same priority date, but the permit for S2-29920(A) is superior in priority. Both of the permits are evaluated in one Investigator's Report.

This permit establishes a Regional Reserved Water Program to be used by the Cities of Auburn, Bonney Lake, Buckley, and Sumner (collectively referred to as the "Four Cities"). The Regional Reserved Water Program provides a mechanism that can be used by the Four Cities to mitigate impacts to the mainstem White and Puyallup Rivers in connection with water right applications to be submitted in the future. "Regional Reserved Water" refers to the water allocated by this permit.

ADDITIVE	IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
	NON-ADDITIVE		WATER SYSTEM ID	CONNECTIONS

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Pierce	White River	Puyallup River	10-Puyallup-White

WATER RIGHT PERMIT

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
WHITE RIVER (NON DIVERSIONARY)			19N	06E	02			

Datum: NAD83/WGS84

Place of Use (See Attached Map)

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

White River from the diversion dam (RM 24.3) to the confluence with the Puyallup River (RM 0.0) and the Puyallup River from the confluence with the White River (RM 10.4) to Commencement Bay (RM 0.0).

Proposed Works

Not Applicable

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
December 31, 2030		

Any water right applicant seeking to use the Regional Reserved Water as a component of their application shall obtain an approved water right from the Washington State Department of Ecology ("Ecology") prior to the Begin Project Date of December 31, 2030. The Begin Project Date shall not be extended.

The remaining development schedule shall be established in the Report of Examination for any water right application making use of Regional Reserved Water

Provisions:

The Permit Holder must meet the provisions and conditions of this section.

1. Minimum Flow

Regional Reserved Water has no mitigation value when flows are below the Minimum Flow established in table and its use shall not reduce the instream flow of the White River below the Minimum Flow established in Table 1. Compliance with the Minimum Flows shown in table shall be measured at USGS gage 12099200 – White River above Boise Creek at Buckley, or other appropriate gage established by the Permit Holder of S2-29920(A) in accordance with the conditions of that water right.

Table 1. Minimum Flow

Time Period	Minimum Flow	Time Period	Minimum Flow
January 1-14	650 cfs	July 1-23	800 cfs
January 15-31	525 cfs	July 24-31	650 cfs
February 1-14	550 cfs	August 1-6	650 cfs
February 15-29	500 cfs	August 7-31	500 cfs
March 1-14	550 cfs	September 1-14	500 cfs
March 15-31	725 cfs	September 15-30	500 cfs
April 1-14	775 cfs	October 1-14	500 cfs
April 15-30	825 cfs	October 15-31	500 cfs
May 1-14	875 cfs	November 1-14	500 cfs
May 15-31	875 cfs	November 15-30	550 cfs
June 1-14	800 cfs	December 1-14	550 cfs
June 15-30	800 cfs	December 15-31	600 cfs

2. Subject to Puyallup River at Puyallup Minimum Instream Flow

The Regional Reserved Water Program is junior to the Minimum Instream Flow ("MIF") for the Puyallup River at Puyallup established in WAC 173-510-030. Regional Reserved Water shall not be used as mitigation in any way that would decrease flows in the Puyallup River at Puyallup when that gage is below the MIF.

3. Mitigation Value Limited to Mainstem White and Puyallup Rivers

The mitigation value of Regional Reserved Water is limited to the mainstem of the White River downstream of the diversion dam and the mainstem of the Puyallup River downstream of the confluence with the White River. Regional Reserved Water is not available to mitigate impacts to tributaries of the White River or the Puyallup River.

4. Additional Water Right(s) Required

Regional Reserved Water cannot be used as mitigation except as authorized by a new water right or change to existing right.

5. Supply and Demand Analysis Required

Any application proposing to use Regional Reserved Water shall provide a detailed water supply and demand analysis documenting that the water quantities in the application will be put to beneficial use.

6. Use Limited to Four Cities

Use of the Regional Reserved Water Program established by this water right is limited to the Cities of Auburn, Bonney Lake, Buckley and Sumner.

7. Subject to Cancellation on January 1, 2031

Ecology approval for any water rights using the Regional Reserved Water Program must be secured by December 31, 2030. Any portion of the permit for the Regional Reserved Water Program that has not been allocated in conjunction with a water right approved by Ecology shall be cancelled on January 1, 2031.

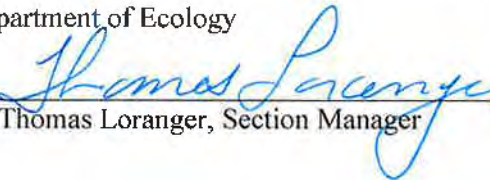
This Permit Subject to Cancellation

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or to give notice to the Department of Ecology on forms provided by the Department documenting such compliance.

Given under my hand and the seal of this office at Lacey, Washington this 10th day of Dec., 2010

OK 

Department of Ecology

By 
Thomas Loranger, Section Manager



File NR S2-29934
WR Doc ID 22232

State of Washington WATER RIGHT PERMIT

PRIORITY DATE
9/15/2000

WATER RIGHT NUMBER
S2-29934P

MAILING ADDRESS
CASCADE WATER ALLIANCE
11400 SE 8TH ST STE 440
BELLEVUE WA 98004

SITE ADDRESS (IF DIFFERENT)

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE
135

UNITS
CFS

ANNUAL QUANTITY (AF/YR)
54300

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE		UNITS	ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE		ADDITIVE	NON-ADDITIVE	
Municipal	135		CFS	54300		01/01 - 12/31

REMARKS

The diversion location will be Lake Tapps, likely in the forebay area of the White River Hydroelectric Project, but the specific location is not yet determined.

Source Location

COUNTY	WATERBODY	TRIBUTARY TO				WATER RESOURCE INVENTORY AREA		
Pierce	Lake Tapps	White River				10-Puyallup-White		
SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
UNBUILT FACILITY ON LAKE TAPPS	0520082019		20N	05E	08	SWNE	47.237999	-122.203379

Datum: NAD83/WGS84

Locations and parcel number are approximate.

Place of Use (See Attached Map)

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

The place of use for this water right is the combined service areas described in the most recent Water System Plans approved by the Washington State Department of Health for the Cascade Water Alliance, the City of Seattle and the City of Tacoma.

WATER RIGHT PERMIT

Proposed Works

Lake Tapps Reservoir Water Rights and Supply Project

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
December 31, 2040	Within 15 Years of Begin Project	December 31, 2060

Provisions

The Development Schedule, and Provisions and Conditions of the 2010 Report of Examination for S2-29920(A) in their entirety are incorporated by reference.

This Permit Subject to Cancellation

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or to give notice to the Department of Ecology on forms provided by the Department documenting such compliance.

Given under my hand and the seal of this office at Lacey, Washington this 10th day of Dec, 2010.

OK HL

Department of Ecology

By Thomas Loranger
Thomas Loranger, Section Manager