CHAPTER 3

PLANNING CRITERIA AND SERVICE POLICIES

INTRODUCTION

In this chapter, factors that will affect the planning and design of future water facilities are addressed. These factors include regulatory requirements, topography, population, land use, and political considerations. The information presented is general enough to retain validity as design constraints change and at the same time sufficiently detailed to provide a foundation for the design of future facilities.

GROWTH MANAGEMENT

The Growth Management Act (GMA) was enacted by the Washington State Legislature to ensure a continuation of Washington's high quality of life. The basic objective of the GMA is to encourage local county and city governments to develop and implement a 20-year comprehensive plan that incorporates their vision of the future, within the framework of the broader needs of the state.

Under the GMA, municipalities must complete their own planning and coordinate these planning efforts with those of the county and surrounding municipalities. Municipal water supply systems, including water districts, support this planning process pursuant to the development of water system plans. Water service provided by both municipalities and special districts is to occur consistent with local land use plans, as well as with retail service areas established in Coordinated Water System Plans (CWSP) or other state approved planning processes. The Northshore Utility District retail service area, which includes portions of five cities: Lake Forest Park, Kenmore, Bothell, Woodinville, and Kirkland, and unincorporated Snohomish County has been developed to be consistent with the land use plans of the jurisdictions that it serves.

SERVICE AREA

In accordance with the Municipal Water Law (MWL), the District is required to designate a retail service area within which it has a duty to serve all customers, and if appropriate, also designate a future service area and wholesale service area. At this time, the District provides only retail service within the service area established in the east King County CWSP (i.e., direct service connections) and has no intention or physical opportunity to expand its retail service area. Consequently, no future service areas are described in this plan.

RETAIL SERVICE AREA

The District acknowledges that it has a duty to serve within its RSA, which is co-extensive with the service area boundary shown in the East King County CWSP. With the exception of a small area within Snohomish County, the District's retail service area is located within King County. The District is bordered by Lake Washington on the southwest, the Snohomish-King County line to the north, and the western foothills of the Sammamish River Valley to the east.

For purposes of this plan, retail water service is generally defined as the provision of a direct service connection to a customer within the District's retail service area. Within its retail service area, the District currently provides water supply to the entirety of the City of Kenmore, portions of the cities of Bothell, Lake Forest Park, and Kirkland. The location of the District in relation to surrounding areas is presented in Figure 1-1. Figure 1-2 is a district base map that includes the Corporate boundary, retail service area, pump stations, pipes, tanks, and reservoirs. There have been no substantive changes to the District's retail service area since the date of its last approved Water System Plan Update (2009).

With the exception of a limited number of properties that have yet to request service, the District has the water mains and delivery capacity to serve its entire retail service area.

RETAIL SERVICE AREA BY AGREEMENT

In addition to providing retail water service to customers located within the District's designated retail service area, the District also provides retail water service on an interim basis to a limited number of customers located outside of its retail service area and CSWP boundary. Such interim retail service is provided by agreement with the Cities of Bothell, Kirkland, and Lake Forest Park, in addition to Alderwood Water and Wastewater District (AWWD) and the Woodinville Water District (WWD), as shown in Figure 1-2. All of the interim retail water service agreements cited above have been in place for more than 6 years.

Retail water service will continue to be provided by the District on an interim basis until such time a jurisdiction/municipal water system cited above advises the District in writing of: (1) its intent to terminate such agreements; and (2) its ability to fully assume all retail service area responsibilities involving the interim retail connections. These agreements are referenced later in this chapter and in Appendix F. The District is considering revising the interim retail service agreements to conform to a single, consistent format that describes appropriate terms and conditions.

WHOLESALE SERVICE AREA

The District has a wholesale agreement to provide up to 1 mgd to the City of Bothell through the Cherry Hill intertie. This agreement reserves 1 MG of capacity from the Norway Hill Reservoir for the City of Bothell. The District's agreement with the City of Bothell is in Appendix F.

CUSTOMER SERVICE POLICIES

Water Service and Connections

The District will strive to provide potable water service to the people within its retail service area, provided all policies related to service can be met, consistent with applicable statutes, rules, and guidance provided by DOH.

The District has a duty to serve all customers located within its retail service area. In this regard, all proposed structures and developments within the District's retail service area shall connect directly to the District's water system.

All proposed connections/developments within the District's retail service area shall be allowed unless deemed topographically unfeasible by the District at the time of the request due to water supply and/or system capacity constraints. The District has developed the following process for application for water service by the District.

- For individual water service applications, the applicant must submit a completed Certificate of Water Availability form to the District. The proposed service will be evaluated by the District to determine water system capacity, fire flow availability, meter size and/or other improvements are necessary to provide adequate water pressure, fire flow, and water quality.
- The issuance of Certificates of Water Availability generally occurs within one week of applicant submittal. Applicants are then advised to submit the Certificates to appropriate local governments to secure building permits. Following receipt of a building permit, the water service applicant must then submit an Application for Water Service to the District, along with appropriate connection fees, for a water connection/meter installation to occur. Water connections/service meters are generally installed within one week after a completed Application of Water Service is received.
- For a new water service request that requires an extension of the existing water system, the District requires the applicant complete: (1) a Certificate of Water Availability form, (2) a Developer Extension Agreement (DEA), and (3) an Application for Water Service. The District has a Developer

Extension Procedure Manual that identifies the five phases of the developer extension process. These phases include pre-application, preconstruction, construction, final acceptance, and project closeout.

A developer extension (DE) applicant must secure preliminary plat approval prior to the District executing a Developer Extension Agreement. Developer extension agreements require District Board of Commissioners approval which generally occurs within one month of submittal of a proposed DEA by the applicant. Once the water facilities are built by the applicant and deeded to the District, the applicant is then required to submit an Application for Water Service for meter installation and commencement of water service.

- For all forms of water service request, the District determines whether adequate water system capacity is available to serve an applicant's property located within the District's retail service area, based on available capacity from contracted wholesale water supply, independent water rights, storage, and transmission. As a practical matter, the District has determined that it has sufficient system and water supply capacity to meet projected service area demands beyond 2035. Consequently, the District's capacity is not reverified with each additional request for water service.
- Water availability will expire at the time indicated on the Certificate of Water Availability issued for the property, unless a written request for an extension is submitted to and approved by the District prior to the expiration date. Certificates of Water Availability expire within one year of issuance.
 - The District is not responsible for service connection delays resulting from non-technical conditions that are the responsibility of the applicant to resolve and which affect the District's ability to provide new water service. These conditions include, but are not limited to, environmental review, state/local/federal permits and ordinances.
 - All new water services shall be consistent with locally adopted land use plans and development regulations, in addition to other relevant conditions of service and associated costs documented in this Plan.

Timelines, Extensions, and Dispute Resolution

Applicants for a new individual water service are advised that a "timely" service response period commences on the date the completed Certificate for Water Availability is received by the District, and ends upon the prescribed expiration date of the Certificate.

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Applicants for developer extensions are advised that a "timely" service response commences on the date a Developer Extension Agreement (DEA) is executed with the District, and ends upon the prescribed expiration date of the DEA.

Connections to the District's water system for individual and developer extension applicants generally occur within 1 week of submittal of the Application for Water Service form, and payment of related connection fees.

Time extensions involving the DEA may be granted, provided that good faith effort is being made to complete the permit or other activity deemed necessary to connect to the District's water system. In this regard, the District allows up to 18 months for completion of a developer extension. Requests for additional time can be made if needed.

Time extensions involving individual applications for water service are generally and quickly addressed through the issuance of a new Certificate of Water Availability.

In the event an individual water service applicant or party seeking a developer extension agreement has a grievance regarding the "timely and reasonable" response of the District to his/her application, the applicant is directed to submit in writing to the District General Manager, a request for said grievance to be heard before the District Board of Commissioners. Once a request is submitted, a hearing before the Board of Commissioners shall occur within 60 days.

Satellite System Management

The District is not prepared at this time to provide and/or contract for satellite system management or ownership services within or adjacent to the District's service area.

PHYSICAL ENVIRONMENT

The physical environment within the District and surrounding areas plays a key role in planning for the future water service of the District's population. The relevant components of the physical environment include topography, groundwater, climate, surface water, site sensitive areas, and geology, and soils.

Topography

The ground slope and natural drainage features within the District play a significant role in the planning and design of the water distribution and storage facilities. The elevation within the District ranges from about 14 feet above sea level along the shores of Lake Washington to approximately 550 feet (NAVD 88) at the Lake Forest Park Reservoir located in the northwest portion of the District. The topography of the District and surrounding areas is shown in Figure 3-1.

Groundwater

The average depth to water in the Interlake Drift Plain (see *Geology* section) is about 37 feet, but this can vary widely depending on location and time of year. The nearest major aquifer is located in the Sammamish Valley near Redmond and ranges in depth from 13 to 56 feet.

The District has investigated the development of groundwater resources within the District boundary. Groundwater studies were completed in 1987 by Robinson and Noble and in 1994 by Golder Associates, Inc. One test well was drilled and equipped with a pump, but was not connected to the District's system at the Westhill Standpipe site and can produce approximately 75 gallons per minute (gpm) of potable quality water. Based on the closed status of the Lake Washington drainage (WAC 173-508-040), Ecology denied the District's application for a water right, so the well is not in use. The District will not decommission this well, in case it is needed as an emergency supply source. Because of the Lake Washington/Lake Sammamish Basin closure, the development of groundwater is not considered to be a viable water supply option for the District.

Climate

The District receives an average of 36.15 inches of rain per year, with 73 percent occurring in the six-month period from October to March. December is historically the wettest month, and July the driest. Evaporation is less than one inch in December and approximately six inches in July, per NOAA Published Climatological Data.

Winds generally blow from the west, bringing a moderate, maritime climate inland. The average annual temperature is about 53 degrees Fahrenheit (F). August is the warmest month with an average temperature of about 67 degrees F, and December is the coolest with an average temperature of about 41 degrees F.

Surface Water

The surface water features within the District boundary include Lake Washington, the Sammamish River, Swamp Creek, and Juanita Creek, which flows south into Lake Washington via Juanita Bay. Swamp Creek, North Creek, and Bear Creek are tributary to the Sammamish River and therefore flow into the Puget Sound via Lake Washington. The wetland features within the District are shown in Figure 3-2. The basin characteristics for the creeks, streams, and rivers discussed below were obtained from stream gauging published by the U.S. Geological Survey.

Lake Washington is over 200-feet deep in places and has a detention time of approximately 2.5 years. It receives flow from the Cedar River, the Sammamish River, and numerous creeks. Historically, Lake Washington served as receiving water for surrounding wastewater discharges and as a result experienced severe algae blooms and











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low oxygen conditions associated with high nutrient loadings. The lake has made a successful recovery since wastewater flows were diverted in the 1960s, but concerns are still being raised with regard to stormwater runoff and combined sewer overflows. Lake Washington discharges into Puget Sound via Lake Union and the Chittenden Locks and is closed to new water right appropriations by Ecology rule.

Bull trout, which are listed under the Endangered Species Act (ESA), are found in Lake Washington. The U.S. Fish and Wildlife Service considers these sub-populations to be "depressed," with an estimated population of less than 5,000 and fewer than 500 spawners.

The Sammamish River flows north from Lake Sammamish at Redmond, then turns west and flows through Bothell into the north end of Lake Washington. The Sammamish River drainage basin is approximately 212 square miles in size and historical records report peaks as high as 1,900 cubic feet per second (cfs).

Swamp Creek drains an area of about 23 square miles and has experienced peak flows of greater than 1,090 cfs. Small portions of the North and Bear Creek basins are located within the District, although the creeks themselves are not. North Creek drains a 25-square-mile basin and has experienced peak flows of over 680 cfs. Bear Creek drains a 14-square-mile basin and has experienced peak flows of over 420 cfs. Juanita Creek has a basin area of approximately 6.7 square miles. The Juanita Creek basin is highly urbanized, resulting in peak flows as high as 740 cfs. Both Swamp Creek and Bear Creek are closed to new water right appropriations by Ecology rule.

Site-Sensitive Areas

Site-sensitive areas within the District include those classified as erosion hazard areas, wetlands, seismic hazard areas, slide hazard areas, flood hazard areas, and water bodies. The site-sensitive areas within the District are shown in Figure 3-2.

Erosion Hazard Areas

There are approximately 2,275 acres within the District that are classified by the U.S. Department of Agriculture Soil Conservation Service (SCS) as erosion hazard areas. These areas are especially subject to erosion, if disturbed, and may not be well suited for high-density developments or intensive land uses.

Seismic Hazard Areas

There are approximately 394 acres within the District that are classified as seismic hazard areas. Seismic hazard areas are those with low-density soils that are more likely to experience greater damage due to seismic-induced subsidence, liquefaction, or landslides.

Wetlands

There are approximately 288 acres within the District that are classified as wetlands. Wetlands are defined by the EPA as areas that are inundated for at least part of the year. Wetlands support valuable and complex ecosystems and consequently development is severely restricted if not prohibited in most wetlands.

Flood Hazard Areas

There are approximately 564 acres within the District that are classified as flood hazard areas. Flood hazard areas are areas adjacent to lakes, rivers, and streams that are prone to flooding during peak runoff periods. Flood hazard areas deserve special attention due to the sensitive nature of their ecosystems as well as the potential for damage to structures located in the floodplain. Figure 3-3 identifies the floodplain areas within and around the District.

Slide Hazard Areas

There are approximately 1,528 acres within the District that are classified as slide hazard areas. Slide hazards areas are those that are prone to unstable behavior due to steep slopes, lack of vegetation, or unconsolidated soils.

Water Bodies

Lakes and streams are classified as sensitive areas due to the wide variety of plants and animals that they support. It should be noted that a majority of the regulations discussed in Chapter 2 are designed to protect natural water bodies and their associated ecosystems.

Geology

Most of the District lies on what is called the Interlake Drift Plain, located between Lake Washington and Lake Sammamish. The northwestern portions of the District lies on the Seattle Drift Plain. The most recent glaciations of the Puget Sound lowland is termed the Vashon glaciation, which scientists estimate began its northerly recession about 14,000 years ago. Subsequent erosion by ice melt cut steep-sided canyons in the major valley walls and transported the eroded material to lowland areas where alluviation created flat valley floors.

Soils

The majority of the soils within the District boundary are on uplands or terraces. The SCS classifies them as the Alderwood association, described as moderately well drained, undulating to hilly soils that have dense, very slowly permeable glacial till at a depth of 20 to 40 inches. The central areas of the District are classified as the





LEGEND:

CORPORATE BOUNDARY

RETAIL SERVICE AREA (INCLUDING RETAIL SERVICE AREA BY AGREEMENT)

---- COUNTY LINE

FEMA FLOOD ZONES:

A - AN AREA INUNDATED BY 100 YEAR FLOODING, FOR WHICH NO BASE FLOOD ELEVATIONS (BFE'S) HAVE BEEN ESTABLISHED

X500 - AN AREA INUNDATED BY 500 YEAR FLOODING; AN AREA INDUNDATED BY 100-YEAR FLOODING WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; OR AN AREA PROTECTED BY LEVEES FROM 100 YEAR FLOODING

SOURCE: FEMA



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Alderwood-Kitsap-Indianola association. These are moderately well drained, nearly level to steep soils that have very slowly permeable glacial till or glacial lake deposits at a depth of 16 to 40 inches and somewhat excessively well drained rolling, deep sandy soils on uplands and terraces. The areas along the Sammamish River and in major stream valleys are classified as the Puget-Earlmont-Snohomish association. These are poorly drained and somewhat poorly drained, nearly level soils that have layers of peat within a few feet of the surface. The soils northeast of the District are classified as the Everett association. These are somewhat excessively drained, gravelly, gently undulating soil underlain by sand and gravel on terraces.¹ The locations of the soil classifications within and adjacent to the District are presented in Figure 3-4.

Flora and Fauna

Plant species within the District include alder, maple, aspen, fir, cedar, pine, and various shrubs and grasses. Animal species include ducks, woodpeckers, great blue herons, bald eagles, salmon, bass, and trout.

Endangered Species

The Puget Sound Chinook salmon was listed as "threatened" under the ESA in March 1999. Under the ESA, governments and individuals are prohibited from taking species or degrading critical habitat of the species. Critical habitat for Puget Sound Chinook salmon was designated by NOAA fisheries on September 2, 2005. Lake Washington was designated as critical habitat for Chinook salmon, but the Sammamish River and its tributaries were excluded.

According to the National Marine Fisheries Service, critical habitat types necessary to support the chinook life cycle include juvenile rearing areas, juvenile migration corridors, areas for growth and development, adult migration corridors, and spawning areas. Essential features of critical habitat include adequate substrate, water quality, water quantity, water temperature, water velocity, cover and shelter, food, riparian vegetation, space, and safe passage conditions. Compliance with the Section 4(d) rule promulgated by National Marine Fisheries Service will reduce the possibility of District activities, such as stream crossings or other construction adjacent to streams that may adversely impact any of these critical habitat features.

The U.S. Fish and Wildlife Service listed the Puget Sound bull trout as threatened under the ESA in October 1999. Bull trout habitat requirements are similar to the chinook in many respects. Spawning bull trout are often associated with colder water than the Chinook and may seek out groundwater seepages along the bottom of small tributary streams in the upper elevations of the watershed. Critical habitat for Puget Sound bull trout was designated by USFWS on September 26, 2005, as Lake Washington.

¹ Taken from U.S. Department of Agriculture Soil Conservation Service General Soil Maps.

Table 3-1 lists the priority species present in Lake Washington, Sammamish River, Juanita Creek, and Swamp Creek.

TABLE 3-1

Туре	Lake Washington	Sammamish River	Juanita Creek	Swamp Creek
Fall Chinook	Х	Х		Х
Coho Salmon	Х	Х	Х	Х
Sockeye Salmon	Х	Х	Х	Х
Winter Steelhead	Х	Х	Х	
Resident Cutthroat	Х	Х	Х	Х
Large Mouth Bass	Х	Х	Х	
Rainbow Trout	X	X	Х	
Kokanee Salmon				X

Priority Anadromous and Resident Fish Presence

LAND USE PLANNING

The future land use for the District is shown in Figure 3-5. Because land use classifications vary among the various municipalities, all categories were combined into four groups, as shown in Table 3-2. For the purposes of this Plan, a representative density was determined for each of the residential classifications Low, Medium, and High Density Residential. The total area of each land use designation as defined in Table 3-2 is given in Table 3-3. These zoning designations are used to develop buildout population estimates later in this chapter.





TABLE 3-2

Zoning Classification	Municipality	Zoning Density	Municipality Zoning Classification
Low Density	Bothell	1-5	R 40000, R 9600, R 8400
Residential	Kenmore	1-6	R-1, R-4, R-6
	Kirkland	1-8	RS 6.3, RS 7.2, RS 8.5, RS12.5,
			RS35, RSX 5.0, RSX 7.2, RSX
			8.5, RSX 12.5, RSX 35, RSA 1,
			RSA 4, RSA 6, RSA 8
	Lake Forest Park	2-6	RS 7200, RS 9600, RS 10000,
			RS 15000, RS 20000
	Woodinville	4-6	R-4, R-6
	Unincorporated	4-6	R 9600, R 7200
	Snohomish County		
Medium	Bothell	8-10	R 7200, R 5400, R 4000
Density	Kenmore	12	R-12
Residential	Kirkland	9-12	RM 3.6, RM 5.0, RMA 3.6,
			RMA 5.0
High Density	Bothell	15	R 2,800
Residential	Kenmore	18-48	R-18, R-24
	Kirkland	18-24	RM 1.8, RMA 1.8 , RM 2.4,
			RMA 2.4
Non-	Bothell	0	AG, DT, NB, GDC
Residential	Kenmore	0	NB, P/SP, RB, WC, DC, DR,
			CB, GC, UC, P
	Kirkland	0	PR, PRA, PO, WD, YBD, BN,
			BNA, BC, BC 1, BC 2, BCX,
			CBD, JBD, MSC, NRH, RH,
	-		TL, LIT, TL7, PLA, P
	Lake Forest Park	0	BN, PF

Land Use Designation for the Northshore Utility District

Lake Forest Park0Source: GIS data provided by each City or County in June 2014.

Table 3-3 provides the total land area and the number of residential units at buildout for each of the zoning classifications. Approximately 80 percent of the District retail service area is zoned residential, and 20 percent is zoned non-residential.

TABLE 3-3

Area⁽¹⁾ **Possible Residential Zoning Classification** Units at Buildout⁽²⁾ (acres) Low Density Residential 7,249 28,536 Medium Density Residential 499 5.006 942 High Density Residential 13,025 Non-Residential 1.295 0 Total 9.985 46,566

Retail Service Area Land Use Designation

(1) Land area does not include rights-of-way.

(2) Residential units are defined as any residential living space, including single-family homes, apartments, condos, etc.

WASTEWATER SYSTEM

The District owns and operates a wastewater collection system consisting of collection sewers, trunk sewers, lift stations and force mains. Treatment for the District's wastewater is provided by the King County Department of Natural Resources (KCDNR) Brightwater Treatment System. In response to increased growth and limited expansion options, KCDNR designed and constructed the Brightwater Treatment System which began operation in September 2011. In addition to agreements with KCDNR, the District has several agreements with adjacent municipalities to transport flows into the KCDNR system. Figure 3-6 shows the District's wastewater system.

INTERGOVERNMENTAL COORDINATION

Regional coordination is an important component of water system planning and is a required feature of water system plans under the Municipal Water Law (MWL). Intergovernmental coordination is particularly important to the District because of the various cities and unincorporated areas of King County that lie within the District's retail service area. The District currently provides water service to either some or all of the cities of Kenmore, Bothell, Kirkland, Woodinville, and Lake Forest Park, portions of Woodinville Water District, and Alderwood Water and Wastewater Districts. Figure 3-7 shows the city limits and UGA boundaries of the cities within the District retail service area boundary. The aforementioned cities and adjacent purveyors are discussed in the following sections. The District maintains interties with many of these purveyors. Further discussion of the interties and a map showing their location is provided in Figure 1-2.





LEGEND:

SEWER SERVICE STUDY AREA BOUNDARY

- CORPORATE BOUNDARY
- GRINDER PUMPS
- LIFT STATIONS
- KCDNR LIFT STATIONS
- ---- KCDNR INTERCEPTOR
- ----- COUNTY LINE
- EAST WEST BASIN BOUNDARY

SOURCE: KING COUNTY GIS









SOURCE: KING COUNTY GIS, JULY 2005



ALDERWOOD WATER & WASTEWATER DISTRICT

The Alderwood Water & Wastewater District (AWWD) is located in Snohomish County and borders the District to the north. AWWD boundaries cover approximately 60 square miles, serving a population of more than 200,000.

AWWD currently provides retail water service to the Cities of Brier and Mill Creek, portions of the Cities of Bothell and Mukilteo, and unincorporated areas of Southwest Snohomish County. AWWD also provides wholesale water service to the Cities of Mountlake Terrace, Lynnwood, and Edmonds. The District currently provides retail water service on an interim basis to a small area within the AWWD corporate boundary near Lockwood Elementary. Although AWWD has facilities in this area, it is most conveniently served by the District at this time. An intertie also exists that is capable of providing flow from AWWD to the District in an emergency situation.

CITY OF BOTHELL

Bothell was incorporated in 1909. The 2010 city population, according to census data, was approximately 33,505. The current UGA lies in both King and Snohomish Counties and comprises over 9,000 acres with 7,750 acres located within the city limits. The District serves the west and south areas of the City with retail water consistent with its location within the District's designated retail service area. The District also provides by agreement on a limited basis, interim retail water service to small areas of Bothell located outside the scope of their existing distribution system (e.g., Woodcrest Estates). Development within Bothell and within the District's corporate boundary is primarily residential in nature.

The District's Norway Hill Reservoir was constructed on City of Bothell property under an agreement with the City. Bothell provided the reservoir site to the District in exchange for 1.0 MG of the reservoir's capacity. The reservoir capacity is provided through three intertie locations where the City requests up to 1 mgd of flow from the District. The District also has two emergency interties with the City's water system.

CITY OF KENMORE

The City of Kenmore was incorporated in 1998. The current UGA is coincidental with the city limits, which comprise approximately 3,900 acres. The 2010 population was approximately 20,460 according to US Census data. The City of Kenmore lies entirely within the District's retail service area boundary and CWSP boundary, and is currently provided all of its water supply by the District.

KING COUNTY

The District previously provided water service to greater than 9,000 customers in unincorporated King County. These customers have been since annexed into the surrounding cities so there is no longer any unincorporated King County within the District's boundary.

CITY OF KIRKLAND

The City of Kirkland was incorporated in 1905. The city population was 48,787 at the 2010 census. In 2011, the City of Kirkland annexed 7 square miles of unincorporated King County which included approximately 33,000 people. According to the City's website, Kirkland now consists of 17.81 square miles with an estimated population of 81,730. Due to the annexation, Kirkland became the 13th largest municipality in the state of Washington.

The City of Kirkland currently provides water service to a large area east of the District's retail service area that falls within the District's (sewer-based) corporate boundary southeast of the Totem Lake area.

The District provides retail water service to a large number of customers who reside within Kirkland's City limits. Many of these customers were previously in unincorporated King County. The District has an emergency intertie with the City of Kirkland that allows flow in both directions. This intertie can supply the District's 380S Zone in an emergency.

LAKE FOREST PARK WATER DISTRICT

The Lake Forest Park Water District (LFPWD) is located adjacent to the northwest corner of the District. The District had previously served certain customers within LFPWD; however, the District's service area boundary was revised to include these customers. One intertie between the District and LFPWD currently exists. Inside a vault is a 4-inch PRV connection through which the District can supply LFPWD with water but cannot receive water from LFPWD. LFPWD can provide supply to the District at this location via booster pumps located in the same vault at a rate of approximately 425 gpm for emergency purposes. According to the agreement, the interties are available for use upon proper notification, and either party can terminate the agreement by giving 1-year's notice.

CITY OF LAKE FOREST PARK

Lake Forest Park was incorporated in 1961. The 2010 census population was 12,598. The current UGA comprises approximately 1,840 acres (excludes existing rights-of-way). Development is primarily residential in nature, with 1,490 acres of single- and multiple-family dwellings (approximately 80 percent of the developable land). There are

also approximately 31 acres of commercial development, with the remaining land consisting of public facilities such as parks, roads, recreational facilities, and 136 acres of vacant lands.

The City of Lake Forest Park does not currently provide water service; instead it is served retail water supply by Northshore Utility District, North City Water District, and LFPWD.

SEATTLE PUBLIC UTILITIES

Seattle Public Utilities (SPU) serves as the primary regional water supply system in western King County and currently provides wholesale water to approximately 21 cities and special purpose districts. The water used by the City of Seattle and its wholesale customers comes from the Tolt and Cedar Rivers and two well fields. The Cedar River system provides approximately 70 percent of SPU's total water supply and the Tolt River system provides 30 percent. Seattle's well fields are available to provide peak season and emergency supply, but are not normally operated. All of the water provided to the District is from the Tolt River system and not from groundwater sources.

In 2005, SPU and the District executed a new wholesale block water supply contract with an expiration of date of 2062. The contract provides the District with an average of 8.55 mgd of supply and defines the points of withdrawal from the SPU system. Between June 1 and September 30 (peak season), the District is contractually limited to a withdrawal rate of 14.96 mgd. Monetary penalties for exceeding the withdrawal rates are defined in the SPU contract. As noted earlier, the quantities secured under this contract are expected at a minimum to meet the District's 20-year demand requirements.

NORTH CITY WATER DISTRICT

The District and North City Water District have parallel lines constructed along 35th Avenue NE, but no intertie currently exists.

SNOHOMISH RIVER REGIONAL WATER AUTHORITY

The Snohomish River Regional Water Authority (RWA) is composed of the City of Everett, Northshore Utility District, and Woodinville Water District (WWD). RWA was established by an interlocal agreement in 1996. Its objective is to provide regional cooperation in the planning, development, operation, and management of new municipal water sources. The service area for RWA includes the retail service areas for the District, WWD, the City of Bothell retail service area, and a portion of Everett's service area north of the King County boundary. Additional discussions related to RWA's role in water supply to the District are discussed in greater detail in Chapter 4.

CITY OF WOODINVILLE

The City of Woodinville was incorporated in 1993. The 2010 census population was estimated at 10,938. The current UGA comprises approximately 23,172 acres, 3,587 of which are within the city limits. Approximately two-thirds of the development is residential in nature, with 2,130 acres of single and multi-family dwellings. Woodinville is primarily a community of single-family dwellings, with about 37 percent multi-family development. The City does not own or operate sewer or water facilities. The District does not provide water service to any areas located within the City, although the District Corporate Boundary includes a small portion of the City of Woodinville.

WOODINVILLE WATER DISTRICT

The Woodinville Water District (WWD) provides water and some sewer service to the City of Woodinville located to the east of the District. The District and WWD have several agreements that allow the District to serve 110 connections located within the WWD retail service area.

The District has several service area boundary agreements with WWD, which allows each purveyor to serve selected customers within each other's service area on a mutually convenient basis. An intertie also exists that allows the District to sell water to WWD for emergency use only, as indicated in Exhibit 1 of the District's Water Supply Agreement with SPU.

RELATED PLANNING DOCUMENTS

The related planning documents listed in the following sections were utilized in the preparation of this document.

COMPREHENSIVE AND WATER PLANS

- City of Bothell Comprehensive Plan Update, 2012
- City of Kenmore Comprehensive Plan, June 2015
- 2012 King County Comprehensive Plan Update, amended 2013
- City of Kirkland Comprehensive Plan, amended 2013
- City of Lake Forest Park Comprehensive Plan Update, 2005
- City of Woodinville Comprehensive Plan Update, 2009
- Seattle Public Utilities Water System Plan Update, 2013

DISTRICT WATER SYSTEM PLANNING DOCUMENTS

- Water System Comprehensive Plan, 2009
- Water and Sewer Hydraulic Model and Capital Improvement Plan Update

- Hydraulic Capacity Analysis, 2014
- PRV Station Operation and Maintenance Manual, 2014
- Master Meter Operation and Maintenance Manual, 2005
- Sammamish River Water Main Crossing Analysis

OTHER DISTRICT PLANS AND REPORTS

Report of Examination, Snohomish River RWA Water Right Change (SW S1-10617C)

REGIONAL CONSERVATION PROGRAMS

SPU adopted a water conservation plan as part of its 1994 Water Supply Plan. Among the goals of this plan were to deliver a regional conservation message and to reduce program costs due to duplication of conservation efforts by wholesale customers. In their effort to meet these goals, the SPU sought to coordinate activities and share information with wholesale customers including the District. The District participated in SPU's "1 Percent Conservation Program" from 2000 until the program's end in 2010. The District's Water Use Efficiency plan is presented in Chapter 9. The District is a member of the Saving Water Partnership, which is a group of utilities with the common goal of saving water.

PLANNING PERIOD

Due to the District's growth history and the need to provide water services for future growth, the District's water system is in need of continuous evaluation and improvement. A planning period for the evaluation of the water utility should be long enough to be useful for an extended period of time, but not so long as to be impractical. The planning period for the Plan is through 2035, coinciding with a 20-year planning interval. Because the service life of many water system components is greater than 20 years, however, the planning of the future facilities will consider a buildout scenario as an estimate of the ultimate required capacity to serve all land under current zoning. In general, it is assumed that mechanical and electrical equipment, such as pumps and controls, has a useful life of 20-years, while structures such as reservoirs and piping have a useful life of 50 years. A detailed schedule of improvements will be proposed for the next 6 and 10 years, but should be continuously reviewed, evaluated, and updated as development occurs and regulations change.

POPULATION

To evaluate the operation of the existing facilities and to estimate the facilities required for future water service within the study area, the District's existing and projected populations are established based on 2014 Transportation Analysis Zones (TAZ) provided by the

Puget Sound Regional Council (PSRC). The TAZs within the study area are shown in Figure 3-8 along with the retail service area of the District.

CURRENT AND PROJECTED RETAIL SERVICE AREA POPULATION

Table 3-4 provides the population within the District's retail service area for each TAZ within the District's boundaries. In cases where a TAZ does not fall entirely within the District, the population within the District is estimated as a fraction of the total population of the TAZ proportional to the area within the retail service area. The PSRC's baseline data was for 2010 and had four projection years 2025, 2030, 2031 and 2035. The values below were interpolated from the projection years. The unincorporated Snohomish County TAZ represents a de minimis fraction of the overall service area and is not included in Table 3-4 or 3-5 but is included in Table 3-6 for buildout.

TABLE 3-4

Projected Retail Service Area Population Based on TAZ Projections

	Percent TAZ within	Retail Service Area Population			
TAZ	Retail Service Area	2010	2020	2024	2034
223	14.8%	792	828	843	871
236	61.5%	2,695	2,925	3,017	3,199
237	100.0%	4,728	5,604	5,955	6,746
238	100.0%	9,134	11,047	11,812	13,356
239	33.4%	1,652	1,872	1,960	2,198
242	52.9%	2,389	2,644	2,746	3,059
243	0.2%	6	7	7	8
244	38.3%	875	2,413	3,028	3,265
245	100.0%	3,851	3,891	3,908	4,151
246	5.8%	292	301	304	324
247	64.2%	3,040	3,282	3,379	3,793
248	100.0%	5,032	5,325	5,442	5,800
249	74.0%	3,494	3,936	4,113	4,390
250	14.0%	331	347	354	378
251	100.0%	6,374	7,008	7,261	8,084
252	90.1%	5,376	5,851	6,041	6,707
253	100.0%	2,552	2,645	2,682	2,857
254	100.0%	7,718	8,680	9,064	9,715
255	100.0%	4,204	4,682	4,874	5,220
256	100.0%	2,684	3,183	3,383	3,647
257	0.8%	44	46	47	50
599	0.7%	27	30	31	33
602	2.27%	92	95	96	109
Total		67,379	76,641	80,346	87,959

(1) Includes planned Totem Lake Development.







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In addition to population estimates and forecasts, each TAZ also provides employment data. Table 3-5 provides the retail service area population and employment estimates for years 2010, 2020, 2024 and 2034.

TABLE 3-5

	Percent TAZ within	Retail Service Area Employment			ent	
TAZ	Retail Service Area	2010	2020	2024	2034	
223	14.8%	93	116	125	145	
236	61.5%	287	322	335	394	
237	100.0%	1318	2,034	2,321	3,010	
238	100.0%	1768	2,611	2,949	3,745	
239	33.4%	473	594	643	727	
242	52.9%	425	507	540	618	
243	0.2%	6	9	10	12	
244	38.3%	2933	4,192	4,695	5,367	
245	100.0%	375	334	317	361	
246	5.8%	98	140	157	199	
247	64.2%	426	496	523	599	
248	100.0%	1031	1,245	1,331	1,617	
249	74.0%	2419	3,317	3,677	4,406	
250	14.0%	72	66	64	75	
251	100.0%	823	1,294	1,482	1,922	
252	90.1%	733	907	977	1,182	
253	100.0%	319	353	367	421	
254	100.0%	1621	2,104	2,297	2,869	
255	100.0%	517	690	760	945	
256	100.0%	736	834	873	991	
257	0.8%	10	13	14	18	
599	0.7%	2	2	2	1	
602	2.27%	10	11	11	12	
Total		16,496	22,191	24,469	29,638	

Projected Retail Service Area Employment Based on TAZ Projections

RETAIL SERVICE AREA BUILDOUT POPULATION

A buildout population is the maximum population an area could have if that area was fully developed based on current zoning. Future land use zoning for each city was used along with average household sizes to determine the buildout population within the District's RSA. The land area for each residential zoning classification was determined for each city though the use of GIS. A weighted average of the number of residential units per acre was found based on the dwelling units per acre and total acres for each zoning

classification. This value was then used to find the total number of residential units in each city. The average household size is not available for each zoning classification so an average number of units per acre along with the city-wide average household size was used to predict the buildout population. Each household size provided was acquired from City and County sources. Table 3-6 below shows the results of the buildout analysis.

TABLE 3-6

City	Residential Land Area (acres)	Average Units Per Acre ⁽¹⁾	Residential Units	Average Household Size ⁽²⁾ (pph)	Population
Bothell	1,215	4.38	5,320	2.46	13,090
Kenmore	2,578	5.13	13,238	2.55	33,760
Kirkland	3,862	6.77	26,151	2.15	56,220
Lake Forest Park	449	4.00	1,800	2.36	4,250
Unincorporated					
Snohomish County	11	5.00	60	2.65	160
Buildout	8,115		46,569		107,480

Buildout Population for the Retail Service Area by Zoning Classification

(1) This is a weighted average of low, medium and high density residential units based on total land for each within the District's limits.

(2) Acquired from the respective City and County sources.

Table 3-7 summarizes the 20-year and buildout population and employment projections. These projections will be used in Chapter 5 to project future water demand.

TABLE 3-7

Projected Retail Service Area Population and Employment

	Population		Employee	
Year	Growth Rate	Population	Growth Rate	Employees
2014	1.96%	71,084	3.13%	18,774
2015	1.30%	72,010	3.03%	19,343
2016	1.29%	72,936	2.94%	19,913
2017	1.27%	73,863	2.86%	20,482
2018	1.25%	74,789	2.78%	21,052
2019	1.24%	75,715	2.71%	21,621
2020	1.22%	76,641	2.63%	22,191
2021	1.21%	77,567	2.57%	22,760
2022	1.19%	78,494	2.50%	23,330
2023	1.18%	79,420	2.44%	23,899
2024	1.17%	80,346	2.38%	24,469

TABLE 3-7 –	(continued)
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	Population		Employee	
Year	Growth Rate	Population	Growth Rate	Employees
2025	0.95%	81,107	2.11%	24,986
2026	0.94%	81,869	2.07%	25,503
2027	0.93%	82,630	2.03%	26,019
2028	0.92%	83,391	1.99%	26,536
2029	0.91%	84,153	1.95%	27,053
2030	0.90%	84,914	1.91%	27,570
2031	0.90%	85,675	1.87%	28,087
2032	0.89%	86,437	1.84%	28,604
2033	0.88%	87,198	1.81%	29,121
2034	0.87%	87,959	1.77%	29,638
Buildout		107,480		30,149

Projected Retail Service Area Population and Employment

Employees at buildout are assumed to equal the number of employees in 2035. (1)