

Water systems are expected to provide timely and reasonable water service within their designated water service areas. If timely and reasonable water service is not or can not be provided, service areas may be transferred to a water purveyor who can provide timely and reasonable service. This is allowed by state law and is in some areas locally reinforced by coordinated water system plans. This has two effects. 1) More responsive service to prospective customers is ensured. 2) The potential for competition between water systems is established, particularly between investor-owned for profit systems and publicly-owned non-profit systems in which responsible resource management may not be the highest priority.

Solutions Being Pursued: The water systems interviewed displayed a broad range in the horizon for which water supply is needed. Whereas the North Perry Avenue Water District apparently has sufficient water for the next 20 years, Gig Harbor has an immediate need for water and has a building moratorium. The purveyors interviewed are currently pursuing a variety of solutions. Source development and permitting efforts are usually conducted on the scale of 20 years to 50 years. Comprehensive water system plans are required by the Washington Department of Health (DOH) to be updated every five years. Current timeframes for processing water rights can be well in excess of five years. Some systems are in short-term need of additional water rights, and several have chosen to use Ecology's cost reimbursement process to speed up water right application processing in order to meet more urgent needs. Listed here are some solutions being pursued by the purveyors interviewed:

Applications for New Water Rights: Several systems are in need of additional water supply, either immediately or in the near term, and are planning to provide this supply through additional water rights (e.g., Cities of Port Orchard and Gig Harbor). Applications are up to 14 years old with the oldest ones submitted in 1990 and 1991 (North Perry Avenue Water District and the City of Port Orchard, respectively).

The primary reason for slow processing of these applications is a lack of Ecology staff resources, and the legal requirement for Ecology to prioritize available budget among their many programs (e.g., water quality, metering/enforcement, etc.). In addition, Ecology's process for individual water right applications has become much more complex and time consuming. The City of Gig Harbor has entered into the cost reimbursement program for speedier processing, where the applicant compensates the time of Ecology staff (supported by consultants). Other possible reasons for slow processing is that applicants may not be willing to move forward under conditions that would result in a rejection of the application (such as in drainages that are closed to further appropriation that would affect streamflows), or there is a perception that insufficient information is available to make a decision.

Interties: Several systems have established or are establishing wholesale water arrangements, or interties, where connections between systems allow the delivery of water from one system to another (e.g., between KPUD and the City of Poulsbo), or the exchange of water as needed. Interties are encouraged by DOH and lead to a more regional and reliable water supply. Obstacles to establishing more interties include engineering (e.g., pressure zones, compatible water quality, etc.), state law and water right considerations. Water rights are issued for a defined place of use. Recent changes in pertinent regulations (House Bill 1338, the "Muni" bill) have provided more flexibility to the establishment of interties under certain conditions (see attached RCW 90.03.383, sections considered particularly relevant to watershed planning are highlighted). Because the law allows for considerable flexibility, the watershed plan may take advantage of the new provisions for WRIA 15 to consider regional water supply development.

Reclaimed Water: The City of Port Orchard is expected to have advanced water treatment of their waste water within five years. The Annapolis Water District is exploring the use of this reclaimed water to meet a portion of their future increased demand. The use of reclaimed water provides many prospective opportunities, including meeting future non-potable water demand; augmentation of instream flows; mitigation of impacts resulting from future groundwater development; and other applications. The primary concern associated with reclaimed water use is the cost of treatment to acceptable levels and, depending on its intended application, residual components in the reclaimed water such as endocrine disrupting compounds.

Development of Inchoate (unused) Rights: Some systems have sufficient water rights and will be developing them as demand increases (e.g., North Perry Avenue Water District).

Resource Development: Nearly all systems surveyed do not have desired margins of infrastructure capacity (e.g., extra wells), and plan to install new wells. This development is expected to be permitted with new or inchoate water rights. Most systems interviewed assume that new wells will be installed in deeper portions of the aquifer system to avoid direct hydraulic continuity with streams that are closed to further appropriation or have set minimum instream flows. Deeper portions of the aquifer system are also less susceptible to impacts from contamination originating from the ground surface. However, in some cases natural water quality is not as good in the deeper portions of the aquifer system (e.g., elevated manganese, iron and/or hydrogen sulfide), and some treatment may be needed before delivery to drinking water systems, adding a cost to this development approach. Additionally, overdevelopment of these deeper aquifers may cause saline intrusion.

Common Problems: Most of the water systems are facing limitations because of sustainable aquifer yield or water rights. These are illustrated by the following examples, with the latter two examples representing resource limitations:

Water Right Limitation: The most extreme example of a water right limitation is the City of Gig Harbor. The City exhausted their available water supply this year and imposed a moratorium in May 2004 on development that required new water supply.

Instream Flow Limitation: Several of the systems interviewed have submitted applications to Ecology for new water rights in drainages that are closed to further appropriation that would result in impacts to stream flows, or have minimum instream flows set. Mitigation may be required to offset impacts on streams if these water right applications are approved. In general, requirements for mitigation of potential environmental impacts are increasingly being included with applications to allow approval. In Kitsap County, some permits have had augmentation of stream flow or other conditions placed on ground water permits. It is not known how many of the pending water right applications in WRIA 15 would be subject to mitigation requirements.

Saline Intrusion Limitation: An example of an area of concern for aquifer limitation is the Manette Peninsula area where the deeper portion of the aquifer system is being developed by at least three water systems (Silverdale and North Perry Avenue Water Districts and the City of Bremerton). The area was identified in the Kitsap Initial Basin Assessment and Level 1 Assessment as having the highest percentage of available ground water being used of all of the subareas in the county. Although some of the systems have enough water rights for the next 20 years, there is concern that such concentrated development near the marine waters of Puget Sound may cause saline intrusion. No indication of saline intrusion has been detected to date, although this has not been well evaluated.

Coordination: Most of the water systems approach water supply development from the perspective of establishing sources. There are a few examples of coordination among purveyors, such as interties between the City of Poulsbo and KPUD, and reclaimed water use between the Annapolis Water District and the City of Port Orchard. There is a desire for further coordination through the development of interties and other efforts that are well documented for Kitsap County in the Revision to the Kitsap County Coordinated Water System Plan being prepared by the Kitsap County Water Utility Coordinating Committee (WUCC). DOH encourages establishing interties. Several purveyors displayed awareness of resource sustainability limitations.

Among the best means of minimizing the growth in water demand is conservation. Reduction of outdoor landscape watering may provide significant reductions in demand. The current annual demand for outdoor watering is approximately 15%, and is expected to increase in response to an expanded the summer dry season as a result of predicted global warming effects over the next 20 to 40 years (some estimates are for 60 extra days of dry weather). Therefore reducing the growth in water demand through conservation will have not only curb current demand, but also counter future pressures of increased irrigation.

There is approximately two and a half times the amount of groundwater rights issued (~105,000 AF/yr) than is currently being used (~40,000 AF/yr) for municipal and domestic purposes of use in WRIA 15. These data are taken from the Level 1 Assessment (Golder, 2002), with the total allocated rights for domestic and municipal use (~135,000 AF/yr) modified by removing supplemental water rights for these purposes (~30,000 AF/yr). Interties may result in the development of inchoate (unused) rights in areas where impacts to the natural resource in the form of reduced streamflows and/or saline intrusion may occur. An alternative approach to development of inchoate rights is to allow greater flexibility in their location of development (point of withdrawal) to minimize impacts. A recommendation in the watershed plan may consider specific interpretations of the definition of the same body of public groundwater for WRIA 15.

Development by multiple purveyors (e.g., Gig Harbor and Manette Peninsulas, and Bainbridge and Vashon Islands) in recharge-limited deeper portions of the aquifer system may result in well interference and saline intrusion. Although there may be general awareness of the potential for these problems, there is little effort to better define critical parameters or to coordinate groundwater supply development efforts.

Management of groundwater resources in these areas should include better quantification of the portion of groundwater recharge that does not return to streams as baseflow, long-term water level monitoring, and monitoring for saline intrusion. Because of the uncertainty in conventional water balances (e.g., groundwater models, as is being considered for Vashon Island, and $P=ET-SF-GW$), water balances should be independently verified using natural tracers and age-dating of groundwater, and monitoring. A water level monitoring program is being expanded and refined by the KPUD for some areas under recommendations from 1990 groundwater management-planning efforts, but coordination with all the major purveyors could be improved. Similar programs should be extended to and implemented in sensitive areas.

Organization, maintenance and implementation of programs will require funding. There are numerous possible sources of funding, including: Phase IV Implementation grants from Ecology (up to \$400,000 over five years); Centennial Clean Water Funds; Public Works Trust Funds; EPA grants; and other sources. These funding sources may be used for development and/or initiation of programs. However, stable long-term funding is desirable to ensure the success of longer term programs and

avoid the discontinuation/interruption of data collection and monitoring programs (as opposed to short-term projects). One option is to build funding into the water service provided, because it is this resource that is being managed. Current water use in the watershed is approximately 40,000 AF/yr (for domestic and municipal use only). Assuming 82% of the population is served by purveyors (for Kitsap County, USGS report on estimated water use in Washington, 2000; i.e., excluding individual private wells), a rate of one hundredth of a penny per gallon may provide an annual budget of approximately \$1M. This would result in an average charge of 70 cents per month for a typical household. An appropriate rate might be established based on a compilation of water resource management actions recommended by the watershed plan.

Programs might be established and/or funding implemented for specific areas (e.g., Vashon Island and Bainbridge Islands, Gig Harbor and Manette Peninsulas, etc.), and managed by water resource management organizations that currently exist (e.g., the Planning Unit or its successor in the implementation phase of watershed planning, WATERPAK, KPUD, county agencies, tribal agencies, and/or other), or organizations established in the future (e.g., in the Gig Harbor area).

SURVEY/INTERVIEW RESULTS

Washington State Department of Ecology (Ecology)

Ecology Perspective on Kitsap County

Jay Cook in the Water Resources Program with Department of Ecology's Northwest Regional Office was contacted for his input on water supply in Kitsap County. Mr. Cook was most familiar with the City of Port Orchard and Annapolis Water District. Mr. Cook confirmed that Port Orchard has four applications currently pending with Ecology (two for McCormick Woods, one for a flowing well without a water right, and one for a new well that has not been drilled). He noted that all of the water rights applications are in creek basins that have been closed to further surface water withdrawals.

Mr. Cook confirmed that Annapolis Water District has no new water rights pending with Ecology and that a recent change in water rights has given the District an adequate supply for the present.

Ecology Perspective on the City of Gig Harbor

Jill Walsh in the Water Resources Program with Department of Ecology's Southwest Regional Office provided comments on the City of Gig Harbor's water supply. Ms. Walsh noted that Gig Harbor identified the limitations of their water supply and submitted two water right applications to Ecology in 2000. One application is for the City's Well 5, which has historically been operated under another water right certificate. The second application is for a well that has not yet been drilled. Gig Harbor has negotiated with Ecology to enter the cost reimbursement process to process their applications. Ecology recognizes the limitations that Gig Harbor is facing related to their current water supply and is enthusiastic to work with the City to develop a sustainable water supply. Ecology has already worked with the City in order to increase flexibility in the operation of the City's water supply (e.g., exempt well consolidation and changes to existing rights) and will continue to work with the City throughout the cost reimbursement process.

Washington State Department of Health (DOH)

DOH Perspective on Kitsap County

Jerrod Davis, regional engineer in the DOH Northwest Regional Office provided comments on the water supply in Kitsap County. Mr. Davis noted that the purveyors in Kitsap County are responsible managers of their water supplies. He also noted that communication between purveyors (largely as a result of WATERPAK) is extremely good. Mr. Davis noted successful regional water management in the County is possible because there are a large number of potential interties between systems in Kitsap County, and that DOH is supportive of exploring future interties. The intertie process would begin by the purveyors submitting a project report to DOH who would review the report and forward it to Ecology. Both agencies would have to approve the project in order for it to proceed.

Some purveyors (e.g., Annapolis, Silverdale Water District and Manchester Water District) voluntarily disinfect water supplies in order to avoid any future water quality problems. Some have been chlorinating their water supply for years, while other purveyors will likely begin disinfection in the near future.

DOH Perspective on City of Gig Harbor

John Ryding, regional engineer in the DOH Southwest Regional Office provided information about water supply in the Gig Harbor area. The City of Gig Harbor has an approved Water System Plan. Gig Harbor currently has a self-imposed moratorium on additional equivalent residential units within the portion of the Urban Growth Area (UGA) that they serve because the City has committed most of its remaining capacity to a multi-use development in the north end of town. Purchasing water from neighboring purveyors is not likely because no system has additional capacity to provide water. Some purveyors (e.g. Rainier View Water) have declined adding new connections because they do not have adequate capacity. Mr. Ryding believes that purveyors who obtain new water rights in the Gig Harbor area will likely attempt to supply water to other areas (served by purveyors who were unable to obtain additional rights) and pursue changes to service areas and thereby place of use for the approved water rights. DOH is aware of water quality concerns on the west side of the Gig Harbor Peninsula (Forest Beach/Shaw's Cove area). Growth on the peninsula is likely fueled by developments that were grandfathered in to more recent zoning restrictions. Current zoning codes are fairly strict and would not allow the magnitude of development in applicable areas that grandfathered developments allow.

Bringing water onto Gig Harbor peninsula over the new Narrows Bridge will likely be met with a great deal of opposition by anti-growth advocates, but may become a reality at some time in the future.

KPUD Perspective on Kitsap County

Bill Hahn, Assistant General Manager of Kitsap PUD (KPUD), provided comments on water supply in Kitsap County. There are several areas in Kitsap County that currently have insufficient water rights and/or sources that are being carefully monitored. Conversely, there are locations in the County where development pressures are low and water supplies are well below full allocation (e.g., the west side of WRIA 15). Wholesale transmission lines and interties are a valuable method to allow movement of water from areas with an adequate water supply to areas with sustainability questions or insufficient water rights. Interties between KPUD and other systems (e.g., City of Poulsbo) are currently operating and KPUD has designated the whole county as a wholesale service area. The City

of Bremerton is the only other purveyor that Mr. Hahn is aware of that has also designated a wholesale service area.

Future water supplies in WRIA 15 will likely be developed in western Kitsap County (e.g. Seabeck area) and in Mason County where there is less groundwater development in the sea level and deeper aquifers. Water would then have to be conveyed from these areas to locales that need additional water. Additionally, development of deeper groundwater sources in these western areas (e.g. Big Beef Creek and Lake Symington) could replace shallow groundwater use currently occurring in these areas, which would mitigate impacts to surface water.

The WUCC with KPUD taking the lead is currently revising the Kitsap County Coordinated Water System plan which will describe water supply requirements in the County and summarize a regional plan to meet these supply requirements.

City of Poulsbo

Bill Duffy with the City of Poulsbo provided comments on the City's water supply. The City of Poulsbo currently serves 2,500 connections with four wells. There are a number of limitations on the future water supply of the City including: water rights, sustainable sources, and politics. The City has recently finished drilling a new production well (with water rights), and has installed a pump and most of the infrastructure, but the City Council has stopped work on the project while it explores the possibility of purchasing more water from the KPUD. Currently the City has a contract with KPUD for 120 gpm. The viability of purchasing additional water through the KPUD is unknown. It is estimated that if one of the existing wells were rehabilitated and the new well were put online (for a total of five operational wells), the City would have adequate supply and water rights for five to ten years, based on their own supply and 120 gpm from KPUD. Future water rights changes might include the transfer of surface water rights to groundwater rights.

Conservation is considered a method to stretch existing supplies. The City currently has a conservation plan but needs to update it.

City of Bainbridge Island

Lance Newkirk with the City of Bainbridge Island provided comments on the City's water supply. The City of Bainbridge Island serves 2,300 connections with 11 active wells. Seven of these wells are in close proximity to one another and are completed in the Vashon (shallow) Aquifer. The City would like to make the operation of these wells more efficient. One option for this is to consolidate the water rights for the Vashon Aquifer wells into a smaller number of wells completed in the Sea Level or Deep Aquifers. The remaining four city wells are completed in the Sea Level or Deep Aquifers. The City does not currently have any water right applications pending with Ecology but expects to approach Ecology in the next three to five years with plans to modify their water rights (e.g., change the point of withdrawal and/or new rights).

The City recognizes the need for close cooperation with other purveyors on the island in order to manage water resources. The City currently has no interties with neighboring systems, but has informally discussed the idea of jointly developing a new source on the island with adjacent purveyors to add redundancy to their system. The City has not explored any off-island supply sources at this point. The City believes that they could eventually be a leader in working with regulatory agencies to develop an island-wide management plan.

North Perry Avenue Water District

Craig Russell, a hydrogeologist representing North Perry Avenue Water District (NPWD) provided the following information. North Perry Avenue Water District serves 6,046 connections with 10 active wells. Currently, NPWD has adequate production and water rights, but is looking to add redundancy to its system with an additional production well in the next two to three years. Mr. Russell anticipates that adding an additional point of withdrawal to NPWD's existing water rights will be favorably received by Ecology. This projection is based on recent changes that were approved to NPWD's water rights (points of withdrawal) when water rights from several NPWD wells were consolidated.

Mr. Russell reports that four NPWD wells completed in the sea level aquifer on the southern portion of the Manette Peninsula have historically experienced static water level declines on the order of 50 feet. During a 60-day pumping test of NPWD Well 14 in 1999, production from other sea level and deep aquifer wells belonging to NPWD and other purveyors in this area was stopped. During the two months of non-pumping, water levels in the sea level aquifer recovered approximately 25-feet. Other wells outside the influence of Well 14, recovered to within a few feet of historic (time of well construction) levels. Mr. Russell believes that the water level decline in the sea level aquifer is a result of a limited recharge area, which may be related to a bedrock boundary associated with the Seattle Fault zone. Water levels in the deep aquifer are measured in NPWD's Paulson well (non-pumping), and have declined on the order of five feet since 1987. No water quality problems (e.g. elevated chloride concentrations) have been observed in any of the NPWD wells.

Mr. Russell has estimates that NPWD will run out of instantaneous water rights (Q_i) in the year 2026 and annual water rights (Q_a) in 2035, assuming a growth rate of 2.5% and no decline in production in the wells. Mr. Russell reports that there are currently no mitigation measures or plans in place for securing additional water supplies in the future (e.g., interties, purchase of water from elsewhere). Water level and water quality monitoring is on-going.

City of Port Orchard

Larry Curles with the City of Port Orchard provided comments on the City's water supply. The City of Port Orchard currently serves 7,900 people with four active wells. The future water supply limitations for the City are related to water rights. The City currently has two applications into Ecology and is participating in the cost reimbursement program. Both water right applications are for 500 gpm and are for existing wells completed in the sea level or deeper aquifer. If accepted, it is estimated that these water rights would meet increased demand for approximately 10 years (assuming no annexation occurs). Future water beyond this time will have to be met with additional water rights for new wells. Any new wells are expected to be completed in the sea level or deeper aquifers. It is expected that the tribes and other nearby purveyors with wells in the sea level and deeper aquifers will be closely watching for evidence of interference from any new wells completed in the aquifers below sea level.

The City currently has a conservation program and will continue to emphasize conservation in the future. The City is currently developing emergency interties with the City of Bremerton and the Annapolis Water District.

Annapolis Water District

Dennis Coburn with the Annapolis Water District provided comments on the District's water supply. Annapolis Water District currently has 5,700 connections, serving approximately 16,500 people with 15 wells. The limitation on future water supplies of Annapolis Water District is likely related to be identifying sustainable sources of groundwater. Annapolis Water District recently transferred three water rights (two rights to existing wells and one right to a new well completed at 1,200 feet below sea level). The transfer of these water rights with Ecology was processed relatively quickly once it was initiated. The total time for processing the transfer requests was approximately three to four years. Future water needs will likely be met with transfers of water rights to existing or future wells.

The Annapolis Water District anticipates that all future wells will be completed in the sea level or deeper aquifer. The Annapolis Water District has noted that wells completed in the sea level or deeper aquifers commonly have water quality issues such as hydrogen sulfide and elevated iron and manganese concentrations.

Other options for meeting increased demand include conservation, which Annapolis Water District will be promoting heavily in 2005. An intertie with the City of Port Orchard is currently being developed. An intertie between the Annapolis Water District and the Manchester Water District is a possibility in the future. Both of these interties would be on an emergency basis only because neither neighboring system currently has enough surplus capacity. Additionally, the Annapolis Water District is exploring the potential of using reclaimed water from the City of Port Orchard WWTP in the next two to five years. The City of Port Orchard WWTP is planning to install a membrane filtration system and might make the water available to Annapolis Water District for use, particularly for irrigation.

Vashon Island

Jeremy Pratt, citizen representative for King County to the WRIA 15 Planning Unit, provided the information for Vashon-Maury Islands. Vashon-Maury Islands are served by 12 Group A systems and 107 Group B systems, which collectively provide public water service to 3,316 residential connections and a population of 7,842, or more than 77% of the island's population. Approximately 1,000 exempt wells serve the remaining population.

A critical water supply situation led to Coordinated Water Supply Planning on Vashon-Maury Island nearly 20 years ago. King County Council Motion No. 6407 (December 16, 1985) adopted a Preliminary Assessment of Water Supply and Fire Protection, declared Vashon-Maury Island a Critical Water Supply Service Area (CWSSA), and initiated Coordinated Water System Planning. The islands' seven largest Group A water systems completed the *Vashon Coordinated Water System Plan* (CWSP) in 1990 (Horton Dennis, 1990). Among the intents listed in CWSP are:

- Coordinate water system development with land use plans/policies;
- Determine the most efficient means of provided adequate water service throughout the CWSSA; and,
- Identify options for cooperative development of water facilities.

The plan recommends that, "*Proliferation of new public water systems within the Vashon CWSSA should be restricted.*" The CWSP has not been updated, although the population forecast used in the CWSP been well exceeded. Key recommendations (such as interties among systems) have not been implemented. Many of the larger Group A island water systems have experienced shortages that date

to the initiation of Coordinated Water System Planning – a situation that continues today with waiting lists for water service, policies not to accept new connections, and conflict erupting over the use of water sources within the CWSSA (e.g., Beall Creek). The largest water system on the islands, Water District 19 has the longest waiting list; the total number on waiting lists for water service probably exceeds 10% of the currently connected residential units. A few systems appear to have water rights in excess of current requirements, but have not expanded due to financial or health constraints (e.g., DOH requirements for water treatment would need to be met before new connections would be allowed). A survey updating water use and demand information from the most recently available Water System Plans or Small System Management Plans filed with Department of Health is currently in the hands of island water purveyors; results will be integrated in the updated Vashon-Maury Island water quantity analysis that is in preparation.

Vashon-Maury Island draws water from a discrete, confined, island aquifer system. Vashon-Maury Island is one of two areas in King County federally designated as a sole source aquifer. The island hydrogeology is described in the 1983 *Vashon/Maury Island Water Resources Study* prepared by J.R. Carr Associates (Carr, 1983) and the 1998 *Vashon-Maury Island Groundwater Management Plan* (GWMP). These reports recognize two aquifers (shallow and deep). The shallow aquifer is the principal aquifer; approximately 69% of Group A systems and 50-75% of Group B systems and individual wells draw drinking water that is 25 feet or less below ground. Island streams, although tapped by a number of islanders, are too small to sustain much use. Springs and shallow wells are used by many island water systems. All of these (streams, springs and aquifers) are part of an integral hydrologic system.

Although surface water currently meets a portion of island water demand, groundwater will be the primary source of the islands' future water supply. All groundwater is either potential drinking water, base flow for streams and other water bodies, or discharges to Puget Sound. Islanders have recognized that ground water is inextricably tied to surface water. This was adopted as a fundamental principle in the 1998 GWMP. Islanders recognize that if too much water is withdrawn from our aquifer, it will lower the water table, lower the volume of stream flow, affect other surface waters, and increase the potential for seawater intrusion.

In 1983, Carr estimated that our groundwater supply might meet the needs of a population near the current size and noted that potential limits imposed by water quality (related to septic system discharge) were actually somewhat more restrictive than the groundwater supply itself. As a result, Carr recommended a maximum population of about 11,000 (compared to a Census 2000 population of 10,123).

Two countywide King County Planning Policies directly address groundwater quantity to avoid the depletion of our aquifers or provide some feasible alternative supply. However, the King County Comprehensive Plan (KCCP) does not recognize realistic alternative sources of supply to Vashon.

The Vashon Coordinated Water System Plan also made recommendations expressing concern about the future groundwater supply. The CWSP set a goal to “*Determine regional deficiencies associated with water supply and consider possible remedial measures.*” It also stated “*The availability of source water has been identified as a major concern for the CWSSA.*” The resolution of these concerns was deferred to the Vashon GWMP: “*The GWMP is ...intended to identify and assess the capabilities of the area’s aquifers.*”

However, the GWMP does not provide clear guidance as to how much groundwater is available for consumption. Although it estimates a much larger amount of groundwater than Carr, nearly 14 times

as much, it declines to state that this groundwater supply is available for consumption. The GWMP defines a range, setting the 1983 Carr estimate as the lower boundary and the new estimate as the higher boundary. It then expresses concern that lower stream flows, a lower water table, and increased seawater intrusion could result if “too much water” is withdrawn, but does not support these cautions with analysis. As a result, Vashon is left with an apparently large estimate of the potential groundwater resource, and a strong caution against relying on that estimate.

The GWMP points out that in the 1990s several island water systems were experiencing shortages, and that deeper wells or further stream flow reductions “are not considered solutions because they could lead to unsustainable water use.” It is generally considered that this situation has not changed, and islanders generally support a moratorium on issuing new water rights and groundwater resource development for public water supply until the sustainable capacity of the groundwater resource is better defined. While focusing on human use, the GWMP acknowledges that “there remains the major issue of leaving an adequate water supply to maintain the overall ecology of the Island.” Cognizant of these concerns, King County has initiated a Water Resource Evaluation Program on Vashon that will monitor surface and ground water quality and quantity, build a comprehensive groundwater flow model to evaluate surface and groundwater under various climate change and land use scenarios, and provide a basis for determining whether and to what extent sustainable water supply is available. The program work plan extends through the year 2010.

City of Gig Harbor

Dave Brereton (City of Gig Harbor Public Works Operations) provided comments on the City’s water supply. The City of Gig Harbor water system consists of 1,200 connections, serving approximately 4,000 people with five wells. Gig Harbor supplies water to a portion of the City’s Urban Growth Area (UGA), with the remainder of the UGA served by other purveyors.

The City’s water supply is limited by its current water rights. A moratorium on any projects requiring water went into effect within Gig Harbor’s UGA on May 24, 2004. Currently, Gig Harbor has two water right applications pending with Ecology. One application is for 1,000 gpm/672 AF/yr for a well completed approximately 300 feet below sea level. The other application is for 1,000 gpm/1,000 acre-feet/year for a well that has not yet been constructed. The applications were submitted in 2000 and Gig Harbor has recently negotiated with Ecology to process these applications through the cost reimbursement program in order to expedite the application process. In this process, Ecology retains a consultant to process the application. However, senior applications within a relevant geographic area must also be concurrently processed consistent with Washington water law. Recent batch processing of water rights in the vicinity of Gig Harbor initiated last year by Ecology included the following applicants (number of applications in parentheses). A subset of these applications may have to be concurrently processed with those of the City of Gig Harbor:

- Rainier View Water (4)
- Horsehead Bay Water (1)
- Nancy Copeland (1)
- Westbridge Estates Water Company (1)
- Harbor Springs Water Company (1)
- Otto Ottow (1)
- Washington Water Service (7)
- Cedars Mobile Manor (1)
- Dickson Brothers (1)
- Canterwood Golf and Country Club (1)
- Fox Island Mutual Water Association (2)

Major purveyors in the vicinity of the City of Gig Harbor include Washington Water Service, Rainier View Water and Stroh's Water Company. Because the major purveyors surrounding Gig Harbor are also facing limitations on water supply as a result of water rights, local interties and/or purchase of water are not feasible. Demand for water in the area outside Gig Harbor's UGA is likely growing just as rapidly as the area within the UGA.

Gig Harbor encourages water conservation within its service population and performs regular leak tests in its system. Monitoring of natural resources is conducted by the Tacoma-Pierce County Health Department.

Attachments: 1) WRIA 15 Water Purveyor Survey Table
2) Survey Telephone Interview questions.
3) RCW 90.03.383

WRIA 15 Water Purveyor Survey

	City of Poulsbo	City of Bainbridge Island	North Perry Avenue Water District	City of Port Orchard	Annapolis Water District	Vashon Island	City of Gig Harbor
Estimated date that additional water supplies/rights needed	Now. If an existing well was rehabilitated, City would have adequate supply for five to ten years from present.	Possibly 3 to 5 years from present.	Qi in 2026 and Qa in 2035 assuming no decline in production of wells.	Now. If pending applications are approved, approximately 10 years from present.	Uncertain.	Many island water systems are in moratorium now. However, sustainable supply capacity of island sole source aquifer needs to be determined before allocating new water rights. King County Water Resource Evaluation underway; to be completed 2010.	Now. Moratorium in effect.
Conservation	The City needs to update their conservation plan.	The City currently has a conservation program.	A conservation program is in place and a written plan is being developed. Conservation kits and watering calendars are available; information is included in yearly Consumer Confidence Reports and inserted with billings.	A conservation program is currently in place. The City encourages conservation with tiered rates and leak detection tests of the water system.	Annapolis plans to increase awareness of conservation within the District beginning in 2005.	Water conservation planning is limited to the few systems with Water System Plans; only a few of these are well-developed. Water District 19 reports 28% conservation 1990-2000. Westside Water Association reports 43% conservation 1987-1997.	The City encourages conservation and regularly performs leak tests on its system.
Development of new groundwater sources within the relevant service area	The City currently has a recently completed well outfitted with a pump that has not been placed online yet. No additional wells are planned at this time.	The City may begin to examine options for consolidation and relocation of sources for operational considerations in the next 3 to 5 years.	NPWD is looking to add redundancy to its system with a new well in the next 2 to 3 years.	The City is currently seeking water rights for two wells in McCormick Woods. Modifying rights to an existing well to split production with a new well. Planning to drill a new well.	No new development is currently planned. Annapolis has received water rights from Ecology for a recently drilled well in the deep aquifer. Additionally, the District transferred 2 water rights to existing wells.	New development awaits better knowledge of island sole source aquifer (see above).	Development of new groundwater sources is pending approval of new water rights.
Development of new groundwater sources in other subareas	The City Council is exploring the possibility of purchasing additional water from Kitsap PUD.	The City has discussed informally with adjacent purveyors the idea of siting a joint well on the Island for redundancy.	No new groundwater sources in other subareas have been identified.	No new groundwater sources in other subareas have been identified.	No new groundwater sources in other subareas have been identified.	Not applicable.	The City is mandated to provide water only within the UGA and has not explored sources outside of this area.
New water rights	An application for new rights was submitted in 2001. There are currently no plans to apply for additional water rights.	Applications for new rights or changes to existing rights may be considered in 3 to 5 years.	Applications for new water rights was submitted in 1990. No additional water rights are needed at this time. Future water rights needs are expected to be met with transfers from older wells to newer.	Two applications for new water rights are pending with Ecology, submitted in 1991, and new rights at McCormick Woods.	There are currently no plans to apply for new water rights.	Pending groundwater applications would double current certificate volumes (Qi). Ecology is not currently processing applications on Vashon. Minor amounts of surface water applications have been filed. A major controversy concerns the transfer and use of a water right to Beall Creek by Water District 19.	The City currently has two applications for new water rights pending with Ecology. Applications were submitted in 2000.
Interties	The City currently has an intertie with Kitsap PUD.	The City currently has no interties.	Not needed at this time.	The City currently has an emergency intertie with the City of Bremerton, has negotiated interties with Bremerton and McCormick Woods, and is developing an intertie with Annapolis Water District.	The District is currently developing an emergency intertie with Port Orchard and may develop an emergency intertie with Manchester in the future.	Interties were recommended in the 1990 Coordinated Water System Plan, but none have been completed (a preexisting intertie between Heights and Water District 19 is in place).	The City currently has no interties.
Purchase of water from elsewhere	The City currently purchases 120 million gallons per year from Kitsap PUD and the City Council is exploring the possibility of purchasing additional water from Kitsap PUD.	The City has not explored the possibility of purchasing water from elsewhere (on-island or off-island).	Not needed at this time.	Purchase some water from the City of Bremerton to serve McCormick Woods.	The purchase of water from neighboring water systems is currently not feasible due to a lack of sustainable supply.	There is no feasible source of off-island water supply.	Not feasible at this time. Private purveyors surrounding City also need additional water rights.
Other solutions	None identified.	None identified.	None identified.	None identified.	The District is exploring the use in the next 2 to 5 years of reclaimed water from the City of Port Orchard Wastewater Treatment Plant.	None identified.	None identified.
Other concerns	Identification of future sustainable sources. Reliance on regional purveyor for a portion of annual supply.	Potential for saline intrusion. Lack of identified new sources.	Potential for long-term decrease of aquifer levels.	Potential for interference with other water users.	Identification of future sustainable sources.	Critical aquifer recharge area protection; potential for saline intrusion; nitrates; limited groundwater recharge.	Identification of future sustainable sources.

Water System Operator Survey – Telephone Interview Questions

Describe your system (# connections, approximate population [date]).

What are your future water supply limitations (water rights and/or sustainable sources)?

What are your system's needs? (When will demand exceed current water supplies and/or water rights? How much additional water is needed?)

What are some possible solutions to these needs?

What costs are associated with these solutions?

What are the perceived pros and cons (e.g. environmental, regulatory, preferred by proponents)?

How do these options factor into meeting increased demand?

- Conservation;
- Development of new groundwater sources within the relevant service area;
- Development of new groundwater sources in other subareas (including new regional source(s));
- New water rights;
- Interties;
- Purchase of water from elsewhere; and,
- Other solutions.

Are there other considerations? (e.g. regulatory, water quality, interference from other wells, seasonal demand limitations).

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Sections considered particularly relevant to watershed planning are bold and underlined.

RCW 90.03.383

Interties -- Findings -- Definitions -- Review and approval.

(1) The legislature recognizes the value of interties for improving the reliability of public water systems, enhancing their management, and more efficiently utilizing the increasingly limited resource. Given the continued growth in the most populous areas of the state, the increased complexity of public water supply management, and the trend toward regional planning and regional solutions to resource issues, interconnections of public water systems through interties provide a valuable tool to ensure reliable public water supplies for the citizens of the state. Public water systems have been encouraged in the past to utilize interties to achieve public health and **resource management objectives**. The legislature finds that it is in the public interest to recognize interties existing and in use as of January 1, 1991, and to have associated water rights modified by the department of ecology to reflect current use of water through those interties, pursuant to subsection (3) of this section. The legislature further finds it in the public interest to develop a coordinated process to review proposals for interties commencing use after January 1, 1991.

(2) For the purposes of this section, the following definitions shall apply:

(a) "Interties" are interconnections between public water systems permitting exchange or delivery of water between those systems for other than emergency supply purposes, where such exchange or delivery is within established instantaneous and annual withdrawal rates specified in the systems' existing water right permits or certificates, or contained in claims filed pursuant to chapter [90.14](#) RCW, and which results in better management of public water supply consistent with existing rights and obligations. Interties include interconnections between public water systems permitting exchange or delivery of water to serve as primary or secondary sources of supply, but **do not include development of new sources of supply to meet future demand.**

(b) "Service area" is the area designated in a water system plan or a coordinated water system plan pursuant to chapter [43.20](#) or [70.116](#) RCW respectively. When a public water system does not have a designated service area subject to the approval process of those chapters, the service area shall be the designated place of use contained in the water right permit or certificate, or contained in the claim filed pursuant to chapter [90.14](#) RCW.

(3) Public water systems with interties existing and in use as of January 1, 1991, or that have received written approval from the department of health prior to that date, shall file

written notice of those interties with the department of health and the department of ecology. The notice may be incorporated into the public water system's five-year update of its water system plan, but shall be filed no later than June 30, 1996. The notice shall identify the location of the intertie; the dates of its first use; the purpose, capacity, and current use; the intertie agreement of the parties and the service areas assigned; and other information reasonably necessary to modify the water right permit. Notwithstanding the provisions of RCW [90.03.380](#) and [90.44.100](#), for public water systems with interties existing and in use as of January 1, 1991, the department of ecology, upon receipt of notice meeting the requirements of this subsection, shall, as soon as practicable, modify the place of use descriptions in the water right permits, certificates, or claims to reflect the actual use through such interties, provided that the place of use is within service area designations established in a water system plan approved pursuant to chapter [43.20](#) RCW, or a coordinated water system plan approved pursuant to chapter [70.116](#) RCW, and further provided that the water used is within the instantaneous and annual withdrawal rates specified in the water right permit and that no outstanding complaints of impairment to existing water rights have been filed with the department of ecology prior to September 1, 1991. Where such complaints of impairment have been received, the department of ecology shall make all reasonable efforts to resolve them in a timely manner through agreement of the parties or through available administrative remedies.

(4) Notwithstanding the provisions of RCW [90.03.380](#) and [90.44.100](#), exchange or delivery of water through interties commencing use after January 1, 1991, shall be permitted when the intertie improves overall system reliability, enhances the manageability of the systems, provides opportunities for conjunctive use, **or delays or avoids the need to develop new water sources**, and otherwise meets the requirements of this section, provided that each public water system's water use shall not exceed the instantaneous or annual withdrawal rate specified in its water right authorization, shall not adversely affect existing water rights, and shall not be inconsistent with state-approved plans such as water system plans or other plans which include specific proposals for construction of interties. Interties commencing use after January 1, 1991, shall not be inconsistent with regional water resource plans developed pursuant to chapter [90.54](#) RCW.

(5) For public water systems subject to the approval process of chapter [43.20](#) RCW or chapter [70.116](#) RCW, proposals for interties commencing use after January 1, 1991, shall be incorporated into water system plans pursuant to chapter [43.20](#) RCW or coordinated water system plans pursuant to chapter [70.116](#) RCW and submitted to the department of health and the department of ecology for review and approval as provided for in subsections (5) through (9) of this section. The plan shall state how the proposed intertie will improve overall system reliability, enhance the manageability of the systems, provide opportunities for conjunctive use, or delay or avoid the need to develop new water sources.

(6) The department of health shall be responsible for review and approval of proposals for new interties. In its review the department of health shall determine whether the intertie satisfies the criteria of subsection (4) of this section, with the exception of water rights

considerations, which are the responsibility of the department of ecology, and shall determine whether the intertie is necessary to address emergent public health or safety concerns associated with public water supply.

(7) If the intertie is determined by the department of health to be necessary to address emergent public health or safety concerns associated with public water supply, the public water system shall amend its water system plan as required and **shall file an application with the department of ecology** to change its existing water right to reflect the proposed use of the water as described in the approved water system plan. The department of ecology shall process the application for change pursuant to RCW [90.03.380](#) or [90.44.100](#) as appropriate, except that, notwithstanding the requirements of those sections regarding notice and protest periods, applicants shall be required to publish notice one time, and the comment period shall be fifteen days from the date of publication of the notice. Within *sixty days* of receiving the application, the department of ecology shall issue findings and advise the department of health if existing water rights are determined to be adversely affected. If no determination is provided by the department of ecology within the *sixty-day* period, the department of health shall proceed as if existing rights are not adversely affected by the proposed intertie. The department of ecology may obtain an extension of the sixty-day period by submitting written notice to the department of health and to the applicant indicating a definite date by which its determination will be made. No additional extensions shall be granted, and in no event shall the total review period for the department of ecology exceed *one hundred eighty days*.

(8) If the department of health determines the proposed intertie appears to meet the requirements of subsection (4) of this section but is not necessary to address emergent public health or safety concerns associated with public water supply, the department of health shall **instruct the applicant to submit to the department of ecology an application for change to the underlying water right or claim as necessary to reflect the new place of use**. The department of ecology shall consider the applications pursuant to the provisions of RCW [90.03.380](#) and [90.44.100](#) as appropriate. If in its review of proposed interties and associated water rights the department of ecology determines that additional information is required to act on the application, the department may request applicants to provide information necessary for its decision, consistent with agency rules and written guidelines. Parties disagreeing with the decision of the department of ecology on the application for change in place of use may appeal the decision to the pollution control hearings board.

(9) The department of health may approve plans containing intertie proposals prior to the department of ecology's decision on the water right application for change in place of use. However, notwithstanding such approval, construction work on the intertie shall not begin **until the department of ecology issues the appropriate water right document to the applicant consistent with the approved plan**.

[1991 c 350 § 1.]