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Section 9
Regional Water Supply Strategy

9.1 Introduction

Public water supply needs within Skagit County (County) are currently met from a combination of surface and groundwater sources. As described in Section 8 (Assessment of Existing Water Supply Systems), the two largest systems (City of Anacortes and Public Utility District No. 1 of Skagit County (PUD)) will serve approximately 94 percent of the County population in 2000 and an estimated 96 percent in 2050. Both utilities have developed surface water sources. The other systems rely primarily upon groundwater development.

Only a few systems currently experience problems in developing adequate water supply. The most predominant of these problems is on Guemes Island. These shortages are primarily related to limited groundwater yields, potential for seawater intrusion into the aquifers near the perimeter of the island, and uncertainties in State groundwater policies.

On a regional basis, additional demands (over current 1995 use) of 45.7 MGD average day and 84.5 MGD peak day are forecast for the year 2050 (See Section 7, Tables 7-9 and 7-10). Expansion of treatment plant capacity to meet forecast peak day requirements will be needed for the PUD system by the year 2005 and for the City of Anacortes by the year 2010. An increase in water source capacities and related water right considerations for these systems is currently addressed through the 50-Year Memorandum of Agreement (MOA).

For areas in the eastern portion of the County which depend primarily on local groundwater supplies, water of adequate quantity and quality appears to exist, particularly in the Skagit River Valley trough. However, the groundwaters are believed to be in hydraulic continuity with the Skagit River, and future State policies for issuance of new water rights may limit future development.

This Coordinated Water System Plan (CWSP) study has shown that additional public water supplies are required to meet future County needs. This section examines the alternatives for meeting those needs and recommends a regional supply strategy.

9.2 Planning Criteria

9.2.1 Regional Water Supply Requirements

The water demand forecast developed in Section 7 examined Skagit County and adjoining area future needs under two scenarios. One scenario assumed

current levels of per capita water consumption would continue into the future. The second relied on a basic water conservation program being implemented by the year 2000, achieving a 10 percent reduction in per capita water use.

The forecast including conservation savings was adopted for purposes of this plan. This forecast identifies a regional requirement for an additional 45.7 MGD (average day) and 84.5 MGD (peak day) over current use (Tables 7-9 and 7-10). These quantities are used for regional planning purposes.

9.2.2 Source Selection

Guidance for identifying sources of supply for study purposes was provided by the Water Utility Coordinating Committee (WUCC). The selection/screening criteria adopted are as follows:

Water Quantity

- ❑ Supply should be sufficient to meet year 2050 average day needs.
- ❑ Source(s) must be developable from technical and political standpoints.
- ❑ From a geographic perspective, examine only those sources that are internal to the CWSP study area.
- ❑ Consider the conjunctive use of surface and groundwater.
- ❑ Groundwater availability in a regionally significant quantity must be on a sustained basis without producing long-term water level declines. A regionally significant quantity is defined as 2.0 MGD or more (about 1,400 gallons per minute) from one well or group of wells (well field) in close proximity.

Water Quality

- ❑ Supply sources must meet State and federal quality standards. Treatment to meet standards is to be considered, subject to economic constraints.
- ❑ New sources of supply should not degrade existing system water quality.

Efficiency

- ❑ Priority should be given to full utilization of existing systems.
- ❑ Development of existing sources should be enhanced.

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Reliability

- Sources must be capable of supplying the design flow 98 percent of the time during which water is required. This equates to a supply which falls below the prescribed value only once every 50 years.
- Source augmentation (e.g., artificial recharge, and storage) may be used to achieve supply reliability.

Environmental

- Preference should be given to supply development options having the least environmental consequences.
- Mitigation of environmental consequences shall be consistent with the State Environmental Policy Act (SEPA) and Skagit County Comprehensive Plan requirements.

9.3 Supply Sources

9.3.1 Groundwater

Recognizing in 1993 that there may be significant potential for groundwater development within the County, the firm of Pacific Groundwater Group was retained during development of 1993 CWSP, to conduct an assessment of the groundwater resources. The specific goals of this study were to:

- Estimate amounts of groundwater potentially available in the County;
- Identify preferred locations for additional development;
- Assess existing water quality and its potential effects on development; and,
- Quantify the cost and general number of wells needed for the additional development.

The final text of the report prepared at that time is included as Appendix H. A summary of the report, still considered valid for purposes of this CWSP update, follows.

Geology and Aquifers

Aquifers were defined through the review of key geologic reports and over 2,000 well logs contained in the files of the Department of Ecology (Ecology). About 250 representative logs were selected that indicated both hydrologic and geologic information. Where available, at least one representative log per

square mile was obtained. Using this information, geologic cross sections were prepared and geologic units identified.

This work disclosed that most of the County's high yield aquifers are associated with the Skagit River. They typically consist of coarse deposits of sand and gravel within the upper 200 feet of the alluvium that defines the Skagit Valley.

Potential Well Yield

Potential well yield was defined as the short-term yield that is likely available from a properly designed and constructed well, finished in the best aquifer (when more than one aquifer lies at depth) from some location within the area. This yield may not be possible with the existing wells installed in the area.

All areas are likely to contain anomalous wells that produce substantially different yields. These anomalous wells are not considered to be representative of yields that may be used in planning for regional water supply.

The highest yields are generally associated with the Skagit River Valley alluvial areas. Yields of 500 or more gpm are possible throughout much of the Valley, with yields of more than 800 gpm possible near the Marblemount area. High yields are also possible in the eastern part of the Skagit Delta area. These yields are also in the 500 gpm or more range.

A small high-yield area was also identified near Lake McMurray. Potential well yields of 500 gpm or more are possible in this area from sand and gravel probably associated with glacial outwash deposits.

Other areas in the County have estimated potential yields of 100 gpm or less. Since 100 gpm is not considered practical for a regional water supply, they are not considered further in this report.

Groundwater Quality

Groundwater quality was assessed to identify the likely water quality from locations that may be considered for regional water supply. Areas were identified where local groundwater quality was known to meet drinking water standards. Areas with wells known not to produce water meeting the standards were also identified.

Three major categories of water quality problems were considered:

- ❑ Saline water;
- ❑ Natural water contaminants, such as iron and manganese; and,
- ❑ Industrial contamination.

More recently, in 1997, the Department of Health (DOH) began full implementation of the Groundwater Under the Influence of Surface Water (GWI) aspects of the Surface Water Treatment Rule. Groundwater sources that are found to be directly influenced by surface water must meet the same treatment requirements as surface water sources. This issue was not a consideration in the 1993 Pacific Groundwater Group study, and could further limit the potential areas for groundwater development. This issue is not included in the following discussions. It would need to be evaluated for new wells in proximity to the Skagit River or other surface water bodies.

Wells with historical occurrences of excess levels of iron, manganese, and salinity (indicated by chloride concentrations) were identified based on published records and DOH water system records. Additional information on saline water was obtained from well logs from Ecology, discussion with well drillers Dean Hayes (1991) and Ken Fowler (1991), and data contained in the files of Ecology (Garland, 1991). Information on potential industrial contamination was obtained from the County Health Department (Haycox, 1991) and Ecology listings of remediation sites in the County.

Criteria were established to designate water quality problem areas. Any report of iron or manganese exceeding the secondary standards of 0.30 mg/l (iron) or 0.05 (manganese) was taken as an indication that future problems in the area were possible. Chloride concentrations of 100 mg/l were taken as an indication that saltwater intrusion (or relic seawater) was present in the area and that future development in the area may have similar problems.

Industrial contamination was considered as a potential problem. The presence of an abandoned landfill, a gas station with a leaking tank, an industrial site such as a refinery or waste transfer/processor, or an agricultural area with known problems such as EDB were all noted, even if actual groundwater contamination had not been reported.

Review of the compiled data indicated that the area east of Concrete has the preferred water quality conditions for a regional water supply. The area between Concrete and Sedro Woolley may also be acceptable. This area has fewer reported and potential water quality problems than areas further to the west.

A regional groundwater supply source developed in the area east of Concrete would be less likely to have excess iron or manganese than a source further down the Valley or in the delta. Areas with wells reporting excess levels of iron and/or manganese lie in the Skagit Delta. Some problem areas can also be found in glacial deposits in the western part of the County and on Guemes Island. Areas up-valley, east of Concrete, do not report excess iron or manganese.

A regional groundwater supply source developed in the area east of Mount Vernon would be less likely to have saltwater intrusion than other areas closer to the delta front. Most areas more than a few miles inland, away from the river, are also acceptable. Areas with wells reporting saline water are listed in the original report. As would be expected, most saltwater intrusion problems occur near the sea, either on islands or near the coast in the delta. Guemes Island indicates many wells reporting saltwater intrusion (unpublished Ecology study, Garland, 1991). Other islands (Fidalgo and Samish) also indicate some intrusion. Non-island intrusion areas are generally confined to the delta area.

Areas with potential for industrial contamination in the groundwater are generally located near population centers, which are located west of Sedro Woolley. A few abandoned landfills can be found further inland. Since these inland landfills are near small, non-industrial centers, they are unlikely to have received a significant volume of hazardous materials. These small landfills are probably not a major concern for development of a regional groundwater supply. Based on these assumptions, the preferred location to minimize potential industrial contamination is inland, east of Concrete away from the few potential problem areas.

Aquifer Recharge and Water Budget

A water budget was developed (see Appendix H) which is a first-cut estimate of the major components of the hydrologic cycle. This estimate indicates the approximate volumes of water that are flowing in and out of the County's hydrologic system through precipitation, evapotranspiration, runoff, groundwater recharge, human consumption, and natural discharge.

The water budget serves as the basis for initial planning of groundwater use. It provides a general understanding of the components of recharge, groundwater use, and natural discharge. This general understanding helps in the management of groundwater resources by indicating the relative magnitude (importance) of each component of the flow system. It cannot be used by itself as a tool for accurate long-term management of groundwater resources. The variability of the natural earth system is too great to allow for precise knowledge of the individual components of the budget to the degree required for management of the resource by water budget analysis alone.

The mass-balance principle was used in determining the water budget; i.e., water going into the system is equal to the water flowing out of the system plus or minus the change in storage of the water within the system. This situation is true at all points of the system at all times based on the principle of the conservation of mass. In the natural system, groundwater storage changes seasonally and with dry/wet year cycles. Pumping of groundwater also changes the amount of storage in the system. In this analysis, it was assumed that

long-term (multi-year) changes in the system are zero. The water budget represents an "average" year.

With the assumption that change in storage is zero (equilibrium conditions) the mass balance was calculated by assessing:

- Precipitation (a significant water input);
- Evapotranspiration (a relatively large component);
- Runoff (a relatively large component);
- Groundwater recharge (relatively small compared to precipitation); consumption via wells and springs (relatively small compared to total recharge); and,
- Unaccounted natural discharge (a major component).

The analysis indicates the total recharge to aquifers in the County is on the order of 600,000 acre-feet per year (530 MGD). This amount represents the recharge to all the aquifers in the County. The specific amounts to each zone cannot be accurately estimated from the existing data. The total water balance analysis provides an estimate of additional groundwater development that would be possible based on a 20 percent capture ratio. On a County-wide basis, an additional 100,000 acre-feet per year (about 90 MGD) may be available.

Regional Groundwater Supply Development

The existing data indicate additional groundwater supplies can best be developed in the alluvial deposits in the Skagit River Valley. High-yield aquifers are present beneath the Valley at many locations. High-yield wells appear feasible at most locations from the vicinity near Marblemount to the Skagit Delta west of Mount Vernon. The available data indicate water quality is better and well yields possibly higher in the area just east of Marblemount. Other areas between Marblemount and Concrete also appear to have good water quality but slightly lower well yields. The Valley areas further downstream near Sedro Woolley and Mount Vernon also appear to have the potential for relatively high well yields, but water quality may not be as good with more wells reporting excessive concentrations of iron, manganese, and in some areas near the coast, saline water.

A few areas outside the Skagit Valley indicated relatively large well yields such as near Lake McMurray. The limited extent of the aquifer in these areas make major development of a regional source less feasible, however. Other areas show moderate well yields, such as north of the Skagit River Valley. In these areas, a large number of wells could be installed to produce a regional supply. The costs would likely be prohibitive, making other supply areas more desirable.

Yields from properly constructed wells, finished in the more productive aquifer(s) in the Skagit Valley area, are likely to be in the 500 gpm to 800+ gpm range. Deposits of gravel and sand lying within 200 feet of ground surface allow these high individual well yields. The highest well yields appear feasible in the Marblemount area where the high-energy environment of the Skagit and Cascade Rivers allowed the deposition of the coarser grained materials. Localized high yields are also feasible further downstream, where aquifers also comprise gravel and sand deposits. Areas of silts and fine sands are also present, however, making consistent very high yields (800+ gpm) less likely.

Upland areas surrounding the Valley do not have regional water supply capability because well yields are generally low. These areas contain bedrock aquifers and only very localized and limited sand and gravel deposits. The bedrock areas typically have well yields of under 10 gpm and often much less. The sand and gravel areas may have yields that are higher, sometimes greater than 100 gpm. These yields are still below those needed for an economic regional water supply. They could be used for local supply, however.

The water budget analysis indicates 90 MGD of additional groundwater may be available for development within the County. This estimate is a "first cut" planning value. It is based on an assumed capture ratio of 20 percent. More (or less) than 20 percent of total recharge may be potentially available, depending on the economic, environmental, and social costs that society is willing to pay.

Development of the 90 MGD would require a series of wells along the Skagit River Valley. Full development would likely require 70 to 100 wells from Mount Vernon to beyond Marblemount. Such a series of wells would be needed to intercept groundwater before it discharged to the river. Some areas would require more wells than others, as yield from individual aquifers will vary, locally.

Full development of the estimated 70 to 100 wells needed to develop 90 MGD would cost about $7 million (1993 dollars). The estimated cost for these wells ranges from about $71,000 to $83,000 (1993 dollars). These costs include drilling, testing, production pump installation, engineering and construction of a small well house. They are based on a compilation of estimates provided by several well drilling firms. The estimated average well depth is 150 feet. Diameters would likely range from 12 to 16 inches, based on anticipated peak yields of 600 to 1,000 gpm. The costs for transmission lines, plumbing, and other appurtenances are not included.

Other issues that may impact well development are the Endangered Species Act (ESA), DOH wellhead protection areas, and Tribal/County coordinated management of stream flows.

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Water Right Policies

Ecology has given considerable attention to the relationship of surface and groundwater in water right activities. The term "hydraulic continuity" is used to identify the relationship and is currently defined by Ecology as:

> "The interconnection between groundwater (aquifers) and surface water sources. An aquifer is in hydraulic continuity with lakes, streams, rivers, or other surface water bodies whenever it is discharging to these water bodies. It is also in continuity if it is being recharged by the surface water. Where hydraulic continuity exists, groundwater and surface water can not be considered as independent resources. A withdrawal from one will have some effect on the other." (Ecology Draft Hydraulic Continuity Policy, May 7, 1992)

When hydraulic continuity is determined to exist, Ecology's position is that permit decisions for groundwater withdrawals must be consistent with resource management plans and protection levels established for surface waters. Therefore, since the Skagit River is the discharge point for most groundwater in the County, it is reasonable to assume that requests for appropriation of regionally significant amounts of groundwater would be evaluated as to potential effects on the aquifer and the Skagit River. Quantitatively, the continuous withdrawal of 29 MGD from an aquifer would equate to a flow of 45 cubic feet per second (cfs). Flow of the Skagit River at Mount Vernon (51-year record) averaged 16,710 cfs. The minimum discharge of 2,740 cfs occurred October 26, 1942. Assuming a direct relationship, a 29 MGD withdrawal would represent about three-tenths of one percent of the average discharge and two percent of the extreme low flow of the Skagit River. It is not known whether Ecology would consider this a significant and adverse effect that would prevent groundwater development and use.

A further (and possibly controlling) water right consideration would be the protection of instream flows in the Skagit River. State law requires that certain instream resources be protected and establishes a rule making procedure for setting instream flows. Once established, the protected flows enjoy a priority as of the date the State rule/regulation is adopted. Water rights issued after that date are then inferior to the instream flows and subject to closure to protect the flows. The 50-year MOA defines the process by which the instream flow conditions will be determined and set.

It is the position of the Swinomish Tribe that nothing in the CWSP should be construed as acknowledgments by the Tribe of any determinations which may affect future allocations of instream flows.

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9.3.2 Surface Water

Based upon the adopted planning criteria, only sources internal to the planning area (Skagit County) are to be considered for future water supply. The predominant source is obviously the Skagit River and its tributaries. Secondary sources are the Samish River and smaller systems such as the Lake Cavanaugh drainage which is tributary to the Stillaguamish River.

From a practical standpoint, the Skagit River is the surface water source of choice. The next largest stream, the Samish River, has recorded flows as low as 11 cfs, or about 7 MGD, (July 10, 1951) at the bridge crossing on old U.S. Highway 99. The Samish River and smaller streams would not have a flow reliability to support development for regional water supply.

Based upon U.S. Geological Survey published records for the period of 1940 through 1991, the flow of the Skagit River at Mount Vernon may be summarized as Table 9-1.

Table 9-1
Historical 1940–1991 Skagit River Flow at Mount Vernon

	Cubic Feet Per Second (cfs)	Million Gallons Per Day (MGD)
Mean annual discharge	16,710	10,795
Highest mean daily flow	142,000	91,732
Lowest mean daily flow	3,050	1,970
Minimum day discharge	2,740	1,770

From the standpoint of stream flow records, it appears there should be no problem in meeting the year 2050 forecasted deficit peak day flow of 37 MGD from the Skagit River. This represents two percent of the minimum flow of record. However, as noted in the preceding groundwater discussion, the State has not established instream flows on the River through its rule making process. It is through this process that a priority and quantity of right would be determined for instream resource needs. Prior to granting a reservation or appropriation of a regionally significant amount of water for public water supply use, it is assumed that the State would first establish the instream flows. Instream flow determination is currently in progress as agreed to under the 50-year MOA (Appendix G). Under the agreement the PUD and City of Anacortes will conduct in-stream flow studies in return for water rights. To a portion of the flow in excess of the agreed upon minimum in-stream levels. The reservation or appropriation will carry an inferior priority to the instream resources right. The level at which the instream right is fixed will determine the availability of water for other uses.

9.3.3 Water Conservation

The reduction in water use through water conservation is considered a supply option. For purposes of this CWSP, implementation of utility-specific and a regional conservation plan were factored into the water demand forecast. This conservation plan is described in Section 7 and is a surrogate to a new source of supply through a reduction in future demand.

9.4 Future Supply Options

9.4.1 Non-Urban Growth Areas

The process of identifying and establishing utility service areas, as described in Section 3, resulted in the recognition of many existing, noncontiguous utilities in the non-Urban Growth Areas (UGAs), which rely upon groundwater sources. New systems proposed in the non-UGA will primarily be developed by the PUD consistent with provisions of the Satellite System Program (SSP).

Based upon the results of the previously discussed 1993 CWSP groundwater assessment conducted by Pacific Groundwater Group, it is concluded that groundwater of acceptable quality and quantity is generally available for public water supply in the rural area. Problems do exist in localized areas such as Guemes Island where more detailed groundwater studies may be required.

Given these circumstances, continued groundwater development by utilities appears to be the preferred option in the non-UGA. In that portion of Skagit County west of Sedro Woolley, intertie with or service by the urban systems (City of Anacortes and PUD) should be encouraged when service is available.

9.4.2 City of Anacortes System

The current status of development and future water demand requirements for the City of Anacortes service area are described in Section 8 and summarized as Table 9-2.

Table 9-2
City of Anacortes Service Area Water Demand

	Average Day (MGD)	Peak Day (MGD)
Year 2050 Requirements	28.0	40.5
Current Installed Capacity at Treatment Plant	20.0	30.0
Scheduled Capacity Upgrade	[a]	[a]
Year 2050 (Deficit)/Surplus	(see Appendix G)	

[a] The City of Anacortes plans to upgrade production as needed to maximize water rights.

The existing raw water pumping plant on the Skagit River is designed and constructed to accommodate a peak pumping rate of about 55 MGD. Additional pumps must be installed to develop this capacity. In addition, the existing water filtration plant is designed for expansion to a peak capacity of 60 MGD.

Two State certificates of water right are issued for benefit of the raw water pumping station. The combined appropriation is approximately 55 MGD. In addition, a groundwater certificate of water right exists for the appropriation of about 21 MGD from Ranney wells no longer used by the City of Anacortes. The City has filed application with Ecology to transfer this right to the existing raw water intake on the Skagit River. The 50-year MOA will transfer the Ranney Well right to provide for diversion at existing intake addressed in Certificate No. C-709.

Based upon the above, it appears City of Anacortes water supply demands within the scope of this study can be met from the Skagit River.

9.4.3 Public Utility District No. 1 of Skagit County (PUD) System

Supply Status

The current status of supply development and the future water requirements for the non-satellite service area of the PUD system are generally described in Section 8. This examination relies upon the results of past hydrologic analysis of the watershed streams by PUD consultants using data for the years 1927 through 1962. These data indicate that a low flow critical period existed between May 1928 through November 1929 and that there have been times within this recorded period when no flow was available for diversion to Judy Reservoir from May 1 through September 30.

The relationship of the critical period flow of the source streams (Gilligan, Salmon, Turner, and Mundt Creeks), mainline collector/transmission pipeline capacity from the source streams to Judy Reservoir, and water right status pending MOA required in-stream flow levels are as follows:

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- The 42.59 CFS (27.52 MGD) appropriation from Sedro-Woolley and Ranney Wells (Certificate 1904 and 2107) and Cultus Mountain water rights are not subject to Lower Skagit in-stream flows.

- The 31.69 CFS (20.48 MGD) appropriation from Salmon, Gilligan, Turner, and Mundt Creeks are subject to Cultus Mountain in-stream flows. These flows have been established and are included as Appendix I.

- The 39.81 CFS (23.4 MGD) of pending and new water rights on Salmon, Gilligan, Turner, and Mundt Creeks. The purpose of these applications is to make full use of the hydraulic capacity of collector lines.

- All Cultus Mountain diversion will not exceed 35.8 MGD.

- Cultus Mountain instream flows included as (Appendix I) will be recognized as higher priority than: 1) existing claims and certifications; 2) pending and new water rights; and, 3) future claims and adjustments.

Based on the MOA, the PUD:

- May divert up to 35.8 MGD to Judy Reservoir from Cultus Mountain streams subject to in-streamflows.

- May transfer Ranney & Sedro-Woolley well water rights to diversion at new PUD Skagit River pumping station.

- May provide additional diversion at PUD Skagit River Pumping Station on each of the MOA listed water rights.

- May periodically divert up to 35.8 MGD from the Skagit River to Judy Reservoir as an alternate source of supply to the Cultus Mountain streams with only 8.28 subject to in-stream flows.

Future Requirements

Additional water supply will be required to meet projected PUD system needs. These needs are summarized Table 9-3.

Table 9-3
PUD No. 1 Service Area Water Demand

	Average Day (MGD)	Peak Day (MGD)
Year 2050 Requirement	39.3	79.7
Current Installed Capacity at Filtration Plant	12.0	18.0
Year 2005 Scheduled Capacity Upgrade	24	30
Year 2050 (Deficit)/Surplus	(15.3)	(49.7)

Supply Augmentation Options

Work is currently underway to enlarge the storage capacity of Judy Reservoir from the current 451 elevation to 461.2 by raising the existing dams. The increase in storage will provide an additional 3.0 MGD during the months of May through September. The work is scheduled for completion in 1999.

Several other alternatives exist for augmenting existing sources or developing new sources to meet the forecasted growth within the PUD service area as needed. These alternatives are briefly described below.

- Expansion of City of Anacortes Filtration Plant - The present river bend intertie with the City of Anacortes provides a flow of 4.5 MGD to the PUD system. The Anacortes filtration plant has a current peak day capacity of 30 MGD and is designed for expansion to 60 MGD. With this expansion, the Anacortes system could serve the growth-related needs of the PUD service area. Booster pumping may be required to serve all but two of the PUD pressure zone areas. Alternatives to pumping to the PUD system should be investigated.

- Groundwater Development – Groundwater options are addressed by the "water resources plan" prepared for the PUD by Kennedy/Jenks, 1997. This report is on file at the PUD

Comparison of Supply Options

The relative merits of the additional supply options are summarized in Table 9-4. A comparison of capital or net worth costs is outside the scope of this evaluation.

Table 9-4
PUD Resource Options

Option	Advantages	Disadvantages
1. **Joint Use of Anacortes Facilities**	Supply potentially available for total future needs	Complementary only to the lower (214) PUD pressure zone
	Minimum near-term capital costs	Pumping/energy cost
	Puts regional water supply program in place	Intertie water right considerations
	Maximizes use of both the Anacortes and PUD systems	
2. **Groundwater Development**	Supply potentially available for total future needs	Potential water quality (iron and manganese) problems
	Supply can be incrementally developed	Water right complications associated with hydraulic continuity issue
	New sources/wells can be sited in growth areas	Pumping/energy cost
	Maximizes phasing of capital costs	

9.5 Recommended Regional Water Supply Strategy

Based upon the review of supply sources described above, the following supply strategy is recommended for the rural and urban areas of the County. This strategy assumes the land use policies adopted by the County in 1996 under the Growth Management Act (GMA) will generally distribute new population growth in the 80 percent urban/20 percent rural manner described in this CWSP.

9.5.1 Supply Strategy

Non-UGA

A. Within the parameters of the 50-year MOA individual utilities and the Satellite Management Agency (SMA) should rely on groundwater or surface water development for future needs, depending on environmental and cost/benefit analyses.

B. Within the limitations of physical circumstances, utilities should seek interties for both emergency and normal operations.

C. Population growth should be served by those utilities indicating the intent to expand their service areas, and by the PUD (as the Satellite Management Agency), according to the program and policy outlined in Section 6.

UGA

A. The City of Anacortes and the PUD should be the responsible entities for serving growth in the urban areas.

B. Anacortes and the PUD should continue their Joint Operating Agreement for development of shared regional water supply facilities.

C. The PUD should continue under the 50-Year MOA to obtain approval of water right applications on the Cultus Mountain streams in an amount that allows use of the collector pipelines to full hydraulic capacity, when water is available.