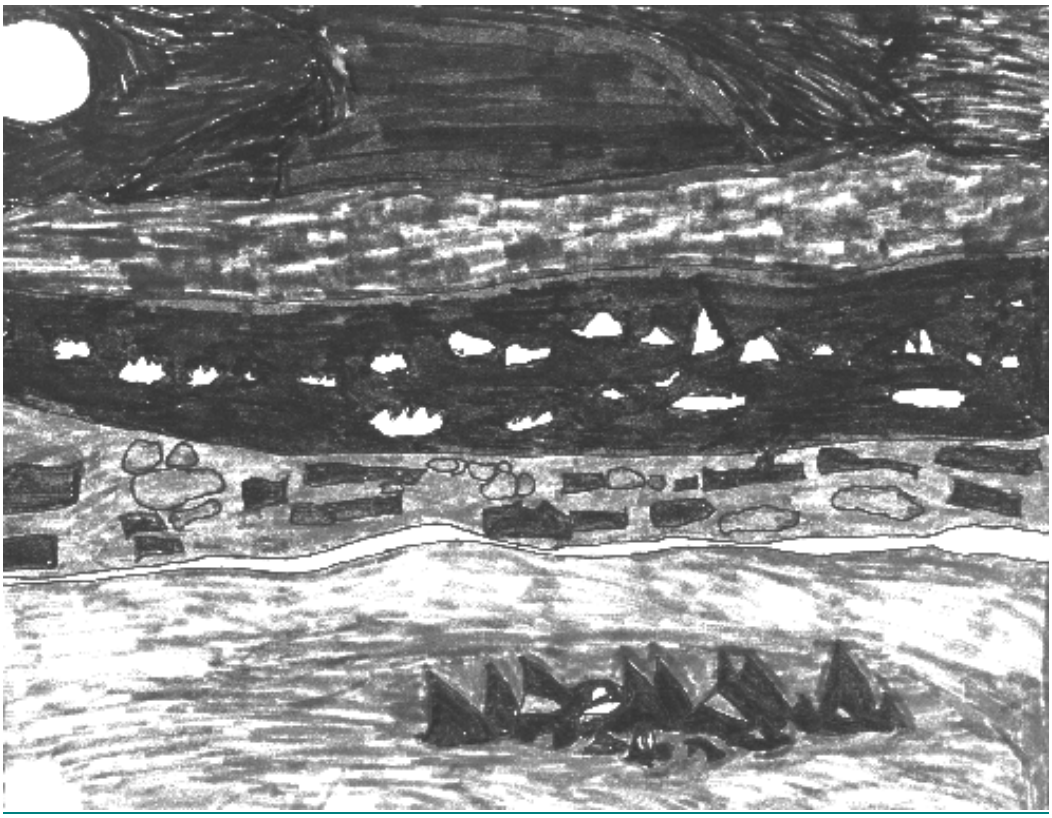
Island County Comprehensive Plan

2. Water Resources Element



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Adopted
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ISLAND COUNTY WATER RESOURCES ELEMENT

INTRODUCTION

Island County has proactively achieved a technical understanding of its water resource through numerous studies. Based on this knowledge, a number of water supply and groundwater resource protection and management plans and policies have been adopted and implemented. These elements manage adequacy and protection of the resource through a common goal of non-degradation. A summary of these efforts include:

1979–1983 USGS Water Resource Study.

1982 EPA Sole Source Aquifer Designation.

1985 Designation of Island County as a Critical Water Supply Service Area per 70.116 RCW.

1989 Adoption of Island County/State Department of Health Salt Water Intrusion Policy.

1990 Adoption of Island County Coordinated Water Plan (CWSP) per 70.116 RCW.

1990 Adoption of ICC 13.03A, Water System and Fire Flow Standards.

1990 Memorandum of Understanding between Island County and Department of Ecology on Water Resource Planning, Management, and Permitting Activities.

1990 September 18, 1990, ICC Chapter 8.09, Potable Water Source and Supply per GMA requirements 19.27 and 58.17 RCW.

1991 Adoption of Groundwater Management Program (GWMP) per 90.44 RCW.

1992 ICC 8.09 revised to include Critical Recharge Area Requirements pursuant to GMA.

1996 Hydrogeologist and data entry staff support hired for monitoring, database development and maintenance, resource management, groundwater evaluations, and development of groundwater flow and sea water intrusion models.

H. ~~1997 —~~Island County and the United States Geological Survey (USGS) cooperative four year Ground Water Recharge Study (1997–2001).

2001 – present Watershed Planning – development of a comprehensive ~~county-wide~~countywide water resource plan.

Island County has shown foresight in proactively managing ~~the~~ its groundwater resources. In many cases, such as the Sea Water Intrusion Policy and aquifer testing requirements, Island County has lead the State in developing resource evaluation and management policies and has successfully worked to incorporate these policies into ~~State~~ agency review of projects ~~approvals regarding~~involving Island County Resources.

The GMA water adequacy requirement for building permits and subdivisions was adopted in Island County a mere 11 weeks after GMA became effective. ~~and is one the most stringent in the State.~~ Current programs are being implemented without grant funding thereby showing the commitment of integration of resource management and protection in land use development review and decision making.

The existing water quality and water level monitoring program, comprehensive groundwater database, and construction of groundwater flow and sea water intrusion models provides the best available data for determining adequacy and detecting trends in groundwater quality and availability. All of these integrated programs provide the technical basis for determining future groundwater capacity and future land use development prior to project approval.

WATER SUPPLY AND WATER RESOURCE MANAGEMENT REQUIREMENTS AND ACTIVITIES

Water Supply Overview

In 1979, Island County contracted with the USGS to conduct a water resource study. This four year study set out to: define the hydrogeology of the Islands; determine the chemical quality of groundwater; and identify areas of existing and potential sea water intrusion. This study has provided detailed information on the hydrogeology of Island County and has been utilized in numerous subsequent studies.

In 1982, the Environmental Protection Agency ("EPA") declared Island County a Sole Source Aquifer. The designation acknowledged the County's reliance on groundwater as a potable water source and requires federally funded projects be designed to ensure protection of groundwater resources. The County is in fact served by a multiple aquifer system. The sole source designation refers to the County's reliance on groundwater for drinking water rather than a singular aquifer.

Island County's "sole source" aquifer system is the critically important water supply for people living outside the general Oak Harbor area. Approximately 72% of the county's population relies upon groundwater as a potable water source. Population growth in rural areas has increased groundwater demand proportionally; this is expected to continue in the future. Studies completed to date, including hydrogeologic investigations conducted by local, state and federal agencies, conclude that groundwater supplies are a finite resource in Island County.

Many of the developed coastal and peninsular regions of Island County are experiencing degrees of seawater intrusion. The Island County Health Department compiles water quality data to monitor seawater intrusion and ~~periodically~~ regularly updates a map that delineates these intrusion regions.

The City of Oak Harbor operates the largest municipal water supply system in Island County. The primary source of supply for Oak Harbor is from Anacortes through two parallel pipelines. The pipelines are owned by Oak Harbor and supply the U.S. Naval Air Station as well as Oak Harbor. All other residents in the County are dependent upon ~~groundawter~~groundwater for their source of water supply.

Coordinated Water System Plan

In 1985, the Board of Island County Commissioners declared Island County a Critical Water Supply Service Area, pursuant to RCW 70.116. This declaration was based on an assessment that identified water supply problems related to uncoordinated planning, inadequate water ~~quality~~quantity, or unreliable service existing throughout the County. A Coordinated Water System Plan (CWSP) was completed in 1990, addressing water quantity/quality problems. This plan includes several management options to be implemented by the County's public water systems. The major elements of the plan include a Utility Service Review Procedure and Conservation and Minimum Design Standards. Highlights of these requirements are outlined below:

Utility Service Review Procedure

- Prior to new water system development, ~~the~~ an applicant must attempt to obtain water service from neighboring purveyors.
- New and expanding systems must prepare a water plan that evaluates the existing system, needed improvements and future needs.

Conservation

Water conservation requirements for new water systems include:

- Installation of meters at individual connections and the well source.
- Implementation of rate structures that encourage water conservation.
- Development of a leak detection and repair programs.
- Development of water use restriction procedures for drought periods.

Design Standards

On July 9, 1990, the Board of Island County Commissioners adopted Chapter 13.03A ICC, Water System and Fireflow Standards. Chapter 13.03A ICC establishes criteria for the design and construction of public water systems within Island County. The ordinance is supplemental to other federal, state, and local criteria governing the construction and operation of public water systems and also complies with design standards set forth in the CWSP. This code includes requirements for resource protection, monitoring and management such as:

- Metering at the well head.
- Metering individual connections.
- Water level device installed in the well for water level measurements.

To date, the CWSP has not prevented the proliferation of small, independent water systems. The inter-connection of water systems and development of larger water systems with superior technical expertise and facilities has met with marginal success. Due to

Island County's rural nature and historical development patterns, many small, scattered developments do not fit the CWSP's goals to encourage the formation or expansion of fewer but larger, well-managed systems (rather than establish small, poorly staffed or unmanaged systems). Implementing the anti-sprawl strategies of the Comprehensive Plan will greatly assist in coordinating management of water systems.

Development demands pose many challenges to available water supplies. Sufficient quantities of potable water are needed to support existing users and any increased population. There is a continuing need for improvements to domestic water systems and increased water conservation efforts. Many small water systems and community associations now provide most of the domestic water to Island County residents, while individual wells serve approximately 7% of the County's population. Often small water systems and community associations are not adequate to serve an expanding population. Many older systems were undersized to begin with, and some are inadequate for their existing service area. Extensive alterations will be required, including improvements to distribution systems, water supplies and storage capacities, and fire protection facilities. Federal requirements for water quality monitoring will place additional burdens on many small systems. Consolidation of water districts and associations is desirable to provide adequate improvements for delivering public water supplies at the least possible cost to consumers.

Avoiding additional seawater intrusion and other potential groundwater quantity and quality problems depends on careful management of existing finite groundwater resources. The County should encourage the development of alternative management strategies to make the adequate improvements for delivering safe and reliable public water supplies at the least possible cost to consumers.

The County should encourage development of alternative management strategies to make the most efficient use of limited groundwater supplies. Hydrogeologic investigation and data collection must continue to better predict groundwater availability, as should investigation of potential mainland water sources, when warranted. As indicated elsewhere, clustering and limiting impervious surfaces will maintain infiltration, which is the sole source of the county's groundwater ~~recharging groundwater~~.

Groundwater Management Program

In 1992, the Ground Water Management Program (GWMP) was completed, pursuant to RCW 90.44, and adopted as an element of the Island County Comprehensive Plan. This plan provides water resource management options to protect groundwater in Island County. Changes in health regulations (Chapter 8.09 ICC) to implement portions of the GWMP and implementation of non-regulatory programs followed adoption of the GWMP. Major elements implemented by the Island County Health Department include the following:

Conservation Program Option Paper #3

A number of conservation measures have been adopted and are implemented in design review and water supply approvals. Pursuant to ICC 13.03, and ICC 8.09, all new drinking water wells drilled in the county are required to be metered whether they are

public water supplies or ~~single family~~single-family individual wells. For individual wells serving one ~~single family~~single-family residence, verification of metering is required prior to approval of a Water Availability Verification Form and issuance of a building permit. For public systems, both source and individual connection meters are required on new and expanding systems. Use-based rate structures promoting conservation and other conservation practices are implemented through the approval of the required water system operation and maintenance agreements. The Island County Salt Water Intrusion Policy also requires the adoption of additional conservation requirements in medium and ~~high risk~~high-risk areas of ~~sea water~~seawater intrusion.

Ground Water Monitoring and Evaluation

Data Collection and Management Program Option Paper #5

1. Well Inventory.

   Well logs either on record with the ~~100% of well logs for wells with available data on file with the~~ Island County Health Department ~~and~~ or available through the Department of Ecology have been entered into the hydrogeologic database. All new public and individual wells are approved by the Health Department for siting criteria.

2. Water Level Monitoring.

   A. Water systems in high and medium risk areas require water level monitoring in April and August of each year and the results are sent to the Island County Health Department and/or Department of Ecology. The Island County Health Department ~~is~~ has ~~incorporating~~ incorporated this data into their hydrogeologic database.

   B. Water levels are monitored biannually during water sample collection of the 60 + wells in the monitoring network managed by the County Hydrogeologist.

   C. Water level electronic measuring tapes are available to the public and can be checked out for use from the Island County Health Department, Coupeville office.

3. Water Quality Monitoring.

   A. The eight well monitoring network started in 1986 by the Island County Health Department was expanded in 1992 to 20 wells and in 1993 to 40 wells. The wells are monitored in April and August of each year. The current well monitoring program managed by the County Hydrogeologist includes the 40 wells and variable area specific monitoring of up to 60 wells. The Island County Health Department is incorporating this data into their hydrogeologic database.

   B. Routine water quality sampling is required by public water systems. In addition, conditions of approval in medium and ~~high risk~~high-risk areas for public wells include additional sampling for chloride and conductivity in April and August and reporting to the Island County Health Department.

C. Water quality results are currently entered into the hydrogeologic ~~database which~~database that is equipped with numerous geochemical analysis tools.

D. Single family individual wells are required to monitor for water quality prior ~~to the~~to the approval of building permits (per ICC 8.09).

E. ~~Thirteen~~ Numerous wells are monitored on a quarterly basis by the Island County Health Department at the closed Coupeville Solid Waste Landfill~~s~~. Results are ~~entered into a database~~tracked to identify any statistically significant trends in degradation of ground water quality.

F. In 1997 The Island County Health Department ~~recently~~ completed a 1-year nitrate study to determine the ~~aerial~~ spatial extent of nitrate contamination in ~~nitrate in~~ Island County groundwater. Eighty-three wells were sampled ~~in 1996. A~~and a report was prepared discussing the extent of nitrate contamination and proposed remediation measures.

G. In 1996, the Island County Health Department worked closely with the Department of Ecology on a ~~one year~~one-year well monitoring program. Forty-six wells were sampled to understand the seasonal fluctuation of chloride concentrations in areas affected by ~~sea water~~seawater intrusion.

H. ~~H.~~ The Island County Health Department ~~recently~~ conducted the baseline water quality, water flow, and sediment sampling for both the North Whidbey and Cemtral/South Whidbey Watershed Water Quality Programs. ~~Six sites were selected and sampled.~~ The final reports were completed in April 1998 and January 2001, respectively, and will be used to identify and prioritize surface water quality problems for use in the watershed action plan.

~~I.~~

Ground Water-Availability. Criteria Option Paper #7

ICC 8.09 was adopted in September 1990. The provisions of this code constitute minimum requirements of the Island County Health Department governing potable water source and supply and protection of groundwater resources. The elements of this code are outlined elsewhere in this section in more detail.

Ground Water Recharge Option Papers #8 and #9

Critical Recharge Area Protection was incorporated into ICC 8.09 in 1992. All projects with the potential for groundwater contamination shall be evaluated by the Island County Health Department to determine their impacts on the groundwater resource. Highlights and amendments to ~~of~~ this code including Critical Recharge Area Protection are documented in more detail elsewhere in this section.

A four (4) year Groundwater Recharge Study was initiated in February 1997 through a cooperative agreement and funding of the Board of Island County Commissioners and the USGS. More detail on the study is provided in the Groundwater Recharge Section.

Pollution Source Controls Option Paper #18

The objective identified in the GWMP was to establish Best Management Practices (BMPs) to reduce the potential for groundwater contamination from specific activities or facilities. ICC 8.09.097, Critical Recharge Area Protection, establishes a method by which land use proposals are reviewed to determine the potential for groundwater contamination. The Island County Health Department has developed a list of accepted ~~BMPs which~~BMPs that are both disseminated to the public and applied as "conditions of approval" on land use approvals. The Island County Health Officer has the discretion to impose conditions designed to prevent degradation of groundwater quality or quantity.

Other elements of the GWMP have been implemented by the Island County Health Department on an ongoing basis such as technical assistance and public education.

ICC 8.09 Potable Water Source and Supply

ICC 8.09 was adopted in September, 1990. The provisions of this Chapter constitute minimum requirements of the Island County Health Department governing potable water source and supply, and protection of groundwater resources. The regulations apply to all potable water supply systems proposed ~~to be used~~ for building permits and ~~proposed~~ subdivisions. ICC 8.09 complies with GMA requirements for verification of water availability and adequacy requirements for building permits and subdivisions (RCW 19.27 and RCW 58.17). In 1992, this code was revised to include Groundwater Resource Protection measures and Critical Recharge Area Protection measures which also comply with GMA requirements. Amendments to the Critical Aquifer Recharge Area Protection are included in this update based upon the data derived from the USGS Recharge study and the Watershed Planning process currently underway.

The following provides a brief overview of the code.

Building Permit and Subdivision Requirements:

Prior to building permit approval, evidence of an adequate water supply must be provided.

This code includes requirements for ~~single family~~single-family individual wells, including a meter at the ~~well head~~wellhead and the establishment of a ~~100 foot~~100-foot pollution control radius. These ~~requirements~~conditions ~~far~~ exceed state requirements for individual water supply approvals. In addition, other requirements for individual well approvals include: drilling records, water quality testing and pump testing.

Requirements for public water supply approvals are also more stringent than state requirements. In addition to meeting WAC 246-290 and WAC 246-291, approvals in Island County require compliance with the Island County Coordinated Water System Plan, the State Department of Health and Island County Seawater Intrusion Policy, and ICC 13.03A including metering, conservation and aquifer testing.

ICC 8.09 also includes requirements on proposed subdivisions assuring water availability prior to the creation of new lots or other land use approvals requiring potable water.

These requirements include aquifer tests and other detailed hydrogeologic evaluations when deemed necessary.

ICC 8.09.~~097~~ 099, formerly 8.09.097, Critical Recharge Area Protection Requirements establish a method by which land use proposals are reviewed to determine the potential for groundwater contamination. Critical Recharge Areas ~~include areas designated as a Sole Source Aquifer. Whidbey and Camano Islands have been designated as Sole Source Aquifer Areas.~~have been identified utilizing the "Guidance Document for the Establishment of CARA Ordinances", Department of Ecology, 2000.

A hydrogeologic site evaluation is required prior to ~~preliminary~~ approval of projects identified by the Health Officer as having the potential for groundwater contamination. Conditions may be imposed to prevent degradation of groundwater quality and quantity. BMPs have been adopted for activities where accepted BMPs are available. Project approvals are based on the conditions and/or mitigation plan required by the Island County Health ~~Department~~ Officer.

Other Ground and Surface Water Protection Standards

ICC 8.07C On-Site Sewage Systems The goal of groundwater and surface water quality protection is reflected throughout ICC 8.07C. ~~Requirements for sewage system vertical separation to groundwater and horizontal separation to surface water exceeds~~Requirements for sewage system vertical separation to groundwater and horizontal separation to surface water exceed the state standards outlined in WAC 246-272.

Island County Hydrogeologist

The Board of Island County Commissioners hired a Hydrogeologist and data entry person in January of 1996. The Hydrogeologist works in the Health Department and current Hydrogeologist activities are described below.

- Detailed data collection, analysis, and mapping of aquifer distribution, aquifer characteristics and geochemistry.
- Construction and calibration of numeric ~~three dimensional~~three-dimensional groundwater flow / seawater intrusion models.

—

Groundwater flow models allow for the development of an understanding of regional water balance issues and the impacts that land use, groundwater withdrawals, and climatic variations have on the groundwater system. The results of these efforts ~~will~~ are ~~be~~ utilized for both application specific reviews, and long term planning efforts. ~~Early on, m~~Modeling efforts ~~will be~~are concentrated in areas that are experiencing a combination of projected population growth and seawater intrusion problems. This is a long-term effort with individual studies and models expected to take several years each.

- Groundwater monitoring including a county-wide network of ~~40~~ 60 ~~wells which~~wells that includes water sampling and water level monitoring. Up to ~~60~~ 40 additional wells are monitored in area specific studies. Recent activities associated with the county's Watershed Planning efforts also included the collection of water quality samples and groundwater elevation determinations from 378 groundwater wells.

  The network will be increased in size (number of wells) and detail (parameters tested) to better assess any trends in water levels or water quality with a projected maximum of 100 wells (excluding area specific studies).

- Review of ~~projects which~~projects that may impact groundwater resources per ICC 8.09.~~097~~099.

  The decision making process will utilize data collected specific to the proposal, regional hydrogeologic and geochemical analysis, and regional groundwater flow models as they become available.

- Data management and the continued development of a hydrogeologic database.

  These tools greatly increase our ability to analyze regional and area-specific trends in water quantity or quality. Through these efforts it is possible to detect and mitigate problems related to resource management before these problems become critical.

- Technical staff to the Watershed Planning process.

- Public outreach and education.

Watershed Planning

Since 2000 Island County has been involved in the development of a Watershed Management Plan pursuant to RCW 90.82. Phase II of the watershed plan development included a comprehensive assessment of the groundwater systems supplying potable water for the majority of the population. 379 wells were sampled for water chemistry and water level elevation. This data was is being used for the development of the plan in an attempt to define those locations within the county where ample water supplies exist and those areas where the groundwater supply is tenuous.

Seawater Intrusion ~~Policy~~

The Island County Health Department and State Department of Health adopted a joint Seawater Intrusion policy in 1989. The purpose of the policy ~~is~~ was to responsibly manage the approval of new public water systems (two or more connections) as well as classify and monitor existing or expanding public water systems with respect to ~~sea water~~seawater intrusion. Through ~~this~~ the implementation of this policy, ~~it is hoped that~~

~~the~~ problems of the degradation of drinking water quality or loss of water source due to ~~sea water~~seawater intrusion ~~will be~~are reduced or eliminated.

This policy ~~establishes~~ established three (3) risk categories of saltwater intrusion risk for all public water systems that ~~are existing~~exist, or are expanding, or are proposed ~~which use or propose~~ to be used as a ~~ground water as the~~drinking water source. This policy further establishes standard requirements for water systems within each risk category.

~~The following is a general outline of the sea water intrusion evaluation process. The Island County Health Department initially classifies water systems into one of the three categories based on proximity to existing wells which exhibit elevated chloride levels. Specific pump tests, monitoring and design requirements are based on the risk categories.~~

~~A standard pump test is required of wells proposed in areas of low risk. If the system is rated as medium or high risk, the Island County Aquifer Test Procedure is required. The purpose of the standard pump test and the aquifer test is to determine whether the well and aquifer are capable of yielding water at the proposed pump rate without impacting the resource or existing users and to provide information necessary to determine proper pump settings in the well.~~

~~The Island County Aquifer Test requirements include not only design of the pump test specific to the test well but also the following:~~

~~- Drawdown and water quality measurements from nearby observation wells,~~

~~- Well source chloride and conductivity samples at intervals during pumping,~~

~~- Tidal influence on the pumping well,~~

~~- Aquifer transmissivity and storativity,~~

~~- The effect of the proposed ground water withdrawal on existing ground water users,~~

~~- Potential for seawater intrusion into this or seaward wells,~~

- ~~Copy of laboratory results~~

~~Examples of requirements for medium risk areas include metering at the connection and well head, water conservation measures incorporated into the operation and maintenance agreement, appropriate design modifications (pump rate, intake elevation, etc.), annual reporting of chlorides sampled in April and August analyzed by a state-certified lab, a hydrogeologic evaluation, and phased development. In high risk areas the systems are denied or modified unless an applicant can develop mitigating measures to reduce the risk of intrusion.~~

The Watershed Planning process provided an opportunity to review the county's methodology for evaluating groundwater withdrawals in areas defined at risk for seawater intrusion. An outcome of the planning process, based upon data collection and analysis of 378 wells, was the development of a new evaluation tool that focuses on both groundwater chemistry in the form of chlorides and elevation of the aquifer in reference

to sea level in order to predict impacts to the resource. This new methodology is included as an update to the county's CAO for the protection of groundwater resources and is described in detail under the Aquifer Recharge Area protection section.

~~**Other Related Health Department Studies and Reports Nitrate Study**~~

~~The Island County Health Department recently completed a study of the extent of groundwater nitrate contamination in the County. Eighty-three wells were sampled in 1986 and a report and recommendations for remediation were developed in 1997.~~

Water Related Interested Parties

The citizens in Island County have shown a great deal of interest and support in water related issues. The following organized groups actively support resource management efforts and advise the Board of Commissioners on water related matters:

~~•Ground Water Advisory Committee (GWAC)~~

~~•Central Whidbey Water Resource Forum (CWWRF)~~

- ~~Camano Community Water Association (CCWA)~~Water Resource Advisory Committee (WRAC)
- Community Health Advisory Board (CHAB)
- Environmental Health Advisory Board (EHAT)

AQUIFER RECHARGE AREAS

Groundwater Resource and Recharge Protection

The Growth Management Act ("GMA") requires the designation and protection of critical areas, such as aquifer recharge areas. Included in the adopted GWMP are areas identified as having a greater potential for recharge based upon soil type and surficial hydrology. In 1992, ICC 8.09 was amended to include measures to protect groundwater from surface activities in susceptible areas. ~~Subsequently, all~~ All of Island County ~~is~~ was ~~now~~ considered a recharge area and specific protection measures ~~are~~ were determined at the time of application and related to project impacts.

~~Pursuant to GMA requirements and the adoption of the GWMP, the Island County Health Department amended Chapter 8.09 ICC to include provisions for the protection of groundwater resources and critical recharge areas, ICC 8.09.095, and ICC 8.09.097. Unlike the GWMP which identified specific areas for protection based upon recharge potential, the~~ The amendments to Chapter 8.09 ICC in 1992 were based upon the entire county as a critical recharge area formulated from the sole source aquifer designation and adopted groundwater management areas pursuant to Chapter 90.44 RCW. The criteria established in Chapter 8.09 ICC provided the basis for the protection of groundwater resources in critical recharge areas. ~~This approach is more stringent than only applying protection measures in certain areas.~~

As noted previously, the 2002 USGS Recharge Study provided Island County with invaluable information concerning the local conditions that affect the recharge of precipitation into our aquifer systems. Previously, these areas had not been specifically delineated other than through the application of potential recharge rates based upon surficial geology. In the previous Water Resources Element of the Comprehensive plan it was noted that the information derived from the recharge study would be used to update or further identify those areas of the county that are critical in terms of groundwater recharge and aquifer susceptibility. ~~Per ICC 8.09.097 Critical Recharge Area Requirements, land use proposals are reviewed for the potential to impact groundwater resource quantity or quality. Proposals are reviewed on the basis of site-specific, project specific impacts to groundwater resources.~~

Through the Watershed Planning process Critical Aquifer Recharge Areas have been delineated using the "Guidance Document for the Establishment of CARA Ordinances", Department of Ecology, 2000. The following four criteria were used to assess aquifer vulnerability, and maps of each parameter were developed.

1. Depth-to-Water parameter was used to develop the "Depth to Water Susceptibility Rating" map, using data from the Island County hydrogeology database;

2. Recharge parameter was used to develop the "Groundwater Recharge Rate" map, using information from the USGS Deep Percolation Model and DOE Scoring Options;

3. Soil Permeability parameter was used to develop the "Soil Percolation Rate" map, using information from the Island County Soil Survey; and

4. Surficial Geology parameter was used to develop the "Surficial Geology Susceptibility Rating" map, using data from the Island County hydrogeology database.

The Critical Aquifer Recharge Area Map shows the sum of the scores from the four individual maps and ranks the county into one of three zones: "limited," "moderate," and "high" risk for contamination. The specific risk associated with surface contaminants, then, is based upon the four criteria rather than just surficial geology as in the past. Project actions in areas identified as having an increased risk for groundwater contamination may require a hydrogeologic assessment, as determined by ICC 8.09.

Hydrogeologic evaluations are required prior to ~~preliminary~~ approval of projects identified by the Health Officer as having a potential for groundwater contamination. Appropriate mitigation measures are imposed as conditions of approval for projects with a potential for impacts to groundwater resources.

Pursuant to the ~~GWMP~~ICC 8.09, Best Management Practices ("BMPs") have been adopted as part of ICC 8.09.097.C, Critical Aquifer Recharge Area Requirements, for projects which have a potential for groundwater contamination. BMPs are applied as conditions of approval for land-use projects in Island County.

Due to the complexity of the aquifer systems underlying Island County, it is difficult, if not impossible, to apply regional determinations of groundwater resource protection and water availability. Given these management limitations, site-specific, project specific evaluations are the best available option. As additional information is collected and analyzed, refinements can be made to the system of identifying critical areas for recharge and groundwater protection.

SEAWATER INTRUSION PROTECTION

Over ten years of experience in the application of the Saltwater Intrusion Policy has shed light on some limitations of the policy. The first limitation is that there are other sources of chloride in the environment other than seawater intrusion. Non-intrusion chloride sources include: connate (very-old) groundwater, septic system effluent, very hard groundwater, windblown sea spray, and recharge from irrigation, agricultural practices, and well disinfection. Chloride from any of these sources can result in elevated levels of chloride concentrations in an aquifer, triggering the Saltwater Intrusion Policy when in fact the aquifer is not intruded. This erroneous interpretation of data is known as a false positive, where a test identifies a problem that does not in fact exist.

False positives are one potential problem for the Saltwater Intrusion Policy; a second involves the opposite effect, a false negative. False negatives occur when a test indicates that a problem does not exist, when in fact it does. The processes of groundwater recharge, flow, mixing, and discharge all combine to affect the movement of marine water inland into an aquifer. Only after the marine water influences well water quality do the existing aquifer protection standards apply. The existing tools utilized for protection do not take into account the identification of future problems through predictive strategies.

In order to prevent seawater from entering a freshwater aquifer, adequate freshwater pressure must be maintained. An aquifer's susceptibility for seawater intrusion can be evaluated by measuring the distribution of water level elevations. Thus, the relationship between an aquifer's water level elevation and its susceptibility to seawater intrusion can be utilized as a planning and resource management tool. If employed in the same manner as the current Seawater Intrusion Policy, as a method of flagging a proposal for more detailed review, it may overcome virtually all of the policy's current limitations.

An aquifer that has water level elevations (pressure) significantly above sea level is not at risk for seawater intrusion, while an aquifer that has near sea level water levels is at risk. A more sophisticated analysis would be required to answer the question of whether or not the low-pressure aquifer would actually intrude due to a proposed withdrawal, but the risk for

intrusion is definitely present. If aquifer water level elevations can be accurately determined, incorrectly identifying an area as being at risk for intrusion (false positives) should not occur.

Through the Watershed Planning effort Island County and the WRAC collected and analyzed water quality and groundwater elevation data for 378 wells. This information was used to develop countywide water level elevation criteria to define at what elevation is a well at risk to seawater intrusion. These elevations, coupled with chloride data, were then used to define risk categories for the purpose of reviewing land-use proposals to define impact to the resource.

Hydrogeologic evaluations are required prior to approval of projects identified by the Health Officer as having a potential for causing, inducing, or contributing to seawater intrusion (ICC 8.09.099). Appropriate mitigation measures are imposed as conditions of approval for projects with a potential for impacts to groundwater resources. Additionally, public water systems are required to collect groundwater chemistry and water level elevations in areas defined as being at increased risks to intrusion.

Goals:

To manage and protect ground water withdrawals and provide for resource protection through a common goal of non-degradation for existing and future residents of Island County.

To protect aquifer recharge areas from contamination and insure long-term recharge potential.

Policies:

A. Continue efforts to identify areas with ground water problems such as ~~sea water~~seawater intrusion, groundwater depletion, and contamination from surface activities.

1. Continue implementing data collection and analysis efforts as recommended in the Ground Water Management Program.

2. Work with the Island County Health Department, Washington Departments of Health and Ecology to make best use of available data and new technology.

Use site-specific data as it becomes available to determine locations of important recharge areas, areas of limited ground water availability, and areas of particular vulnerability to contamination from surface activities. Maintain, update, and coordinate this data to make the most effective use of the available information. ~~The USGS is currently conducting a five-year study to estimate the distribution and quantity of recharge entering aquifers in Island County. When completed (in the year 2002) information gained will allow for the determination of those areas in the county that are most important from a groundwater recharge perspective.~~

~~Additional safeguards will be established within those areas to protect the quantity and quality of waters recharging Island County aquifers.~~

B. Protect the quantity and quality of groundwater resources for existing and future residents of Island County.

1. Provide incentive programs to encourage participation in water conservation and aquifer recharge area protection programs.

2. Consider acquisition of areas with particular value to ground water recharge.

3. Continue participation with State agencies and with the public in developing, updating, and implementing tools to improve management of limited ground water resources such as the ~~Sea Water Intrusion Policy, the~~ Coordinated Water System Plan, ~~and~~ the Ground Water Management Program, and the Watershed Management Plan..

4. Development must not be allowed to outstrip known water supplies. Consideration shall be given to the availability, susceptibility, and vulnerability of known ground water resources when siting new development and making land use decisions, per ICC 8.09 and related policies.

5. No intensive development shall be allowed in areas of known ground water limitations as determined by the Health Department, unless it can be proven through objective well tests not to diminish water supplies or reduce water quality for existing users, per ICC 8.09 and related policies.

6. Continue to provide for adequate groundwater analysis, commensurate to the scale and nature of the proposed development.

7. Continue to carefully evaluate the hydrogeologic setting when making decisions on potentially contaminating land uses, and require use of Best Management Practices, hazardous material management plans, and other tools to help prevent contamination of ground water.

C. Maps, site-specific studies, and information collected by other agencies available for public review will be made readily accessible to potential and existing landowners, interested citizens, and development interests to aid in the protection of these areas.

D. Development regulations shall be implemented in addition to those associated with the underlying land use designation.

~~E. Existing regulations for areas with high aquifer recharge are contained in the Ground Water Management Program and Potable Water and Supply, Chapter 8.09 ICC.~~

WATER PLANNING

Goal:

Ensure that Island County plans and develops in a manner that utilizes the best available information regarding water resources, so that the resource will be preserved for current and future use.

Policies:

A. Island County will prohibit service overlaps for the expansion of existing water systems and the formation of new water systems per CWSP.

B. New water systems will be required to meter and document water usage at the source and impose conservation strategies and implementation measures per CWSP.

C. Water systems will be encouraged to upgrade facilities to provide adequate water distribution, pressure, storage, and treatment for domestic use and fire protection.

D. The County will promote the retention and reuse of stormwater when it is the best and environmentally correct option.

E. Watershed management planning will be ~~initiated county-wide and will be~~ cognizant of the need to preserve water supply while providing drainage facilities to protect the welfare and safety of the community.

F. Development plans will contain plans for facilities to mitigate the impacts of increased ~~runoff ,~~runoff, ~~stormwater~~storm water drainage and flooding.

G. Public education concerning water conservation will be a continuing high priority.

H. The location and design of development will be carefully guided in order to minimize potential adverse impacts on the quality of ground and surface waters.

I. Land use patterns and practices conserving the integrity of the natural watershed system will be encouraged.

J. Development will be restricted unless adequate water supplies are available per ICC 8.09 and related policies.

K. Prior to any final plat approval, water availability must be reviewed and approved in accordance with ICC 8.09 and other related water policies.

L. Reuse of water, recharge of aquifers and alternative storage systems will be encouraged.

M. Incentives will be offered for the retrofit of existing fixtures with water conservation fixtures.