

RESOLUTION # 15570V

**ADOPTING AN INTERIM SEAWATER INTRUSION POLICY**

WHEREAS, RCW 70.05.060(3), relating to the powers and duties of boards of health, provides that such boards shall "enact such local rules and regulations as are necessary in order to preserve, promote and improve the public health and provide for the enforcement thereof", and

WHEREAS, Pursuant to RCW 70.05.060(3) the Skagit County Board of Health adopted rules and regulations governing quality and quantity for individual and public water supplies as codified in Chapter 12.48 of the Skagit County Code (S.C.C.) and under S.C.C. Chapter 12.48.280 must concur with any decision by the Skagit County Health Officer to waive said rules; and

WHEREAS, Seawater intrusion problems have been documented by the Washington State Department of Ecology, United States Geologic Survey (U.S.G.S.) and the Skagit County Health Department in private as well as community wells in the coastal areas of Guemes Island pointing to the need to acknowledge the sensitive nature of the aquifer serving the area; and

WHEREAS, The Skagit County Board of Health on August 12, 1994 adopted Resolution #15473 allowing a waiver to S.C.C. Chapter 12.48 for a subdivision on Guemes Island in an area with documented seawater intrusion problems; and

WHEREAS, Experience from adjacent areas in the San Juan Islands, Camano, Whidbey and Lummi Islands suggests worsening ground water and public health problems if care is not taken to carefully develop this sensitive groundwater source; and

WHEREAS, The Skagit County Health Department staff with the assistance of an Advisory Committee made up of a hydrogeologist, licensed well drillers and concerned Guemes Island property owners has jointly developed a proposed INTERIM SEAWATER INTRUSION POLICY to provide direction to the Board;

WHEREAS, A discussion was held before the Skagit County Board of Health on December 12, 1994 during which time the Board questioned health department and public works staff; and

NOW, THEREFORE, BE IT RESOLVED AND ORDERED by the Skagit County Board of Health that an INTERIM SEAWATER INTRUSION POLICY (see attachment) is hereby adopted to assist in development and use of groundwater in the coastal areas of Skagit County; and

BE IT FURTHER RESOLVED that a SEAWATER INTRUSION ADVISORY COMMITTEE is to be appointed by the Skagit County Board of Health with the following membership:

- a) 5 citizen members broadly representing the interests of property owners; and
- b) 2 representatives of the Skagit County Health Department; and
- c) A representative (e.g., hydrogeologist) of the Skagit County Department of Public Works; and
- d) A representative of the Skagit County Planning Department; and
- e) A well driller licensed by the Department of Ecology; and
- e) A representative of the Department of Ecology.

cc: HEALTH, PLANNING, PUBLIC WORKS, PERMIT CENTER

RESOLUTION # 15570

WITNESS OUR HAND AND THE OFFICIAL SEAL OF OUR OFFICE this 12<sup>TH</sup> day of December, 1994.



BOARD OF COMMISSIONERS/HEALTH  
SKAGIT COUNTY, WASHINGTON

Harvey Wolden  
Harvey Wolden, Chairman

Bob Hart  
Bob Hart, Commissioner

Robby Robinson  
Robby Robinson, Commissioner

ATTEST:

Patti J. Owen  
Patti J. Owen, Clerk  
Skagit County Board of Commissioners/Health

APPROVED AS TO FORM: John Moffat John Moffat, Chief Civil Deputy  
Skagit County Prosecuting Attorney

APPROVED: Howard Leibrand Howard Leibrand, MD  
Skagit County Health Officer

# INTERIM SEAWATER INTRUSION POLICY

## GENERAL DISCUSSION

### THE PROBLEM

Seawater intrusion is found in public and individual water wells at many coastal areas of Skagit County. Fresh water, being less dense than seawater, will float as a lens on top of seawater. The lens of freshwater is thinnest at the coastal edges and thickens landward. Fluctuations occur depending on seasonal rainfall (aquifer recharge) and tidal movement. Over-pumping of these sensitive aquifers, which are under the influence of seawater intrusion, will further degrade the aquifers and pull in more seawater, thus increasing their salt content. Chloride, sodium and conductivity levels are all elevated as more seawater is pulled into the fresh water.

The U.S. Public Health Service drinking water standards indicate 2% of seawater (425 ppm chlorides) in fresh groundwater will make it unusable. The State Department of Health has set a chloride limit of 250 parts per million (ppm). Above this level, water is considered to be polluted. Small amounts of salt in fresh water (e.g. below 100 ppm chlorides) are not considered harmful for human consumption and are difficult to taste. However, these lower levels can contribute to metal corrosion and damage pumping equipment.

The Washington State Department of Ecology identified coastal seawater intrusion areas on Guemes Island in the late 1980's. A U.S. Geological Survey (U.S.G.S.) groundwater study began in October, 1991. More than forty individual wells have been drilled on Guemes Island since the beginning of the U.S.G.S. study. Additional hydrogeological investigative work by Dr. John Oldow will begin in late 1994 and continue through 1998 on Guemes Island. A Sole Source Aquifer application has been filed with the U.S. Environmental Protection Agency for Guemes Island.

In January, 1992, the revised Skagit County Water Code (S.C.C. 12.48) became effective. Since that time, the County Health Department has become increasingly aware of a lack of adequate policies to address the seawater intrusion concerns in regards to land divisions and building permits. Skagit County Code (12.48.260) defines "sensitive areas" to include seawater intrusion areas. Skagit County considers islands and coastal areas as sensitive areas. Areas within 1/2 mile of the coastline are especially vulnerable due to the intense development and a thin lens of freshwater available. Development pressure continues to be high at all coastal locations.

### PUBLIC HEALTH OBJECTIVE

Seawater intrusion is a very long-term problem which has the potential to worsen. This policy will treat the whole island and/or area as an interconnected aquifer system. The intent of the policy is to be preventative in nature by requiring careful use of this finite resource, reasonable water conservation measures and public education. The goal is to protect the groundwater for both the present population as well as the future users. We hope that these measures will eliminate or reduce future aquifer degradation.

Format: This policy is organized with general discussion on pages 1 and 2, general requirements on page 3, building permit specifics on page 4, and land division specifics on pages 5 and 6.

**THE INTERIM POLICY**

The seawater intrusion policy generally applies to islands but may also be applied on the mainland in areas of documented seawater intrusion at the discretion of the Health Department. It uses chloride concentrations of the groundwater as a basis for designating categories indicating levels of seawater intrusion. The maximum pumping rate and other conditions of approval are specified.

A public education awareness handout will be created for the well driller to give to his clients which will include general information on seawater intrusion, seasonal variations, installation of small capacity pumps, use of totalizing wellhead source meters and sounding tubes, restrictions and conservation measures, responsible use of the groundwater resource and steps to take if the chloride level begins to increase.

This Interim Policy is based on the hypothesis that low pumping rates, lowered water use, and judicious location of well sites will eliminate or reduce seawater intrusion in newly developed wells and surrounding wells. However, the cumulative effect of additional wells on seawater intrusion into the aquifer is not yet known. The observation of significant increases in aquifer chloride levels may result in a modification of this policy.

Responsibility for chloride testing results, static water levels and recording the well-head totalizing source meter readings will reside with the property owner. These records shall be submitted to the Skagit County Health Department. They shall be available for the Guemes Island groundwater monitoring program. This information is for educational purposes only and for the residents to be able to note trends in their drinking water. No enforcement action will result from this information. The Skagit County Health Department shall maintain groundwater data and periodically advise the Board of Health on the groundwater status.

**ADVISORY COMMITTEE RECOMMENDATION**

Within 60 days of adoption of this Interim Policy, the Board of Health shall appoint an advisory committee to develop a final policy. This committee shall recommend changes to the Interim Policy as information becomes available from Dr. Oldow's study, the U.S.G.S. final report and ongoing monitoring. This committee shall submit their recommendations on a final seawater intrusion policy within 90 days of the publication of Dr. Oldow's final report, expected mid-1998. The advisory committee shall consist of 5 citizens broadly representing the interests of property owners plus one local well driller, two representatives from the Health Department, and one representative each from the Public Works Department (their hydrogeologist), the Planning Department, and the State Department of Ecology.

## GENERAL REQUIREMENTS

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1. This policy will regulate individual wells and public wells, including those not requiring water rights, in coastal locations where the owner requests a building permit or land division. A "public" well serves at least two residential connections or the general public.
2. Replacement or irrigation wells, will not be covered by this policy. Well drillers will still be encouraged to educate their customers as to conservation, to follow the drilling precautions and to recommend installation of totalizing wellhead source meters and sounding tubes.
3. At the effective date of this policy, the Skagit County Health Department will require all well drillers to contact the Health Department before drilling a new well needed for a building permit or land division in the seawater intrusion area as noted on a map to be provided to the drillers. The map will be altered as new wells with chlorides 100 ppm or higher are found and includes a potential 1/4 mile margin of safety. The driller will be asked to fill out a short application and to read an instruction sheet before drilling. This instruction guide will include: cautions when drilling deeper than sea level and drilling too deeply into the aquifer; installation of small capacity pumps; and testing for conductivity as they drill.
4. The one-hour pump test, as required by WAC 173-160, will be sufficient for the purposes of the land division and building permit as long as the developer is willing to accept the conservative maximum pumping rate as stated in this policy. If the developer desires to increase the maximum pumping rate, then a complete professional hydrogeological assessment with an appropriate pump test utilizing observation wells (where available), shall be required by the Skagit County Health Department.
5. This policy strives to be consistent with the following three State documents: Washington Administrative Code (W.A.C.) 246-290 and W.A.C. 246-291 State Department of Health Drinking Water Regulations for public systems; Washington State Department of Ecology Seawater Intrusion Policies (water rights); and W.A.C. 173-200 Water Quality Standards for Groundwater.
6. Compliance with these requirements will be documented by the Health Department representative with assistance from water well drillers and pump installers. The Health Department may ask assistance from the Building Official for documentation of the well head source meter and sounding tube.
7. In an effort to gain compliance with this new policy, education will always be the first step. The primary responsibility will lie with the property owner. Possible enforcement action will be addressed in the final Seawater Intrusion policy.
8. The Health Department may waive the seawater intrusion requirements where seawater intrusion is demonstrated not to be a problem.

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# BUILDING PERMITS

## REQUIREMENT CHARTS

well located at a distance less than 1/2 mile from the coast			
chloride level	0-24 ppm	25-99 ppm	100 ppm or higher
max. pump rate	5 gpm*	5 gpm*	3 gpm*
static water level measurements	recommended (September)	Annually in September	1st year-quarterly, thereafter- annually in September
wellhead source meter and sounding tube	yes	yes	yes
wellhead meter readings	Annually	first year-quarterly, thereafter- Annually	first year-monthly, thereafter- Annually
conservation	recommended	required	required
annual chloride testing	September	September	Sept. & March
dedicated inland well site	yes	yes	yes
status report	no	yes	yes with health note

- \*1. The maximum pumping rate shown above may be increased if a professional hydrogeological assessment has been reviewed and approved by the Skagit County Health Department.
2. The status report (Skagit County Code 12.48.270) provides information for present and future consumers. It must be filed with the Auditor prior to final occupancy for all wells with chlorides over 25 ppm. The status report information will follow the above chart.
3. Following is status report health note for wells with 100 ppm or higher chlorides: "The sodium in the well water was (X) ppm on (date). The water may taste salty. High levels of sodium may cause problems for people with cardiac, circulatory or renal diseases and infants who are fed reconstituted formula. Home water softeners that add additional sodium to the water are not recommended for this water."

Well located at a distance greater than 1/2 mile from the coast	
max. pump rate (chloride level 0-24 ppm)	8 gpm
conservation	recommended
wellhead source meter and sounding tube	recommended

4. It is assumed that the chlorides for wells located at a distance greater than 1/2 mile from the coast would be 24 ppm or less (note: small chart). If the chlorides are 25 or more, then the more conservative restrictions from the chart for building permits with wells within 1/2 of the coast shall apply based on chloride level.
5. Conditions for building permits with wells not needing status reports will be placed on the Health Department Result Form.

**LAND DIVISIONS**  
(with individual wells)  
REQUIREMENT CHART

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wells located at a distance less than 1/2 mile from the coast			
chloride level	0-24 ppm	25-99 ppm	100-199 ppm
max. pump rate	5 gpm*	5 gpm*	3 gpm*
health note	no	no	yes
plat note	yes	yes	yes
wellhead source meter and sounding tube	yes	yes	yes
conservation	recommended	required	required
dedicated inland well sites	yes	yes	yes
D.O.E. notification	no	no	yes

- \*1. The maximum pumping rate shown above may be increased after a professional hydrogeological assessment has been reviewed and concurrence by the Skagit County Health Department has been received.
2. Land division proposals with test results of 200 ppm chlorides or greater will be denied.
3. If the chloride results are 199 ppm or less, then the land division may be approved with the above conditions.
4. The Health Department will collect water samples for the inorganic samples, unless the Health Department defers to the drilling or pump contractor.
5. Monitoring requirements will begin once the property is occupied. Only annual September chloride monitoring will be required for existing water systems within the plat.
6. The first demonstration well should be located so that it will represent the groundwater under the entire parcel. The location of other proposed wellsites should be taken into account early in the planning process. If the parcel is located within 1/2 mile of the coast or in an area of documented chlorides in excess of 25 ppm, the future well locations will be specified and located as central to the island as possible and spaced 100' or more from another well.

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7. **PLAT NOTES** for Land Divisions within 1/2 mile of the coast:
- a. The plat map shall show an elevation for a benchmark for each proposed well site.
  - b. The plat notes shall reiterate the requirements from the Requirement Chart for the applicable chloride test result.
  - c. The educational health plat note is also required for land divisions with chlorides over 100 ppm. The plat note should address the salty taste, risk and the options for treatment. An example is:

"The well water for lot (X) was tested on (date) and the results were X ppm for sodium. The water may taste salty. High levels of sodium may cause problems for people with cardiac, circulatory or renal diseases and infants who are fed reconstituted formula. Home water softeners that add additional sodium are not recommended for this water."

plat located at a distance greater than 1/2 mile from the coast (for each well in the development)	
maximum pumping rate (chloride level 0-24 ppm)	8 gpm
conservation	recommended
wellhead source meter and sounding tube	recommended

8. It is assumed that the chloride level for these wells would be 24 ppm or less (note: small chart). If the chlorides are 25 or more, then the restrictions that are imposed on land divisions at a distance less than 1/2 mile from the coast with the appropriate chloride level shall apply. All conditions will be noted as plat notes.
9. Skagit County Code 12.48.240 requires that for all land divisions located in or near "sensitive areas," all wells must be drilled and tested prior to land division approval. At the discretion of the Health Officer, approval of this policy will provide a waiver to this requirement. Demonstration well(s) of one per four lots will still be required at a minimum.