CITY OF BAINBRIDGE ISLAND

Environmental Technical Advisory
Committee Regular Meeting Thursday
November 16, 2023, 3:00 PM
Chamber Conference Room, City Hall
280 Madison Ave N
Bainbridge Island, WA

The Environmental Technical Advisory Committee will hold this meeting in person, in the City Hall Chamber Conference Room, 280 Madison Ave N, Bainbridge Island, WA
It is recommended that attendance be in person, but it is also accessible via the Zoom meeting platform.
Please click the link below to join the webinar:

https://bainbridgewa.zoom.us/j/88963877904

Webinar ID: 889 6387 7904

Or iPhone one-tap: US: +12532158782Or Telephone: +1 253 215 8782 or +1 669 900 9128 or +1 346 248 7799

Agenda for November 16, 2023, ETAC Meeting

3:00 PM

Call to Order / Roll Call / Conflict of Interest Disclosure

Members: Melanie Keenan, Malcolm Gander, Dylan Frazer, Ben Harrison and Brian Harmon

Council Liaison: Jon Quitslund
COBI Staff: Patty Charnas - Director, Planning & Community Development; David Greetham – Interim Planning Manager; Renee Argetsinger - PCD Administrative Specialist

Approval of Agenda – November 16, 2023

Approval of Minutes – October 19, 2023 (10 min)

Council Liaison Report – Jon Quitslund (10 min)

Chair Report – Melanie Keenan (10 min)

COBI Staff Comments (10 min)

1. **Discussion: GWMP** (15 min)
2. **Discussion: Comprehensive Plan Update** (15 min)
3. **Discussion: Winslow Subarea Plan Update** (10 min)
4. **Discussion: Update Shoreline Management Program Schedule & References** (5 min)
5. **Discussion: Update ETAC COBI Webpage to reflect the work ETAC is doing** (5 min)
6. **Discussion: 2024 Workplan** (5 min)

Public Comment (5 min)

Adjournment: 4:40 PM

CITY OF
BAINBRIDGE ISLAND

Environmental Technical Advisory Committee
Regular Meeting Minutes
Thursday, October 19, 2023
City Hall Chamber Conference Room

Call to Order (Attendance, Agenda, Ethics)
Approval of Meeting Minutes from August 17 and September 21, 2023
Council Liaison Report
Chair Report
Discussion of update on GWMP
Discussion of historical aerial photos of recharge areas
Discussion of COBI workshop participation/Comprehensive Plan
Discussion of ways to attract new ETAC members
Other topics of interest
Call for Public Comment
Adjournment

Members Present:
Melanie Keenan, Malcolm Gander, Ben Harrison

Members Absent: Brian Harmon, Dylan Frazer, (4 vacant positions)

COBI Staff and City Council Present:
David Greetham (Interim Planning Manager), Jon Quitslund (Council Liaison), Daria Hansen (Public Records Analyst)

Meeting called to order at: 3:05 p.m. No conflicts of interest were disclosed.

Approval of October 19, 2023, Agenda: Melanie will add comments about scoping and ETAC goals into the discussions. The agenda was approved with no formal vote taken.

Review & Approve Minutes: August 17 and September 2, 2023
Minutes approval delayed until the November meeting.

Council Liaison Report (Jon Quitslund):

The ad-hoc committee that is reviewing all commission and committee processes will be presenting its recommendations to the Council soon. One topic that arose is keeping committee membership to between 5-7 people. Additionally, it will be recommended that Council review all committee workplans the first quarter of the year to maintain productivity.

Council will be discussing the Comprehensive workplan at Tuesday's meeting. Discussion followed.

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CITY OF
BAINBRIDGE ISLAND

Environmental Technical Advisory Committee
Regular Meeting Minutes
Thursday, October 19, 2023
City Hall Chamber Conference Room

Chair Report: Melanie Keenan led the discussion on agenda topics.

Update on Groundwater Management Plan (GWMP)-

Melanie updated the commissioners on the GWMP subcommittee meeting and Brent Meyer's presentation. She presented an overview of concerns observed during the peer review of the latest consultant update, such as well monitoring, developing a failsafe method to identify impacts from pumping too much in one well area on deep and shallow aquifers. Discussion followed.

Discussion of Documented Seawater Intrusion Occurrences-

Melanie discussed early warning levels, seawater intrusion and well draw-down in the Seabold area. Malcolm shared how Aspect did a report in 2006 on seawater intrusion in this area. There are historical areas that need to be assessed before additional well drilling is done, in order to save people time and money. Discussion followed on the difference between connate water and seawater intrusion, and how best to test the water to determine which situation is occurring.

Discussion followed on Dick Krutch's article in the Bainbridge Review and his experiences as a private well owner dealing with seawater incursion and the expenses and difficulties associated with multiple re-drillings. Commissioners discussed RO (reverse osmosis) water treatment systems and costs.

Historic Bainbridge Island aerial photos possibly available through committee members Harrison, and Keenan link to recharge areas-

Melanie shared how she is using Google Earth Pro to look at recharge areas on Bainbridge and stressed the need to address building and growth impacts on these areas along with the 20% projected loss due to climate change. Discussion followed on selecting 4 or 5 specific areas to present to the City and how best to address these issues via the Comprehensive Plan.

Discussion followed on groundwater and stormwater, working with KPUD in managing these, and the costs of upgrading the sewer treatment plant to re-use water vs. releasing it into Puget Sound, compared to using stormwater to recharge the aquifer.

COBI Workshop September 28-October 29 Online Public Feedback. ETAC input for Kick- Off meeting-

In preparation of ETAC's scoping plan to present to Council on October 29th, Melanie reviewed a 2014 scoping document that contained useful concepts for the upcoming Comprehensive Plan; utilizing environmental framing, resident, and stakeholder priorities, and using an economic and commerce perspective. There are opportunities for environmental concerns to be addressed in the Comprehensive

DRAFT

CITY OF
BAINBRIDGE ISLAND

Environmental Technical Advisory Committee
Regular Meeting Minutes
Thursday, October 19, 2023
City Hall Chamber Conference Room

Plan. Discussion followed on whether a special meeting should be held or whether a subcommittee should be formed. This is an opportunity for ETAC to present information for scoping on groundwater and stormwater management, as these are not currently included in the growth element.

Melanie emphasized the need to plan in generational terms vs. the current 20–40-year projections and explained how Bainbridge Island is the only sole-source aquifer island surrounded by salt water in the state of WA. Kitsap and Bainbridge are heavily reliant on rainfall and groundwater. Bainbridge does not have the ability to expand too much in population and water usage. How best to advance COBI towards collecting metrics on existing developments or pilot programs so a basis can be formed on growth impacts on water usage? Melanie stressed the importance of citizen involvement.

Discussion followed on growth estimate calculations, zoning and building regulations across a wider economic spectrum, and whether there are other cities that Bainbridge can follow as a template. Ben and Melanie will form a subcommittee to prepare a report by October 29th.

Discussion of queries to new potential ETAC members and COBI tools to aid ETAC in reaching out to the public-

There have been two Science Night talks so far. Malcolm and Melanie will present a talk in December, laying out the Island hydrology data in a "Hydrology 101" format. They may also attend meetings with Friends of Geology, which may lead to the recruitment of new ETAC members.

Other topics of interest –

Melanie will keep track of how the Climate Action Committee is progressing with the Comprehensive planning process. It's important to assess where the Comprehensive Plan has gaps in goals and policies as they pertain to the current municipal code.

The commissioners spoke of the importance of having regular updates from Chris Wierzbicki and/or to have a combination UAC/ETAC meeting so all involved can stay relevant and up to date.

Call for Public Comment: No public comment.

Meeting adjourned at: 4:30 p.m.

DRAFT

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or +1 301 715 8592 or +1 312 626 6799 or +1 646 558 8656

Agenda for April 20, 2023, ETAC Regular Meeting Call to Order / Roll Call / Conflict of Interest Disclosure

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Members: Melanie Keenan, Ben Harrison, Malcolm Gander, Dylan Frazer, Brian Harmon

Council Liaison: Jon Quitslund

COBI Staff: Patty Charnas, Director, Planning & Community Development; Renee Argetsinger - PCD Administrative Specialist

Approval of Agenda – November 16, 2023
Approval of Minutes – August 17, 2023, September 21, 2023, October 19, 2023, Appendices A-C (10 min)
Council Liaison Report – Jon Quitslund (10 min)
Chair Report –Melanie Keenan (5 min)
COBI Staff Comments - (10 min)

1. Discussion GWMP (15 min)

- Arrange for Public Works Director Chris Wierzbicki to phone in to provide GWMP updates during ETAC meetings, date and time for future GWMP subcommittee meetings, estimated completion goals and dates for various sections and public process for the GWMP. How Public Works will work with ETAC committee to complete council approved Resolution for GWMP report and review involving ETAC moving forward. Are draft sections completed by EA consultants available for review?

- Inclusion of regional earthquake concerns. Seattle Times Article 092723 - Appendix D

https://www.seattletimes.com/seattle-news/a-double-earthquake-threat-study-finds-two-seattle-area-faults-ripped-about-the-same-time/

- Ecology website article- Appendix E

https://ecology.wa.gov/blog/august-2023/water-supply-update-time-to-start-thinking-about-water-supplies-in-2024

2. Discussion Comp Plan Update (15 min)

- Review draft scoping comments submitted (Appendix F). Refer to COBI website for links to public presentations and meetings. Requires more emphasis on water resource protection and planning.

- GW Most Precious Resource on Bainbridge, in the world…requires adequate planning for a SSA on BI.

CNN video,
Securing our planet's water
Water is one of the most precious resources on our planet. From the Great African Sea Forest to the San Francisco Bay, meet five innovators coming up with new ways to protect water - from how we consume it, to how we conserve it.

https://www.cnn.com/videos/tv/2023/11/07/going-green-water-conservation-spc-intl.cnn

- EIS scoping concerns to be developed. Schedule ETAC Comp Plan Draft EIS review. Who is the consultant working on this?

- Review and develop schedule and work goals moving forward.

Sections to review regarding current Comprehensive Plan, COBI Website, links to 2016 Elements https://www.bainbridgewa.gov/162/Comprehensive-Plan

- Land Use Element
- Environmental Element
- Water Resource Element (Appendix G)
- https://www.bainbridgewa.gov/DocumentCenter/View/7801/6-WATER- RESOURCES?bidId=
- Utilities Element

3. Discussion Winslow Subarea Plan Update (10 min)

- Review presentation and comments. Review importance of GWMP and Aquifer Recharge and Stormwater Management concerns for Winslow Subarea Plan Update proposals (Appendix H)

- Plan to reduce Stormwater runoff problems and recharge deserts

4. Discussion Update Shoreline Management Program schedule and references - (5 min)

5. Discussion Update ETAC COBI webpage to reflect the work ETAC is doing (5 min)

- Who takes the lead on this, Patti or Jon?

- Assist with recruitment efforts

- Update the Environmental Technical Advisory Committee description on city webpage

https://www.bainbridgewa.gov/230/Environmental-Technical-Advisory-Committ

Apply to Serve on the Environmental Technical Advisory Committee

Members should have expertise in wildlife management, fisheries management, geology, wetlands management, hydrology, forestry and aquatic or terrestrial ecology.

The committee provides technical recommendations on habitat management plans and environmental management standards for the Shoreline Master Program and critical areas.

Include Stormwater Management, Groundwater Management, Comp Plan and Winslow Subarea Plan Update

Recruit new ETAC members and work with the Council and COBI staff to revise the BIMC ordinance governing the makeup and duties of ETAC.

- Change/delete reference in BIMC to supporting only the Planning Dept, to facilitate environmental advisory considerations for various COBI activities and projects, regardless of COBI department. For example, in recent workplans we have reviewed HMPs (Planning Dept) and worked extensively on the GWMP (PW Dept).
- Revise BIMC to indicate that ETAC primarily advises Council, with a lesser role in advising COBI staff.

6. Discussion 2024 Workplan (5 min)

Public Comment - (5 min**)**
Adjournment – 4:30 pm

Appendices

Appendices A-C

Environmental Technical Advisory Committee Regular Meeting Minutes Thursday, August 17, 2023 City Hall Chamber Conference Room

Environmental Technical Advisory Committee Regular Meeting Minutes Thursday, September 21, 2023 City Hall Chamber Conference Room

Environmental Technical Advisory Committee Regular Meeting Minutes Thursday, October 19, 2023 City Hall Chamber Conference Room

Appendix D

A double earthquake threat? Study finds 2 Seattle-area faults ripped about the same time

Sep. 27, 2023 at 11:00 am

1 of 5 | A diver checks for bark buried in the sediment around a 1,000-year-old Douglas fir stump on Washington's Olympic Peninsula in 2021. The ancient wood... (Stephani Gordon / Oregon Public Broadcasting, 2021)More

By

Sandi Doughton

Seattle Times staff reporter

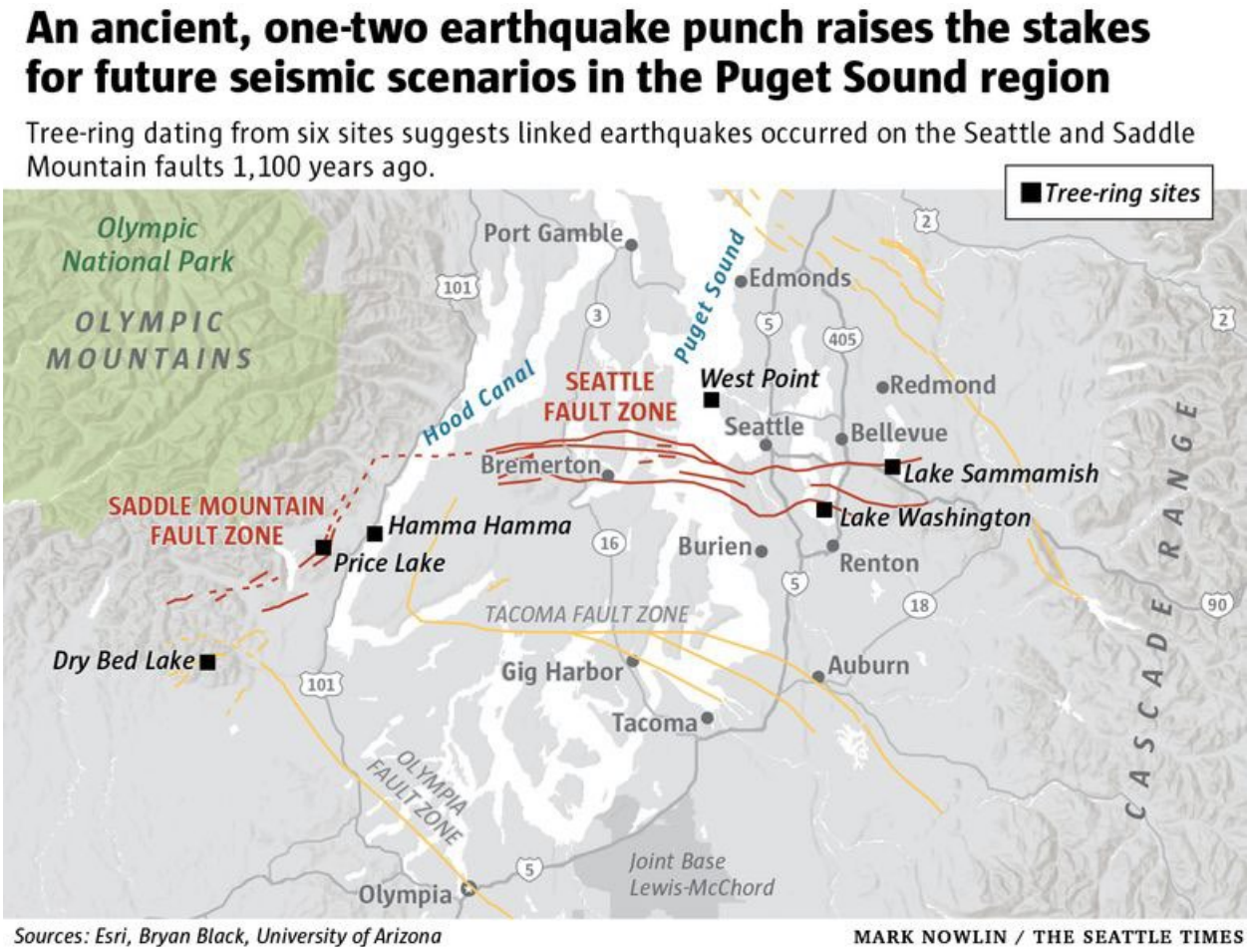
With the Cascadia Subduction Zone parked off the coast and shallow faults lurking under most major cities, the Puget Sound area already faces a daunting array of seismic scenarios. A new study adds another: the possibility of a one-two earthquake punch.

Using state-of-the-art tree ring and radiocarbon dating methods, researchers found the most recent major earthquake on the Seattle Fault wasn't a solo act. The Saddle Mountain Fault, which slices across the Olympic Peninsula near Lake Cushman, ruptured at about the same time.

The team also was able to zero in on the date with stunning precision, narrowing it to a six-month window between the fall of 923 A.D. and the spring of the following year — almost exactly 1,100 years ago.

Their results were published Wednesday in the journal Science Advances.

The project, which spanned more than five years and included divers with underwater chain saws to sample trees drowned by the quakes, is a scientific *tour de force* nearly unprecedented in seismology, said Harold Tobin, director of the Pacific Northwest Seismic Network at the University of Washington. To help nail down the date, the team used a new approach that detects traces of ancient solar storms captured in tree rings.



But the findings add a new worst-case possibility to the seismic threats facing a region that's home to 4 million people, said Tobin, who did not participate in the study. A seismic double whammy would be much more damaging than any single quake, especially to old brick and concrete buildings, and vulnerable bridges and infrastructure. It's a scenario that hasn't been factored into hazard maps, building codes and emergency planning — but it needs to be, Tobin added.

"The chance in any given year is not high, and there's no reason to freak out because of this study," Tobin said. "But it underscores that these are things that we need to be prepared for."

A 2005 analysis estimated a relatively modest magnitude 6.7 quake on the Seattle Fault could kill 1,600 people, destroy nearly 10,000 buildings and cause up to $50 billion in

economic losses. If the Seattle and Saddle Mountain faults ruptured simultaneously, the new study estimates, the resulting quake would clock in at magnitude 7.8 — nearly 40 times more powerful — and affect a much bigger area.

The exact sequence of the ancient quakes remains unclear, said study co-author Morgan Page, of the U.S. Geological Survey.

Based on statistical analysis of global quake sequences, she calculates a 3-to-1 likelihood the faults ruptured simultaneously. But it's also possible two quakes were separated by hours, days or even months. In that case, the study estimates their magnitudes at 7.3 to 7.5.

Seismologists used to categorize most clustered quakes as aftershocks, and assumed they occurred on the same fault, said John Cassidy, a senior seismologist for Natural Resources Canada who was not involved in the project. But over the past several years, more has been learned about how a slip on one fault can put stress on others. February's devastation in Turkeywas caused by a powerful quake that triggered the rupture of an adjacent fault nine hours later.

Shallow quakes near urban areas can be especially nasty because they are so close to the surface. Shaking would be far more intense than from Washington's most recent big earthquake — the magnitude 6.8 Nisqually event in 2001, which originated more than 20 miles underground.

"An earthquake on the Seattle Fault is … likely to be much, much more catastrophic," Tobin said.

Fortunately, shallow fault quakes are extremely rare in Washington. The seismic mayhem in 923-924 A.D. appears to be the most intense episode since the end of the last ice age 16,000 years ago, the researchers report. Geologists still don't have extensive quake histories for most of the dozen or so faults in the area, but most seem to pop off every thousand to several thousand years, Tobin said. The USGS estimates about a 5% chance of a major Seattle Fault quake in the next 50 years.

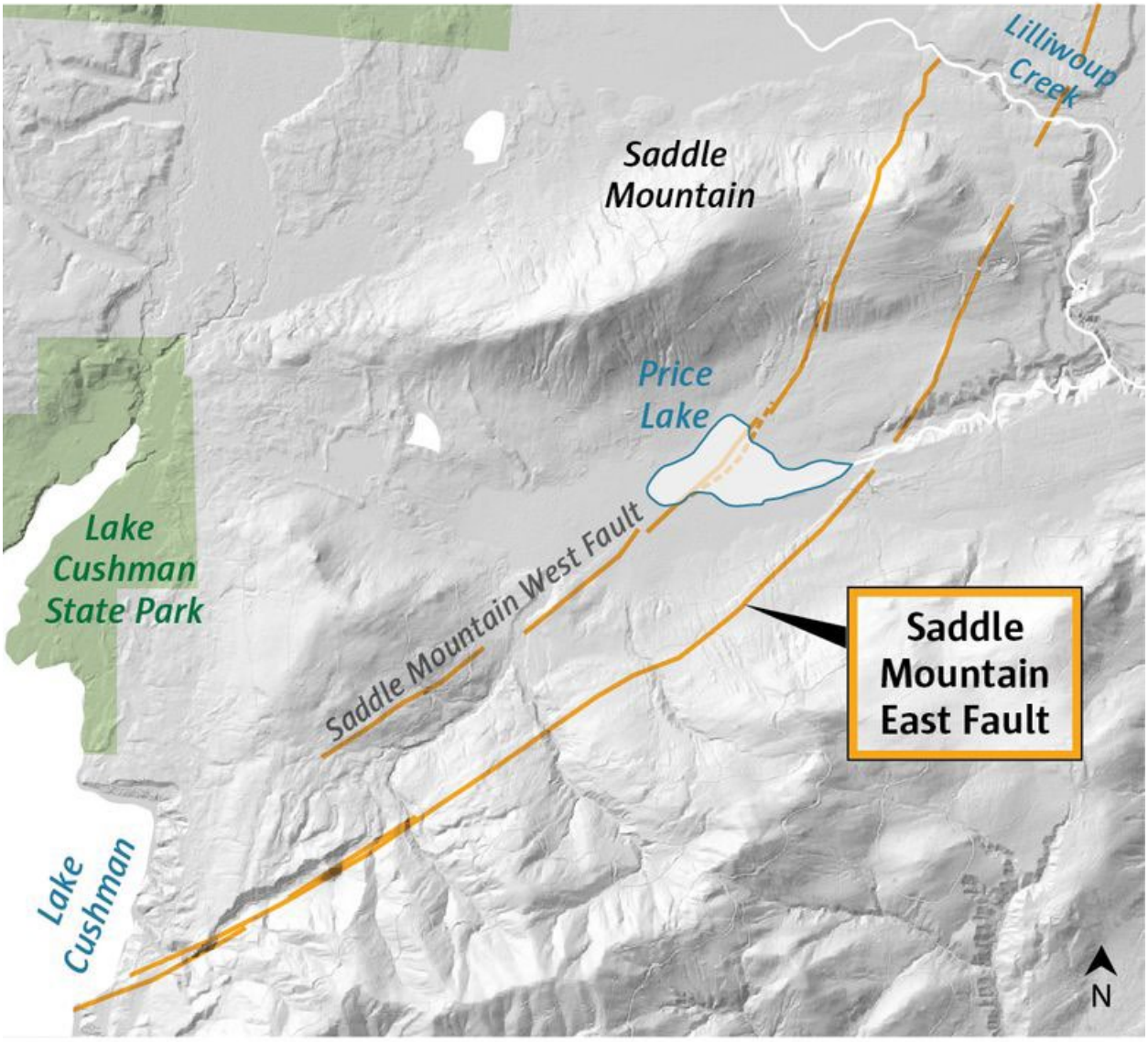
But the quake that struck Morocco earlier this month occurred in an area where earthquakes also are rare, and nothing as powerful had ever been recorded, Tobin pointed out.

The new research builds on more than 30 years of geological discoveries. Field work in the early 1990s uncovered multiple clues left by the Seattle Fault quake, which uplifted Alki Point and the southeastern tip of Bainbridge Island as much as 20 feet and spawned a tsunami that swamped the site of the West Point Treatment Plant. It also triggered landslides on Mercer Island that sent old-growth forests sliding into Lake Washington, where some are still standing upright in more than 100 feet of water.

The Saddle Mountain quake broke the ground with a 24-foot-tall scarp that blocked a drainage and created Price Lake, drowning trees as the water rose.

Drowned trees in Price Lake

Price Lake was formed 1,100 years ago when the eastern strand of the Saddle Mountain Fault ripped, thrusting up a miles-long scarp, 24 feet tall in places, that blocked a drainage. Stumps and sections of trees killed by the rising water are still there.



Sources: Brian Sherrod, USGS; Washington State Department of Natural Resources

MARK NOWLIN / THE SEATTLE TIMES

Preserved in oxygen-poor cold water, those submerged trees from Lake Washington, Price Lake and other sites were the key to the new research.

Previous radiocarbon analysis already had dated the Seattle Fault quake to sometime between 900 and 930 A.D. Intriguing hints from several other faults, including Saddle

Mountain, Olympia and Tacoma, suggested they also ruptured around then. But conventional methods yielded possible age ranges that spanned centuries at those other sites.

“There was too much uncertainty,” said co-author Brian Sherrod, a USGS scientist who has spent most of his career investigating faults across the state.

A chance encounter at a scientific conference between Sherrod and Bryan Black, a leading dendrochronologist from the University of Arizona, set the multiyear odyssey in motion.

Most Read Local Stories

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- Key Washington 2023 general election results
- The Pacific Northwest trees shaped by generations of people WATCH
- Lawsuit filed after Seattle police officers break down wrong door WATCH
- Missing in action: How absent young voters swung Seattle politics

“It’s a big puzzle. That’s why it took so long,” said Sherrod. “To me, the story is these new techniques Bryan and his colleagues bring to the picture.”

Tree rings can yield much more precise dates than radiocarbon, Black explained. But the samples have to be in good condition, with bark and extensive ring sequences.

One of the most daunting tasks was rounding up dozens of cores and wood slices collected over the years by other researchers. Eventually, Black corralled usable samples from 47 Douglas firs at six sites where trees were drowned by the earthquakes. Some of the samples recorded nearly three centuries of history.

The team had to collect new samples from Price Lake, where stumps of the quake-killed Douglas firs remain visible. USGS divers struggled in the murky water to slice usable samples with intact bark from the bases of the trees. “It would take up to an hour to cut a single wedge from a tree, because they were working with almost zero visibility,” said Black, lead author of the study.

To anchor the tree rings in time, he used a reference sequence from 1,300-year-old firs collected on Vancouver Island in the early 1990s — so the date of the outermost ring is known.

Black sanded each sample multiple times, including with micron-level diamond grit sheets called lapping films. “It’s sanded to the point where you can see the individual cells within the wood under a microscope,” he said.

As he lined up his samples and compared them with the reference trees, the answer was unmistakable.

The validity of the date was confirmed through radiocarbon analysis of individual tree rings, looking for evidence of cosmic timestamps called Miyake events. Named for the Japanese physicist who discovered them, the events represent spikes of radiation from solar flares or exploding stars centuries or millennia ago. Luckily for dendrochronology, spikes in cosmic radiation generate spikes in atmospheric levels of carbon-14, the isotope whose slow decay is the clock that anchors radiocarbon dating.

Even luckier for Black and his colleagues, a Miyake event occurred in the year 774 A.D. and showed up in their Douglas fir samples, providing an absolute benchmark from which to count.

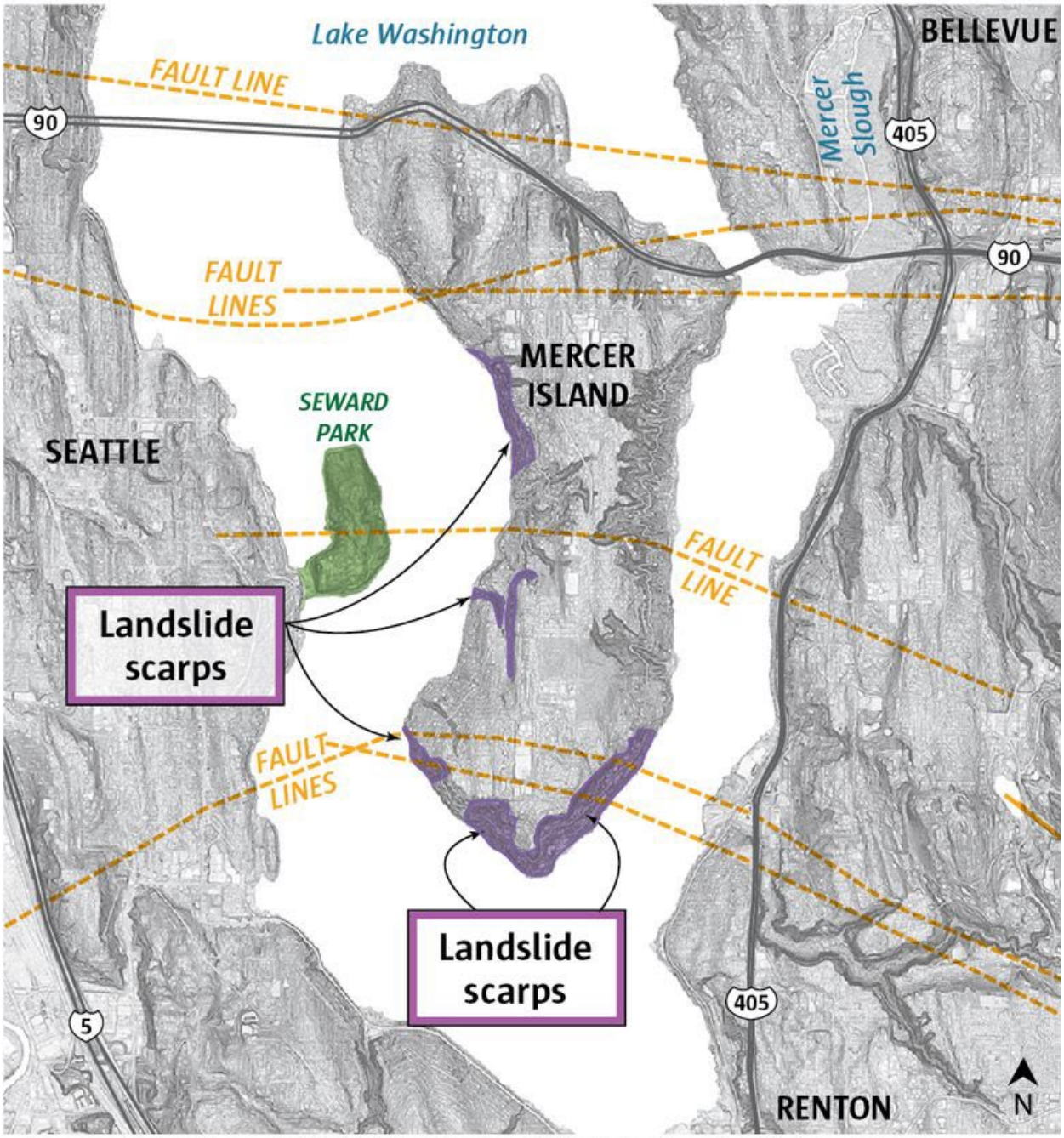
“Boom,” he said. “Everything came together, and we saw that these trees all died with the last completely formed ring being the year 923.”

The mystery of exactly when the Seattle Fault ruptured and whether other faults were involved has been around for more than 30 years — and Black said he can now see why. “This has been the most complicated and challenging dating project in my career.”

And he and Sherrod aren’t done. They’re on the hunt for submerged trees linked to the Tacoma and Olympia faults, to find out whether the earthquake outburst 1,100 years ago was even more extensive.

Drowned trees off Mercer Island

Settlers noticed mysterious, underwater forests off Mercer Island. The trees, some still standing upright in 100 feet of water, slid into Lake Washington when a Seattle Fault earthquake 1,100 years ago triggered landslides.



Sources: Brian Sherrod, USGS; Washington State Department of Natural Resources

MARK NOWLIN / THE SEATTLE TIMES

In the meantime, Seattle is once again trying to tackle the hazard posed by old brick buildings, also called unreinforced masonry (URM), which are among the most dangerous places to be in an earthquake. More than 1,000 URM apartment buildings, offices, churches and meeting halls are scattered across the city, and efforts to require retrofits have stalled repeatedly.

The latest development is a new rule that simplifies and standardizes the requirements for retrofits, said URM program manager Amanda Hertzfeld. The next step will be a voluntary retrofit program that could be in place by next spring. The goal is to eventually mandate upgrades, Hertzfeld said, but there's no timeline yet.

Sandi Doughton: *206-464-2491 or sdoughton@seattletimes.com; on Twitter: @SandiDoughton.*

Appendix E – Ecology Website Article

Water Supply Update — time to start thinking about water supplies in 2024

Get used to the words "warm and dry"

Drought conditions continue to be an issue in Washington. Photo by Joshua Rogala, WA Department of Fish and Wildlife.

If you are reading this, odds are good it's raining. For some reason, anytime we publish a blog about drought, it rains. (And, sure enough, there is rain in the forecast across much of Washington this week.)

Don't be fooled. Your lawn may be soaking up a late-summer shower, but the medium- and long-term forecast is warm and dry.

After another warmer than normal, drier than normal month in July — on the heels of a drought declaration — the current trend of "warm and dry" may not exactly qualify as news.

But the extent to which "warm and dry" is the consensus forecast for the foreseeable future it *should be* newsworthy, because water users need to be looking ahead and preparing for what today's "warm and dry" will mean for them in 2024.

“If you’re a junior water right holder, now is the time to get together and start talking about next year’s emergency and seasonal transfers,” said Ecology drought guru Jeff Marti. “If they’ve been curtailed in the past, they’ll probably be curtailed again.”

Marti said water users can start looking for potential water rights to be transferred using Ecology’s Water Rights Search Tool, but they may need to hire consultants or even look to the private marketplace to find the water they need.

Ecology needs to declare a drought for emergency water right transfers, but we can process non-emergency seasonal transfers at any time.

This isn’t just a concern for 2023 and 2024: Water supply issues are likely to become more frequent in the years ahead. According to climate change models, warm winters will result in more precipitation falling as rain instead of snow, meaning droughts could become more frequent in snow-dependent watersheds. Water users should start planning ahead for more frequent droughts in the coming years.

Will the fall rains help? Don’t count on it. According to current predictions, the fall rains that so many of us pin our hopes upon may not be coming, at least not in the amounts needed to recharge the aquifers and replenish the streams. The winter snowpack we’re always going on about may not come either, thanks to the looming weather boogeyman, El Niño.

El Niño typically means warm winters in the Pacific Northwest.

Averaged statewide, May through July of this year was the fourth-driest and the sixth-warmest on record. Despite a smattering of rain in recent weeks, so far August hasn't provided any reason to think it will get much wetter.

The long-range forecast from the National Oceanic and Atmospheric Administration suggests September through November will also be warm and dry. NOAA's outlook for January through March is also warm and dry relative to seasonal norms.

If it's raining as you read this, be thankful, but don't be fooled.

Appendix F - Comp Plan Water Resource Element 2016

2/28/17

WATER RESOURCES ELEMENT

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RESIDENTIAL ON-SITE SEWAGE SYSTEMS WR-10
PUBLIC EDUCATION AND OUTREACH WR-12

IMPLEMENTATION WR-13

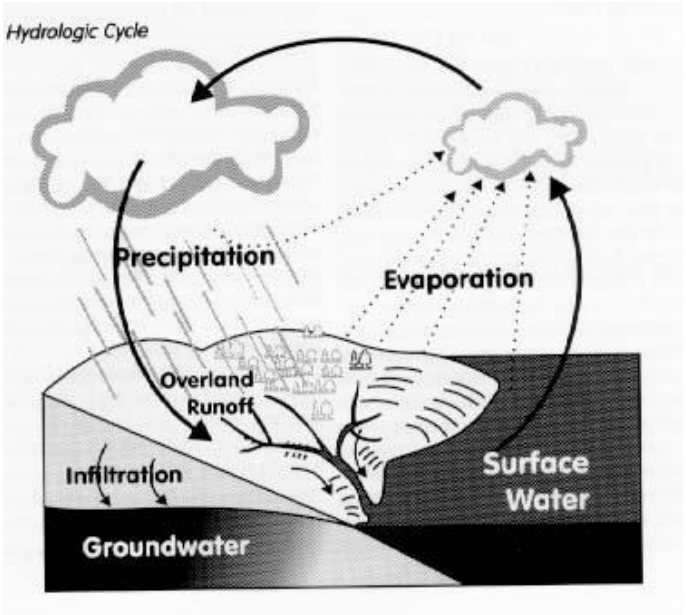
WATER RESOURCES INTRODUCTION

Bainbridge Island is solely dependent on groundwater for its drinking water and requires a holistic perspective to understand the interdependence among the Island's three primary water resources: *groundwater*, surface water and *stormwater*. Although these waters are typically regulated and managed independently, they are in nature, intimately connected.

Precipitation that is not evaporated or taken up by plants will follow one of three paths. It may infiltrate into the ground where it is called *groundwater*. It may drain directly into *streams* and harbors where it is called surface water or it may be captured by manmade *infrastructure* such as street drains, ditches or detention/retention ponds where it is called *stormwater*.

Groundwater may be pumped from wells to provide drinking water or irrigation or seep out of the ground into *streams*, springs and harbors where it is again called surface water. Likewise, *stormwater* may discharge into a nearby stream or harbor and become surface water or infiltrate into the ground and become *groundwater*. (see Fig.WR-1)

Fig. WR-1 The Hydrologic Cycle



2016 COMPREHENSIVE PLAN WR-1 **WATER RESOURCES ELEMENT**

2/28/17

In order to successfully protect and manage any one of these waters one must protect and manage all three. To address these interrelationships, a separate Water Resources Element has been developed as follows:

- • General water resources management policies
- • *Groundwater* protection and management policies
- • Surface water protection and management policies
- • *Stormwater* protection and management policies
- • Residential on-site sewage system policies

- • Contaminated sites policies
- • Public education and outreach policies

Land Use Connection

In the development of policies related to the management of our Island water resources, it is important to understand the links between water resources quality and quantity and *land use*. Most water quality and habitat integrity impacts are caused by the way land was or is used. Developed land allows for rapid *runoff* and inundation of natural conveyance systems such as *wetland*s and *streams*. Rapid *runoff* can cause damage through flooding, erosion and water-borne contamination.

In addition, *household*s create sewage that needs disposal either by a wastewater treatment plant or by residential on-site sewage systems. Wastewater treatment plants are reasonably effective at cleaning wastewater but do not at present provide complete removal of nitrogen nor treat for contaminants of emerging concerns that include but are not limited to, byproducts of medications, recreational drugs, health and beauty products and caffeine.

Residential on-site sewage systems can fail and cause contaminants to enter the surface water and/or *groundwater*. Even functioning systems, depending upon *density* and proximity to surface water and *groundwater*, can contribute to accumulations of nitrogen and contaminants of emerging concern in these waters.

Use of fertilizers, pesticides and other chemicals for cropland, lawns and gardens, and vehicle and *household* cleaning and maintenance as well as improper pet and livestock waste management can add significant contamination to surface water, *stormwater* and *groundwater*.

Commercial and industrial uses, past and present, leave behind pollutants in our soils. In particular, historic *land use*s such as large row crop agriculture, lumber, petroleum and others have left behind legacy pollutants in sediments both on upland properties and in the sediments along the bottoms of our *streams*, harbors and nearshore areas.

Without proper coordination of the regulations that will implement policy statements, conflicting signals may be given when dealing with water resources issues. For example, a surface water problem may be resolved by efficiently collecting and removing all water from the area whereas a *groundwater recharge* issue may require that the water be kept on-site to allow for infiltration.

Another conflict arises when infiltration of *stormwater* competes for space with on-site sewage system drainfields. There are physical limitations to the rates of infiltration and absorption based on soil types which may make it impossible to have both of those facilities on the same site. Where development occurs in important *aquifer recharge areas*, special consideration is needed to preserve the volume of *recharge* available to the *aquifer* and to protect the *groundwater* from

contamination. A key component of water resources protection and adaptive management is adequate monitoring in order to assess impacts of current land use and the effectiveness of applied management actions.

The overriding theme that runs through all of the policies and *goal*s in this element is the preservation and protection of water quality, water quantity, and ecological and hydrologic function.

Climate change

The 2016 Bainbridge Island Climate Impact Assessment, which is referenced in this Comprehensive Plan, establishes that a primary concern of *climate change* is the impact on *water resources*, especially for an island location like Bainbridge Island that relies solely on an *aquifer* system for its drinking water. *Climate change* projections indicate that over the coming decades sea level may rise up to four feet in the Puget Sound region, the ocean will become more acidic and climatic conditions are likely to become warmer. This will result in more intense rain events during the wet season with longer, drier summers, though overall annual volume of rainfall under current models is expected to remain approximately the same.

Ocean acidification will likely impact aquatic species survival and assemblages in our marine areas and sea level rise will likely impact habitat and built *infrastructure* in our nearshore areas including homes, businesses and public facilities such as roads and sewer facilities.

Wetter conditions during the wintertime will increase water availability but may cause flooding or diminish water quality. More intense and frequent storms or heavier rainfall events can cause *stormwater* inundation and localized flooding, chronic flooding, non-infiltrated run-off, erosion andlandslides.Increasedintensityofrainfallmayalsodiminish *aquiferrecharge*ratesas saturated soils are less able to absorb large amounts of water falling over short periods of time.

Warmer,drier conditionsinthesummertimewillincreaseevaporationratesandwaterdemand by plants, wildlife and people, and may diminish water quality. Dry conditions decrease water availability resulting in reduced stream flow and diminished *aquifer recharge*. Warmer and drier conditions can also reduce water quality, both by increasing in-stream temperatures and by concentrating contaminants in smaller volumes of water.

WATER RESOURCES VISION 2036

Bainbridge Island's water resources (precipitation on the surface and in the ground) are climate resilient and demand and quantity are adequate for all forms of life on the Island. *Aquifers* are continuously monitored and maintained above the early warning level. The water quality for most of the consumed water is monitored to ensure quality fully meets the standards for drinking water.

Education on water conservation results in a significant reduction in the average water consumption per *household*. The Bainbridge Island *groundwater* model is regularly updated with

new data and results from model runs are used to maintain long-term *sustainability* of the Island's water resources. *Low impact development* techniques are applied to all *land use*s and redevelopment.

GOALS & POLICIES

GENERAL WATER RESOURCES

GOAL WR-1

Manage the water resources of the Island in ways that preserve, protect, maintain, and where possible restore and enhance their ecological and hydrologic function.

- • Degradation of water resources is not allowed.
- • The long-term *sustainability* of the Island's water resources is maintained, taking into

  account future climatic conditions and their effects on the water cycle.

- • New development and population growth are managed so that water resources remain

  adequate and affordable for the indefinite future.

- • *Groundwater*, surface water and *stormwater* monitoring, data assessment and reporting are

  current and available including future projections of availability, quality and need.

- • Use current and future technology to maintain and protect water resources.

  Policy WR 1.1

  Study future climate and demand scenarios to accurately plan for future water resource conditions.

  Policy WR 1.2

  Groundwater, surface water and *stormwater* are resources that *shall* be protected and managed to preserve water quality and quantity, and to retain natural ecological and hydrologic function.

Policy WR 1.3

The City will provide sustainable water resource planning, protection, management and monitoring in coordination with government agencies at all levels, drinking water purveyors, Tribes, non-profit organizations, and other stakeholders.

Policy WR 1.4

Apply the policies in this element together with the protective measures set by the City's Shoreline Management Master Program, *Critical Areas* Ordinance and any other environmental or water resources management ordinance established by the City and in compliance with county, State, and federal laws and regulations.

Policy WR 1.5

Identify the areas of the Island that are the most vulnerable to pollution from concentrations of fecal coliforms and nitrates (for example, septic fields, agricultural activities, or fertilizers), and monitor those areas to determine if and when preventative or restorative measures are warranted.

GROUNDWATER PROTECTION AND MANAGEMENT

GOAL WR-2

Protect the quality and quantity of groundwater on the Island to ensure clean and sufficient groundwater for future generations.

Policy WR 2.1

Recognize that the Island functions as an *aquifer recharge area*. *Low impact development* techniques are essential for maintaining *aquifer recharge*.

Development, if any in areas with high *aquifer recharge* should be limited to low impact uses and less intense development. Low impact uses include development for buildings, roads or parking that has a reduced area of impact on the land. Low impact uses do not depend on regular applications of fertilizers or pesticides.

Low impact development is an environmentally-friendly approach to site development and *stormwater* management emphasizing the integration of site design and planning techniques that conserve and protect the natural systems and hydrologic functions of a site.

Policy WR 2.2

Identify and assess areas of high *aquifer recharge* as part of a *land use* application. Minimize the effect of development on these areas.

Policy WR 2.3

To promote efficient use of *groundwater* resources, encourage the expansion of existing water systems rather than encouraging shallow or individual residential wells.

Policy WR 2.4

Assess the impacts of proposed activities and development on the flow of springs and *streams* and levels of *wetland*s that are either sustained by *groundwater* discharge or contribute *recharge* to *groundwater*, and require an assessment of anticipated hydrologic impacts. Activities or development may be restricted if the report indicates any adverse impacts.

Policy WR 2.5

In cooperation with the appropriate regulatory agencies (e.g., Washington State Department of Health and the Kitsap Public Health District) institute new wellhead protection procedures.

Policy WR 2.6

Reduce the use of pesticides and herbicides by encouraging integrated pest management techniques and less toxic alternatives.

Policy WR 2.7

Establish a stakeholder group to develop an Island-wide *groundwater* management plan and work with Kitsap Public Utility District to update the Kitsap County Coordinated Water System Plan.

Policy WR 2.8

Develop an incentive based program to encourage exempt well owners to regularly monitor and report the quality of their well water and identify leaks using tools such as flow meters

Policy WR 2.9

Recognizing that the Island *aquifer* system is a Sole Source *Aquifer* as designated by EPA, consider creation and application of one or more aquifer conservation zones for appropriate areas of the Island and institute an added level of development and re-development permit review to prevent or mitigate potential pollutant-generating activities or activities that could affect stormwater runoff and aquifer recharge associated with a proposed *land use*. The Island's aquifers are protected through critical area regulations and Revised Code of Washington (RCW) 36.70A.550.

Policy WR 2.10

Retard seawater intrusion into our groundwater through the development and application of a comprehensive seawater intrusion prevention program.

Policy WR 2.11

Develop a water conservation program for all water uses on the Island.

Policy WR 2.12

Encourage water re-use and reclamation to serve as a supplementary source for high-water users such as industry, parks, schools and golf courses as approved by the Washington State Department of Health.

Policy WR 2.13

Require the retention of native landscapes to promote water quality and to reduce the need for irrigation.

Policy WR 2.14

Develop a program that incentivizes and facilitates innovative methods for homeowners and business owners to use stormwater and grey water as approved by the Washington State Department of Health and the Kitsap Public Health District.

Policy WR 2.15

Maintain a comprehensive program of *groundwater* data gathering, analysis, and reporting including modeling, hydrogeologic and geologic studies, and monitoring of static water levels, water use, water quality, surface water flows and acquisition of other data as necessary.

Policy WR 2.16

Develop and maintain a publicly-available system to report groundwater levels on a timely basis.

SURFACE WATER PROTECTION AND MANAGEMENT

GOAL WR-3
Achieve no net loss of ecological functions and processes necessary to sustain *aquatic resources* including loss that may result from cumulative impacts over time.

Over recent decades awareness has grown of the importance of preserving and protecting *aquatic resources*. *Aquatic resources* have a number of important ecological functions, processes and values. These functions vary but include providing water quality protection, flood plain control, shoreline stabilization, contributions to *groundwater* and stream flows, and wildlife and fisheries habitat. *Aquatic resources* also have values as natural areas providing aesthetic, recreational and educational opportunities that *should* be preserved for future generations.

Policy WR 3.1

Development in regulated aquatic *critical areas* or their associated water quality buffers shall not be allowed unless application of *development regulation*s would deny any reasonable use of

property. In such cases, minimize the allowed use and associated impacts, to maximize environmental protection.

Policy WR 3.2

Require that vegetated buffers be maintained between proposed development and the aquatic resource in order to protect the functions and values of such systems. Restore degraded buffers to enhance their function. Allow reductions in vegetated buffers only in areas where such reductions, if consistently applied, would not result in significant cumulative impacts to *aquatic resources* and *fish and wildlife habitat*.

Policy WR 3.3

Require that buffers be retained in their natural condition wherever possible while allowing for appropriate maintenance. Where buffer disturbance has occurred, require re-vegetation with appropriate species, with a preference for native species, to restore the buffers' protective values.

Vegetated buffers facilitate infiltration and maintenance of stable water temperatures, provide the biological functions of flood storage, water quality protection and *groundwater recharge*, reduce amount and velocity of run-off, and provide for wildlife habitat.

Policy WR 3.4

Ensure that development activities are conducted so that *aquatic resources* and natural drainage systems are maintained and water quality and quantity are protected.

Policy WR 3.5

Prior to any clearing, grading or construction on a site, all *wetland*s, *streams* and buffer areas are to be specifically identified and accurately located in the field in order to protect these areas during development.

Policy WR 3.6

Herbicides and pesticides approved for use near aquatic resources may only be used in aquatic resource areas and buffers when applied by licensed applicators.

Policy WR 3.7

Prohibit access to aquatic *critical areas* by *farm* animals. Require a *farm* management plan for agricultural activities within proximity of *aquatic resources* addressing water quality and other natural resource protection.

Policy WR 3.8

Require mitigation to compensate for unavoidable impacts to aquatic *critical areas*. Mitigation *should* be designed to achieve no net loss in functions and processes of *aquatic resources*.

Policy WR 3.9

Promote *watershed*-based mitigation to meet federal regulations, improve mitigation success and better preserve the ecological function of the island's *watersheds*.

Policy WR 3.10

Work with state and local health departments to evaluate the merits of new technologies such as grey water capture, package treatment plants and composting toilets as alternatives to septic and sewer systems.

Policy WR 3.11

Consider the impacts of *climate change* and ocean acidification when developing regulations or approving capital projects related to *aquatic resources* including marine nearshore, *wetlands*, *streams*, lakes, creeks, associated vegetated areas and *frequently flooded areas*.

Policy WR 3.12

Stream relocation will only be allowed where relocation would result in improved stream ecosystem function.

Policy WR 3.13

Degraded channels and banks *should* be rehabilitated by various methods (e.g., culvert replacement, volunteer efforts, public programs or as offsetting mitigation for new development) to restore the natural function of the riparian habitat for fish and wildlife.

Policy WR 3.14

Protect, preserve and enhance fish and wildlife habitat and adjacent riparian areas to ensure sustainable populations of resident aquatic life.

Policy WR 3.15

Require the construction of public facilities to avoid encroachment into and disturbances of *aquatic resources*.

Policy WR 3.16

Ensure a comprehensive program of surface water inventory, data gathering and analysis. The program *shall* include monitoring and assessment of physical, chemical and biological health of surface water ecosystems to include *streams*, ephemeral *streams*, lakes, *wetlands* and marine waters. This may include water, flow, sediment, habitat, pollutants, submerged aquatic

vegetation, fish and shellfish tissue, aquatic species diversity and other ecosystem health indicators.

Policy WR 3.17

Support a community-wide program to educate Island residents about alternatives to using and disposing of herbicides, pesticides, and other household chemicals, to reduce impacts to marine shoreline areas, wetlands, streams, and other environmentally sensitive areas.

Policy WR 3.18

Promote and support volunteer or community-driven restoration projects.

STORMWATER PROTECTION AND MANAGEMENT

GOAL WR-4

Rather than capture and carry stormwater away as a waste stream, protect it from pollutants and retain it on site to replenish *aquifers* and maintain *wetlands* and natural stream flows, preserving or mimicking the natural water cycle to the maximum extent practicable.

Policy WR 4.1

Comply with all requirements of the City's National Pollutant Discharge Elimination System Phase II Municipal *Stormwater* Permit (NPDES Permit).

Policy WR 4.2

Provide ongoing opportunities for the public to participate in the decision-making process involving the development, implementation and update of the City's *Stormwater* Management Program through advisory councils, public hearings, and *watershed* committees.

Policy WR 4.3

Improve and maintain an education and outreach program designed to reduce or eliminate behaviors and practices that cause or contribute to adverse *stormwater* impacts and encourage the public to participate in stewardship activities.

Policy WR 4.4

Identify and eliminate sources of pollutants to the City's *stormwater* drainage system through proactive field screening techniques such as effluent monitoring, system inspections and cleaning, and commercial and industrial business inspection, and through the enforcement of the City's Illicit Discharge Detection and Elimination ordinance.

Policy WR 4.5

Ensure development of and adherence to required public and private *stormwater* pollution prevention plans for public facilities, construction sites and commercial and industrial *land use*. Encourage the use of such plans where not specifically required.

Policy WR 4.6

Ensure development of and adherence to erosion and sediment control plans on all construction and development sites of any size.

Policy WR 4.7

Develop and actively enforce a strong *low impact development* (*LID*) ordinance to require any and all *LID* methods and practices for new development and redevelopment to the maximum extent practicable and reasonable.

Policy WR 4.8

Prioritize *LID*-based retrofit of public and private *stormwater* drainage systems and built assets through the inventory, management and fiscal planning process.

Policy WR 4.9
Incentivize *LID* retrofit of current built environment. **Policy WR 4.10**

Use *watershed* and basin plans to reduce *stormwater* impacts and *non-point source pollution*.
Policy WR 4.11

Comply with all requirements specifically identified by the City's permit for any Total Maximum Daily Load (TMDL) in which the City is a stakeholder.

Policy WR 4.12

Conduct effectiveness monitoring and assessments to continue to adaptively manage *stormwater* to ensure optimal protection.

RESIDENTIAL ON-SITE SEWAGE SYSTEMS

GOAL WR-5

Ensure that sewage is collected, treated and disposed of properly to prevent public health hazards and pollution of *groundwater*, Island surface water and the waters of Puget Sound.

Policy WR 5.1

Regulations and procedures of the Washington State Department of Health and the Kitsap Public Health District apply to all on-site disposal systems. Coordinate with these agencies to assure regular inspection, maintenance and repair of all *sanitary sewer* and on-site systems located on the Island.

Policy WR 5.2

Request notification of all waivers or variances of Kitsap Public Health District requirements such as modification of setbacks, vertical separation, minimum lot size, reserve drainfield, etc., prior to issuance and subsequent modifications by the Kitsap Public Health District of an approved Building Site Application.

Policy WR 5.3

Allow alternative systems such as sand filters, aerobic treatment, composting toilets and living-systems when approved by the Kitsap Public Health District.

Policy WR 5.4

Require coordination between the on-site septic and *storm drain*age disposal systems designs to ensure the proper functioning of both systems.

Policy WR 5.5

Assist the Kitsap Public Health District in developing a program to require proper maintenance of all on-site waste disposal systems in order to reduce public health hazards and pollution. This program *shall* include periodic system inspection and pumping when necessary.

Policy WR 5.6

Work with the Kitsap Public Health District on a collaborative program to fund and pursue grants or low-cost loans for low and moderate-income *household*s to repair failed septic systems. Incentivize maintenance, repair and replacement of systems for any income level.

Policy WR 5.7

Allow on-site waste disposal systems serving more than one *household* only with assurance of proper design, operation, management and approval from the Kitsap Public Health District.

Policy WR 5.8

Provide the service of operation and maintenance management for approved large on-site *sanitary sewer* systems or community *sanitary sewer* systems in coordination with the Kitsap Public Health District.

Policy WR 5.9

Support the Kitsap Public Health District in maintaining and improving a public education program to foster proper construction, operation and maintenance of on-site septic systems.

Policy WR 5.10

Support the Kitsap Public Health District in developing and maintaining an ongoing inventory of existing on-site disposal systems to provide needed information for future studies.

2016 COMPREHENSIVE PLAN WR-11 **WATER RESOURCES ELEMENT** 2/28/17
PUBLIC EDUCATION AND OUTREACH
GOAL WR-6

The City, in concert with federal, state and local governments, public water purveyors, watershed councils, non-profits, citizens and other appropriate entities will continue to improve and implement comprehensive public education and outreach program to promote protection and management of all water resources.

Policy WR 6.1

Educate and inform the public about:

- • The purpose and importance of aquatic environments, their vulnerabilities and observed status and trends in ecological health and function;
- • Expected *climate change* impacts and how these will affect the Island's water resources and their beneficial uses;
- • The characteristics of the *aquifer* system, the Island's dependency upon it and its vulnerability to contamination (including seawater intrusion) and depletion;
- • The Environmental Protection Agency's Sole Source Aquifer Designation Program and what this designation means for the Island's *aquifer* system;
- • Wellhead protection and the critical importance of restricted chemical use or storage within the protection area around wells;
- • Critical *aquifer recharge areas* (or other special conservation areas) and the purpose they serve to the *aquifer* system;
- • How to report spills or illicit dumping of hazardous waste or other pollutants and how to access information about location and status of contaminated sites;
- • How to find information about their well and how to properly maintain it;
- • Methods to identify wastewater indoors and outdoors and practices to conserve water

such as native landscaping, xeriscaping and water use reduction or reuse;

- • Resources for streamside and shoreline landowners;
- • Water resources protection best management practices for commercial, industrial,

  residential, agricultural and other *land use*s to prevent or reduce pollution. These practices include but are not limited to, septic system maintenance, pet and livestock waste management, landscaping and gardening, *farm* plans, appropriate methods for use, storage and disposal of hazardous materials and other chemicals, on-site drainage system maintenance and automotive care.

  Policy WR 6.2

  Promote opportunities for citizen stewardship and involvement.

  Policy WR 6.3

Provide *LID* technical guidance and workshops to businesses and contractors working on the Island.

WATER RESOURCES IMPLEMENTATION

To implement the goals and policies in this Element, the City must take a number of actions, including adopting or amending regulations, creating outreach and educational programs, and staffing or other budgetary decisions. Listed following each action are several of the comprehensive plans policies that support that action.

HIGH PRIORITY ACTIONS

WR Action #1 Adopt *aquifer conservation zoning regulations* and innovative permit

review processes designed to protect the Island's surface and ground waters.
Policy WR 1.4

Apply the policies in this Element together with the protection measures set by the City's Shoreline Master Program, *Critical Areas* Ordinance and any other environmental or water resources management ordinance adopted by the City and in compliance with county, State, and federal laws and regulations.

Policy WR 2.1

Recognize that the Island functions as an *aquifer recharge area*. *Low impact development techniques* are essential for maintaining aquifer recharge.

Policy WR 2.9

Recognizing that the Island *aquifer* system is a Sole Source *Aquifer* as designated by EPA, consider creation and application of one or more aquifer conservation zones for appropriate areas of the Island and institute an added level of development and re-development permit review to prevent or mitigate potential pollutant-generating activities or activities that could affect stormwater runoff and aquifer recharge associated with a proposed *land use*. The Island's aquifers are protected through critical area regulations and Revised Code of Washington (RCW) 36.70A.550.

Policy WR 4.7

Develop and actively enforce a strong Low Impact Development (LID) ordinance to require any and all *LID* methods and practices for new development and redevelopment to the maximum extent practicable and reasonable.

Policy LU 12.4

Protect *aquifer recharge* functions throughout the Island, all of which is an *aquifer recharge area*, through the application of *critical areas regulations,* Shoreline Master Program use regulations, *low impact development regulations*, and the wellhead protection regulations administered by the Kitsap Health District.

WR Action #2 Adopt an Island-wide Groundwater Management Plan. Take the actions necessary- capital improvements, code changes, etc.- to capture, clean and re-infiltrate as much stormwater as reasonably possible.

Policy WR 2.7

Establish a stakeholder group to develop an Island-wide groundwater management plan and work with Kitsap Public Utility District to update the Kitsap County Coordinated Water System Plan.

WR Action #3 Incorporate *Low Impact Development* principles, goals and approaches into all land use and development codes.

NOTE: Same Action in Environmental Element

WR Action #4 Apply *adaptive management* to assure that land use on the Island will continue to be adequately served by the available water resources.

Policy WR 3.16

Ensure a comprehensive program of surface water inventory, data gathering and analysis. The program *shall* include monitoring and assessment of physical, chemical and biological health of surface water ecosystems to include *streams*, ephemeral *streams*, lakes, *wetland*s and marine waters. This may include water, flow, sediment, habitat, pollutants, submerged aquatic

vegetation, fish and shellfish tissue, aquatic species diversity and other ecosystem health indicators.

Policy WR 4.12

Conduct effectiveness monitoring and assessments to continue to adaptively manage *stormwater* to ensure optimal protection.

MEDIUM PRIORITY ACTIONS

WR Action #5 Launch a program of public education about how individual actions can

help protect the quality and quantity of the Island's surface and groundwaters. Policy WR 2.11

Develop a water conservation program for all water uses on the Island.

Policy WR 2.13

Develop a program that incentivizes and facilitates innovative methods for homeowners and business owners to use stormwater and grey water as approved by the Washington State Department of Health and the Kitsap Public Health District.

Policy WR 3.17

Support a community-wide program to educate Island residents about alternatives to using and disposing of herbicides, pesticides, and other household chemicals, to reduce impacts to marine shoreline areas, wetlands, streams, and other environmentally sensitive areas.

Policy WR 3.18

Promote and support volunteer or community-driven restoration projects.

Policy WR 6.2

Promote opportunities for citizen stewardship and involvement.

WR Action #6 Consider adopting seawater intrusion regulations in coordination with Kitsap County.

Policy WR 2.10

Retard seawater intrusion into our groundwater through the development and application of a comprehensive seawater intrusion prevention program.

OTHER PRIORITY ACTIONS

WR Action #7 Work with other jurisdictions and the environmental and development communities to promote programs and projects to protect the Island's surface and ground waters.

Policy WR 2.5

The City, in cooperation with the appropriate regulatory agencies (e.g., Washington State Department of Health and the Kitsap Public Health District) will institute new wellhead protection measures.

Policy WR 3.10

Work with state and local health departments to evaluate the merits of new technologies such as greywater capture, package treatment plants and composting toilets, as alternatives to septic and sewer systems.

Appendix G - Draft Scoping Comments submitted by Melanie Keenan and Malcolm Gander-subcommittee

ETAC Comprehensive Plan Periodic Update Scoping Draft Input Memo
submitted by ETAC Chair Melanie Keenan, October 29, 2023

Input to be updated and approved by ETAC committee.

The following elements are applicable for ETAC input and review

- Land Use Element
- Environmental Element
- Water Resource Element
- Utilities Element
- Newly Mandated Climate Change and Resiliency Element

.
The Comprehensive Plan Update is a required public process that involves the input of all stakeholders representing varied interests of 25,000 citizens to develop a community-based plan. The previous 2016 Comprehensive Plan Update Public Participation Program provides for a public process scoping program for each element, this should be repeated. Mindful the update extends beyond the City Council, COBI staff and consultant budgetary project.
https://www.bainbridgewa.gov/DocumentCenter/View/4249/Resolution-No-2014-23-Public-Participation-Program-Approved-102814?bidId=

Scoping requires increased environmental technical input. Apply an environmental, water resource and climate lens to this process. Utilize environmental framing to help direct Comp Plan Update priorities to adequately protect and preserve Island limited resources per resident and stakeholder priorities, not just an economic lens from the Office of Commerce in Olympia. The basic function for a community led update.

Require additional priorities outside of the GWMP yet to be completed, and the Climate Change Action 2020 document for addressing environmental and limited natural resources concerns on BI. Most of the materials presented represent COBI management functions, not necessarily an Island wide environmental vantage point. Hopefully the GWMP will help to address some of these omissions

The most precious resource on BI is potable water. As a Sole Source Aquifer (SSA) Island surrounded by salt water, BI does not have another affordable readily available source for potable water. The many impacts of growth directly affects aquifer health, and must be addressed and adequately considered to produce a viable updated plan, which provides for an adequate quantity and quality water supply into the future.

Kitsap Peninsula is also considered a Sole Source Aquifer, this equates to limited resources regionally. Kitsap is reliant on aquifers and rainfall for potable water, it is not being fed by a regional stream or river, or mountain snowpack, (Reservoir in Bremerton serves a water system, however it is reliant on area rainfall).

Associated with the GWMP and Water Resource Element, review proposed conservation and reduction of water consumption per household utilized in recent predictive modeling. What are the actual numbers for the Aspect consulting GW model update annual conservation for the 100-year projected time frame? How does this pencil out? Average 300 gallons/day per household, what are the actual numbers on BI? What are the numbers used in the Aspect GW model update memo to project growth for the next 100 years to account for 50% increase in pumping? Does the estimated 20% reduction to recharge due to climate change cover the loss of recharge areas due to development? We have no metrics for this.

Not only plan for the next 20-40 years, but consider environmental preservation and protection for generations, well into the future.

The newly mandated Climate Change and Resiliency Element for the Comp Plan Update will help to address Bainbridge environmental concerns. The Water Resource and Environment Elements are essential for realistically managing growth.

Stormwater Management Plan and the Shoreline Management Programs are necessary for Comp Plan Update considerations. The Stormwater Plan is incomplete for a Comp Plan Update, requires further in-depth inventory of the 12 watersheds and 47 miles of stream channels on the Island for management and recharge for realistic future Island resource management and planning.

Address limitations and practicality of designating the entire Island as recharge area per Aspect Consulting 2016 GW Model update memo. Develop Aquifer Conservation Zones. Have geologically sensitive areas and wetlands protected for adequate recharge to manage limited water resources. Coordinate with Stormwater and Shoreline Plans and geologic maps. This will help provide for intelligent sustainable growth planning.

Unfortunately, BI is looped into a state process designated for non-land locked island cities. Bainbridge is the only all Island Sole Source Aquifer Urban Growth Area UGA city surrounded by salt water governed by the Growth Management Act in the state of Washington. BI does not fit the mold, thus the Comp Plan Update should adequately adjust for long range environmental resource preservation and planning.

Plan per GMA guidance for BI as a unique land locked island city. Compare the square miles and percentage increases for Urban Growth Areas (UGAs) designated to take growth in Kitsap for realistic and practical comparisons.

Bainbridge Facts – Wikipedia
Bainbridge Island is a city and island in Kitsap County, Washington, United States. It is located in Puget Sound. The population was 24,825 at the 2020 census,[6] making Bainbridge Island the second largest city in Kitsap County.

The island is separated from the Kitsap Peninsula by Port Orchard, with Bremerton lying to the southwest. Bainbridge Island is a suburb of Seattle, connected via the Washington State Ferries system and to Poulsbo and the Suquamish Indian Reservation by State Route 305, which uses the Agate Pass Bridge.

Area

Total	65.08 sq mi (168.55 km²)
Land	27.61 sq mi (71.52 km²)
Water	37.46 sq mi (97.03 km²)

Review projected growth number requirements to accommodate 4,524 additional residents to the approximate 24,825 current population (estimated 18% increase in 20 years), to past projected growth numbers vs. actual growth for realistic planning requirements. Historically the #s from Olympia Department of Commerce for projected growth and required planning exceed actual growth on Bainbridge Island. It is appropriate to chart past projected growth figures and compare them to actual growth. The growth and job numbers are artificially high, aspirational, possibly not realistic. Again, what are the growth numbers for other Kitsap UGAs, compared to the assigned 6.4 % population requirements for projected growth for a Sole Source Aquifer Island, which only comprises 7% of the total land mass for Kitsap County and is already the second largest city in Kitsap? A better understanding of regional planning documents and actual statistics could help direct functional policies, and address deficiencies for environmental preservation and management. Hopefully Kitsap County population and landmass statistics are adequately calculated and reported/published for citizen review.

*Bainbridge Island 27.61sq mi /Kitsap County 395 sq mi = Bainbridge Island is only 7% of land mass of Kitsap County, yet BI was assigned 6.4% of projected population growth, with no room to expand as a SSA Island with limited resources surrounded by salt water.

*As a landlocked island BI's assigned projected population growth of 6.4% is a disproportionately large amount of growth for the relatively small land area occupied by BI. This constitutes a ratio of 6.4% growth over only 27.61 square miles with nowhere to expand. Please provide the actual ratios for the other jurisdictions listed in the table provided by KRCC Population Allocation. What is the basis for allocating growth and does it represent reasonable planning?

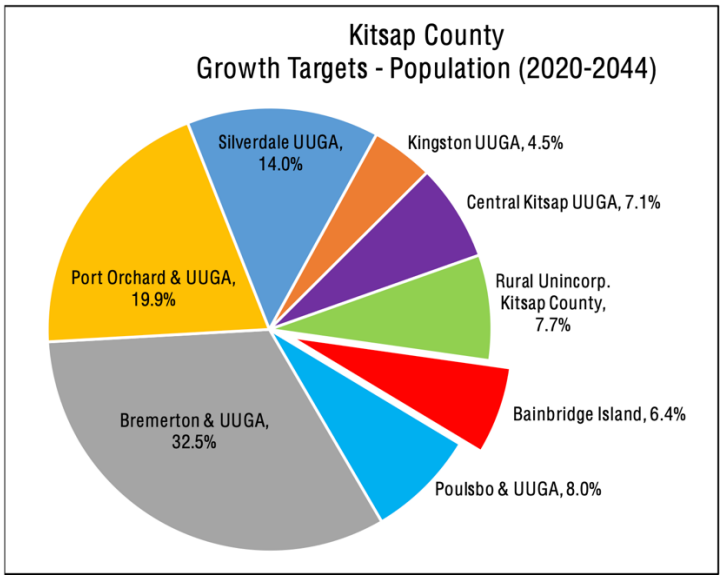
*BI population 24,825/Total Kitsap population 275,611= Bainbridge Island has 9% of population and resources taking on 6.4% of projected growth.

Kitsap County Growth Targets (2020-2044) - Complete statistics in the table for accurate evaluation/discussion of growth allocation #s

Jurisdiction	Assigned Pop Growth	% Pop	Jobs	% Jobs	Land Mass – what are the numbers for comparison	Size of city comparisons	Notes Wikipedia population #s
Bainbridge Island – land lock city surrounded by salt water	4,524	6.4%	1,927	4.2%	27.61 sq mi	2nd largest of 4 cities	24,825
Poulsbo & UUGA	5,646	8.0%	4,000	8.7%	4.74 sq mi + ?UUGA sq mi	Smallest of 4 cities	10,927

Bremerton & UUGA	23,014	32.5%	16,609	36.1%	28.48 sq mim + ?UUGA sq mi	Largest of 4 cities	44,122
Port Orchard & UUGA	14,052	19.9%	6,900	15.0%	9.64 sq mi + ?UUGA sq mi	3rd largest	14,597
Silverdale UUGA	9,896	14.0%	11,416	24.8%	12.63 sq mi + ?UUGA sq mi	Census designated	20,733
Kingston UUGA	3,200	4.5%	1,400	3.0%	1.87 sq mi + ?UUGA sq mi	Census designated unincorporated	2,099
Central Kitsap UUGA	5,000	7.1%	1,470	3.2%	?	?	?
Rural Unincorp. Kitsap County	5,415	7.7%	2,301	5.0%	?	?	?
Total Kitsap County					395 sq mi		275,611

County-wide 70,747 100% 46,023 100% *Source: 2021 KRCC Population Allocations + Wikipedia statistics*



COBI is deficient in collecting metrics to determine effects of past growth, most notable from previous housing pilot programs. Without planned growth study results, it is difficult to provide for actual impacts to the Island environment for projected future needs and planning.
The need to increase building permitting and growth requirements, like other Island communities in the Puget Sound require water resource evaluation based on usage estimates, understanding of what wells the water will be coming from, and an assessment to determine if the regional aquifer is adequate. Not just the current identification of a water system a proposed project can hook up to. Requirements for new permitting on San Juan Island is a good templet.

Pumping rates have tracked with the increase in growth/population increases.
EA Consultants are looking at problems identified with the recent GW model updates. We will have to wait and see how this changes the predicted assumptions. Already the 2016 and recent April 2023 reporting projected a reduction of surface water up to 50%.

Example: A recent COBI notification how surface water in the last ten years has been depleted on the Island. How does the Comp Plan Update provide solutions for this concern, are there existing policies that are relevant, are new ones required?

The City of Bainbridge Island's stream monitoring program has recorded below average stream flows in the past few years and Springbrook, on the West side of the Island, is experiencing its lowest flow rates in over ten years.

The City is working on a Groundwater Management Plan to prepare for the future when water resources will face increased stress from climate change and increasing population. The latest modeling shows that our water systems will be able to supply water to human residents of the Island, but the creatures living in our streams and wetlands will feel the strain. Sustaining our natural aquatic resources will take a collective effort from all of us to reduce the demand on this finite resource. See Ecology's news brief on the outlook for Water Resources in 2024.

To learn more about what the City of Bainbridge Island is doing to support stream flows, please visit the Watershed Assessment of Manzanita project webpage for more information.

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Below are draft preliminary comments in red to the existing Water Resource and Environmental Elements to assist with scoping process.

Water Resource Element

Page WR-3

Another conflict arises when infiltration of *stormwater* competes for space with on-site sewage system drainfields. There are physical limitations to the rates of infiltration and absorption based on soil types which may make it impossible to have both of those facilities on the same site.

Where development occurs in important *aquifer recharge areas*, special consideration is needed to preserve the volume of *recharge* available to the *aquifer* and to protect the *groundwater* from contamination. The preservation of recharge areas on the Island is crucial because studies by the US Geological Survey and other technical experts have confirmed that over 90 percent of the recharge of the aquifers is from rainwater falling on recharge areas on the island, and only minor groundwater inflow comes from off-island sources. A key component of water resources protection and adaptive management is adequate monitoring in order to assess impacts of current land use and the effectiveness of applied management actions. Monitoring, which is the regular measurement of water levels in wells, is the most informative method of assessing whether groundwater pumping is being conducted at sustainable levels, and establishing whether recharge is keeping up with extraction.

Page WR-5: GOAL WR-2

Protect the quality and quantity of groundwater on the Island to ensure clean and sufficient groundwater for future generations.

Policy WR 2.1

Recognize that not all of the Island functions as an *aquifer recharge area*. Areas covered with asphalt are not recharge areas. Developed areas in residential communities likewise do not support recharge because areas with lawns have typically been compacted and infiltration is minimal due to compaction as part of the development process. *Low impact development* techniques allow for only minor recharge due to the processes of compaction and reworking of soil results in only a relatively minor infiltration. It is important to recognize that undisturbed areas by far provide the necessary means for consequential recharge to take place.

Page WR-5: Policy WR 2.3

To promote efficient use of *groundwater* resources, it is critical to realize that the aquifers on the Island are typically relatively small and discontinuous. Therefore, to best manage the groundwater resources, which occur in a series of aquifers ranging in depth from less than 100 feet deep to 1,000 feet deep, an approach that allows for a mixture of expansion of existing water systems along with the ongoing expansion of shallow residential wells that serve several households in a given area is the most sustainable approach to capturing rainwater that is recharging various aquifers.

Page WR-6: Policy WR 2.10

Retard seawater intrusion into our groundwater through the development and application of a comprehensive seawater intrusion prevention program. This program should include the compilation of known areas of seawater intrusion such as the Seabold area, in order to help citizens become aware of previous occurrences of salt water or connate salt water in wells drilled by homeowners or by community water systems to ensure that areas prone to seawater intrusion are not attempted to be exploited in the future.

Page WR-9: Policy WR 3.16

Ensure a comprehensive program of surface water inventory, data gathering and analysis. The primary purpose of such a program is to maintain water levels in streams/watersheds that have been dropping, and are predicted to drop significantly based on modeling conducted on behalf of the City of Bainbridge Island in 2016 and 2023. The program *shall* include monitoring and assessment of physical, chemical and biological health of surface water ecosystems to include *streams*, ephemeral *streams*, lakes, *wetland*s and marine waters. This may include water, flow, sediment, habitat, pollutants, submerged aquatic vegetation, fish and shellfish tissue, aquatic species diversity and other ecosystem health indicators.

Page WR-13: Policy LU 12.4
Protect *aquifer recharge* functions throughout the Island through the application of *critical areas regulations,* Shoreline Master Program use regulations, *low impact development regulations*, and the wellhead protection regulations administered by the Kitsap Health District.

Recognize that the most productive *aquifer recharge area are undisturbed areas; asphalted areas are not recharge areas; and developed areas with lawns or other reworked areas do not provide consequential recharge due to compaction and resulting low permeability*.

Environmental Element

Policy EN 1.4: Maintain and enhance natural systems and protect wildlife, fish resources and *open spaces* through *land use* plans and development patterns including tree retention and planting.

Comment:
It is critical that existing streams and watersheds maintain their current water levels to support fish resources; to protect wildlife habitat; and maintain open spaces as high quality undeveloped areas. The streams/watersheds on the Island are fed by groundwater, and groundwater levels are dropping due to overpumping of water supply wells and from the onset of climate change, which causes more extreme storms and more runoff and less recharge of the aquifers that hold the groundwater.

Therefore, implement more monitoring (regular measuring of water levels) of streams/watersheds to maintain and enhance these essential natural systems.

Policy EN 5.1 The protection and enhancement of *fish and wildlife habitat*, especially during offspring rearing season, and wildlife corridors, including Tribal Usual and Accustomed fishing areas, are integral components of the *land use* planning process.
Comment:
The cornerstone of the protection and enhancement of fish and wildlife habitat must include maintenance of water levels in streams/watersheds. Prior to any construction, evaluate the watershed surrounding existing streams/drainages to ensure that these watercourses will not be adversely affected and their ability to maintain water levels will be perpetuated.

Policy EN 10.1 Promote *land use* patterns and transportation policies that ensure that the Island's contribution to regional air quality is consistent with or better than State and Federal standards.
Comment:

Promoting the establishment of a ferry dock at the north end of the Island will reduce daily air emissions currently released from vehicle traffic driving to/from the Winslow ferry dock.

Policy EN 12.1 Support and implement climate pledges and commitments undertaken by the City and other multi-jurisdictional efforts to reduce *greenhouse gas* emissions, address *climate change*, sea- level rise, ocean acidification and other impacts of changing global conditions.

Comment: Establishing a ferry dock north of the island in Kitsap will reduce the release of GHG emissions across the island by lessening the traffic load along Router 305.

EN Action #1 When updating the City's Critical Areas Ordinance, integrate the precautionary principle and mitigation sequencing to protect and preserve natural resources

Comment: Aquifer conservation recharge areas should be included in the update of the City's Critical Areas Ordinance.

Appendix H

Draft section for CARA Critical Aquifer Recharge Areas, Aquifer Conservation Zones, BIMC-Chapter 16.20 CRITICAL AREAS, Kitsap County Chapter 19.600 CRITICAL AQUIFER RECHARGE AREAS, Advisory input for next meeting. See attachments - (25 min)

- Arrange for Public Works Director Chris Weizbeki to phone in to provide GWMP update, date and time for future GWMP subcommittee meeting, estimated completion date goals and dates for various sections and public process for the GWMP. How Public Works will work with ETAC committee to complete council approved Resolution for GWMP report and review involving ETAC moving forward.

- Inclusion of regional earthquake concerns. Seattle Times Article 092723 - Appendix A

https://www.seattletimes.com/seattle-news/a-double-earthquake-threat-study-finds-two-seattle-area-faults-ripped-about-the-same-time/

Sections from July 2022 Draft GWMP sent to ETAC via COBI email from ES on12-06-2023.

4.4.1 City of Bainbridge Island Climate Action Plan

The City's Climate Action Plan, adopted in November 2020, sets three goals in response to direction given in the Comprehensive Plan to reduce greenhouse gas emissions and increase the Island's climate resilience. These three goals are:

1. Mitigation: Reduce greenhouse gas emissions by 90% by 2045 compared to 2014 levels with interim milestones of 25% reduction by 2025 and 60% by 2035 compared to 2014 levels.
2. Adaptation: Bainbridge Island is climate savvy and can withstand the impacts of climate change.
3. Community Engagement: COBI inspires community action and partners with local and regional organizations to take meaningful and equitable climate change mitigation and adaptation actions.

The Climate Action Plan recognizes several climate impacts that are relevant to groundwater management, including rising sea levels, increased erosion, potential saltwater intrusion, changes to timing, extent of groundwater recharge and interaction with surface water. About water resources, the plan sets the following goals:

1. Steward natural resources to function as healthy, resilient ecosystems
2. Protect and maintain integrity of island's surface and groundwater resources in the face of climate change
3. By 2023, the City will adopt a Groundwater Management Plan that accounts for climate change in its projections, policies, and guidance
4. Steward shorelines to allow for resilience

4.4.2 City of Bainbridge Island Municipal Code

Title 16 Environment of the City's Municipal Code provides for groundwater protection mainly via Chapter 16.20 Critical Areas. This chapter requires designation of ecologically sensitive and hazardous areas including areas protective of water quality and groundwater recharge to "...protect, maintain and restore these areas and achieve no net loss of their functions and values and allow for reasonable use of public and private property."

Chapter 16.20.100 Aquifer Recharge Areas recognizes that WAC 365-190-100 classifies the entire Island as an aquifer recharge area. The purpose of this classification is to preserve the volume of recharge and to protect the groundwater from contamination. Activities meeting certain criteria (i.e. potential to generate pollutants identified as a potential source of drinking water contamination) require a hydrogeologic assessment, designation of Aquifer Recharge Protection Area (ARPA) within the project boundary and if necessary, a mitigation plan.

4.4.3 Kitsap County Code

To give context to the regional approach, it is worth noting that the Kitsap County Critical Areas Recharge Ordinance 19.600 provides policy support to identify, preserve, and protect these critical areas, to recognize the connection between surface water and groundwater and to prioritize potable water resource areas per WAC 365-190-100 when undertaking land use planning and regulation. Finally, the ordinance seeks to balance competing needs for water supply while preserving natural functions and processes.

Ordinance 19.600 provides for two categories of Critical Aquifer Recharge Areas. Category I Critical Recharge Areas are defined by the time it takes water to travel from the ground surface to the water supply well (either 5-years or 10-years if the well takes water from an aquifer at or above sea level with no intervening protective impermeable layer). Category I areas also include significant recharge areas identified as having special circumstances or significant potable supply that is susceptible to groundwater contamination.

Category II Critical Recharge Areas provide recharge to aquifers that are currently or potentially will become potable water supplies and are vulnerable to contamination based on land use.

Bainbridge Island contains both Category I and II Critical Recharge Areas. Category I areas have been delineated for the COBI, Kitsap Public Utility District (PUD) and Group A water suppliers. Most of the remainingareaonBainbridgeIslandisincludedinCategoryIICritical[TJ1][MW2] AquiferRechargeAreas.

Inclusion in Category I or II indicates that certain land use that can potentially negatively impact groundwater quality are either prohibited (Category I) or restricted (Category II). A hydrogeologic assessment may be required.

Bainbridge Island Municipal Code - Chapter 16.20 CRITICAL AREAS

https://www.codepublishing.com/WA/BainbridgeIsland/html/BainbridgeIsland16/BainbridgeIsland1620.html#16.20.100

Sections:

16.20.010 16.20.020 16.20.030 16.20.040 16.20.050 16.20.060 16.20.070 16.20.080 16.20.090 16.20.100 Purpose and intent. Applicability.
Protection of critical areas. Exemptions.

Standards for existing development. Administration.
Review procedures.
Reasonable use exceptions.

Trees and vegetation. Aquifer recharge areas.

16.20.110 16.20.120 16.20.130 16.20.140 16.20.150 16.20.160 16.20.170 16.20.180 16.20.190

Fish and wildlife habitat conservation areas. Frequently flooded areas.
Geologically hazardous areas.
Wetlands.

The Winslow ravine – Special rules in mixed use town center. Performance and maintenance surety.
Compliance and enforcement.
Critical area reports.

Definitions.

16.20.100 Aquifer recharge areas.

A. Applicability. Aquifer recharge areas are areas that have a critical recharging effect on groundwater used for potable water supplies and/or that demonstrate a high level of susceptibility or vulnerability to groundwater contamination from land use activities. In accordance with WAC 365-190-100, the entirety of Bainbridge Island is classified as an aquifer recharge area to preserve the volume of recharge available to the aquifer system and to protect groundwater from contamination.

B. Permit Review and Procedures

1. Any development, use or activity described in subsection B.3.b or c of this section shall require a critical area permit.

2. Critical area permits shall be reviewed pursuant to the criteria in BIMC 16.20.070. 3. Applications for critical area permits for aquifer recharge areas shall include:

a. City of Bainbridge Island master land use application (http://www.bainbridgewa.gov/161/Documents-Forms-Applications); and

b. Proposals for any development, use or activity not associated with permitted principal and accessory residential uses pursuant to BIMC 18.09.020 that has the potential to generate a pollutant identified as a potential source of drinking water contamination (either in Appendix A of the Washington State Critical Aquifer Recharge Area Guidance Document or on the North

American Industry Classification System as used by the city's department of public works) or known to be deleterious to the environment or human health shall require submittal of a hydrogeologic assessment, as set forth in BIMC 16.20.180.A. If the applicant has completed a site assessment review (SAR) in accordance with Chapter 15.19 BIMC that includes sufficient information to address the elements listed in BIMC 16.20.180.A, the SAR will suffice to fulfill this requirement. Additional in-depth site assessment elements as detailed in

BIMC 16.20.180.A may be required by the city or if requested by affected public water purveyors (Group A and B), affected tribes, or the Kitsap Public Health District upon review of the SAR.

c. Proposals requiring designation of an aquifer recharge protection area pursuant to subsection E.1 of this section shall require submittal of a site assessment review application.

C. Prohibited Activities and Uses. The following activities and uses are prohibited within critical aquifer recharge areas due to the probability or potential magnitude of their adverse effects on groundwater:

1. Landfills. Landfills, including hazardous or dangerous waste, municipal solid waste, special waste, wood waste, and inert and demolition waste landfills;

2. Underground Injection Wells. Class I, III, and IV wells and subclasses 5F01, 5D03, 5F04, 5W09, 5W10, 5W11, 5W31, 5X13, 5X14, 5X15, 5W20, 5X28, and 5N24 of Class V wells;

3. Chemical wood preservation and/or treatment facilities;

4. Storage, Processing, or Disposal of Radioactive Substances. Facilities that store (other than minor sources such as medicinal uses or industrial testing devices), process, or dispose of radioactive substances;

5. Hazardous liquid transmission pipelines;
6. Commercial mining and chemical washing of metals, hard rock, sand, and gravel; 7. Hydrocarbon extraction, reprocessing, refinement, and storage;

8. Electroplating/metal finishing;
9. Facilities that treat, store, process, or dispose of hazardous waste; and
10. Other Prohibited Uses or Activities.

a. Activities that would significantly reduce the recharge to aquifers currently or potentially used as a potable water source; and

b. Activities that would significantly reduce the recharge to aquifers that are a source of significant baseflow to a stream.

D. Development Standards – General.
1. No development, use or activity may exceed water quality standards or otherwise violate the

antidegradation requirements specified in Chapter 173-200 WAC.

2. Any development or activity that is not exempt or excluded by subsection E.1 of this section shall ensure sufficient groundwater recharge, defined as maintaining 100 percent of the annual average pre-construction groundwater recharge volume for the site. The primary means to ensure sufficient groundwater recharge shall be through the designation of an aquifer recharge protection area in accordance with subsection E of this section.

E. Development Standards – Aquifer Recharge Protection Area (ARPA).

1. Any proposed development or activity requiring a site assessment review (SAR) pursuant to Chapters 15.19 and 15.20 BIMC located within the R-0.4, R-1 or R-2 zoning designations requires designation of an ARPA; except, designation of an ARPA is not required for the following:

a. Removal of invasive species;

b. Construction of public trails provided the standards set forth in BIMC 16.20.110.G.5.a through e are met;

c. Replacement of hard surfaces; and

d. Development and activities located on properties protected in perpetuity by a legal instrument acceptable to the city attorney wherein at least 65 percent of the site meets the development standards for aquifer recharge protection areas of this section.

2. ARPA General Requirements.

a. The location and configuration of the ARPA shall be determined through completion of a site assessment review (SAR) in accordance with Chapter 15.19 BIMC. The city may require a professional forester, ISA-certified arborist or landscape architect to determine the location and configuration of the ARPA if needed to ensure the ARPA design standards set forth in subsections E.3.a through c of this section are met;

b. The ARPA shall include all existing native vegetation on a site, up to a maximum of 65 percent of the total site area. A lower percentage is allowed if necessary to achieve a development area of at least 12,500 square feet on a parcel;

c. The maximum area of the required ARPA may be reduced to 50 percent for public schools and public parks allowed in the underlying zoning district;

d. The location and configuration of the ARPA may change over time; however, the total area required pursuant to subsection E.2.b of this section shall be retained once established. Any alteration to the location or configuration of the ARPA shall be approved by the director and documented on a site plan included with a notice to title in accordance with

BIMC 16.20.070.G. The city may require an ARPA stewardship plan prior to approving a change to the location and configuration of the ARPA.

3. ARPA Design Standards.

a. Healthy, existing trees and vegetation should be retained to the maximum extent possible. Healthy significant trees shall be priority trees for retention. Trees shall be retained in one or more stands or clusters.

b. The ARPA shall be delineated to include:
i. A low perimeter-to-area ratio;
ii. A minimum width of 12 feet; and
iii. The critical root zone of all significant trees.

c. The ARPA shall be contiguous with abutting, off-site areas of other ARPAs, open space or critical areas to the extent feasible.

d. The ARPA may include landscaping or open space requirements pursuant to BIMC 18.15.010.D and E and Chapter 17.12 BIMC, respectively, and other critical areas and their buffers or setbacks pursuant to other sections of this chapter.

4. ARPA Use Standards. The following developments and activities are allowed within a designated ARPA:

a. Any structure or activity as long as the new structure or activity is shown to not negatively impact the amount of groundwater recharge on the site. Specifically, any structure or activity is allowed as long as the structure or activity (including mitigation measures, if any are needed) maintains 100 percent of the annual average groundwater recharge volume that existed on the site prior to the structure or activity as demonstrated by the 2012 Western Washington Hydrology Model (WWHM2012) recharge module, as amended.

b. Tree and vegetation activities specified in BIMC 16.20.090. c. Installation of native plants.
d. Removal of invasive plant species.
e. Passive recreation, including pervious trails.

f. Potable water wells and well houses.
g. Low impact fencing or signs marking the ARPA boundary.

h. On-site sewage drainfield facilities, if construction of the system will not require the use of heavy equipment or removal of significant trees.

i. Storm drainage facilities if the applicant can demonstrate that (i) the system meets the low impact design (LID) standards of Chapter 15.20 BIMC, and (ii) construction of the system will not require the use of heavy equipment or removal of significant trees.

j. Accessory solar panels, small wind energy generators, composting bins, rainwater harvesting barrels, and cisterns, as defined in Chapter 18.36 BIMC.

k. Other structures or hard surfaces with a total footprint of no greater than 200 square feet.

l. Driveways may be allowed to pass through the ARPA if (i) siting of the driveway within the ARPA is determined by the director to be necessary to achieve greater native vegetation retention and use of nonstructural low impact design practices, (ii) site utilities are installed within the footprint of the driveway, (iii) siting of the driveway avoids removal of significant trees to the maximum extent feasible and (iv) the total area required pursuant to subsection E.1 of this section is achieved, which may require replanting of areas comprised of nonnative vegetation.

m. Removal of any significant tree, other than hazard tree removal, with city review and preapproval of an aquifer recharge protection area stewardship plan prepared in accordance with BIMC 16.20.180.H.

5. ARPA Protection.
a. The ARPA, including the critical root zone of significant trees, shall be protected during

construction as provided in BIMC 18.15.010.C.4 or as specified by an ISA-certified arborist. b. The ARPA shall be documented on a site plan included with a notice to title in accordance

with BIMC 16.20.070.G. (Ord. 2018-01 § 2 (Exh. A), 2018)

16.20.110 Fish and wildlife habitat conservation areas.

A. Applicability. This section applies to all fish and wildlife habitat conservation areas as classified in subsection B of this section except those located within the city's shoreline jurisdiction, which are regulated by the city's shoreline master program (Chapter 16.12 BIMC).

B. Fish and wildlife habitat conservation areas include:

1. Streams. Within the city of Bainbridge Island, streams shall include those areas which meet the definitions in BIMC 16.20.190 (Definitions). Streams shall be classified in accordance with the Washington Department of Natural Resources water typing system (WAC 222-16-030), which is hereby adopted in its entirety by reference and summarized as follows:

a. Type F: streams which contain fish habitat pursuant to BIMC 16.20.190 (Definitions); b. Type Np: perennial non-fish habitat streams; and
c. Type Ns: seasonal non-fish habitat streams.

2. Habitats recognized by federal or state agencies for federal- and/or state-listed endangered, threatened, sensitive and candidate/monitored species which presence is documented in maps or databases available to the city of Bainbridge Island.

3. Areas That Contain Habitats and Species of Local Importance. Any person may nominate for designation a species or habitat of local importance. Nominations will be processed pursuant to definitions in BIMC 16.20.190 and nomination criteria developed by the director.

4. Biodiversity areas and corridors as defined in the 2008 Washington Department of Fish and Wildlife Priority Habitat and Species List, or as amended.

5. All areas within the city of Bainbridge Island meeting one or more of the preceding criteria in this subsection B of this section, regardless of any formal identification or mapping, are hereby designated critical areas and are subject to the provisions of this chapter and shall be managed consistent with the best available science, such as the Washington Department of Fish and Wildlife's most recent management recommendations for priority habitat and species.

C. Mapping. The location and extent of all mapped critical areas shown on the city of Bainbridge Island critical area maps are approximate and shall be used as a general guide only. The type, extent and boundaries shall be determined in the field by a qualified professional according to the requirements of this chapter. The critical area maps (http://www.bainbridgewa.gov/196/GIS-Mapping-Map-Gallery) are adopted as part of this chapter and are incorporated herein by this reference. Washington Department of Natural Resource (DNR) and Washington Department of Fish and Wildlife maps are not the only source of data. Any request to change the city's existing map shall be accompanied by a report from a qualified professional that includes a description of the critical area and a summary of how it meets the definitions in BIMC 16.20.190. The inventory and cited resources are to be used as a guide for the city, project applicants, and/or property owners and may be continuously updated as new or altered critical areas are identified.

D. Permit and Review Procedures.

1. Any development, use or activity within any fish and wildlife habitat conservation area shall require a critical area permit unless it qualifies as an exempt activity, as provided in BIMC 16.20.040.

2. Critical area permits shall be reviewed pursuant to the criteria in BIMC 16.20.070 and any applicable state or federal management recommendations.

3. Applications for critical area permits for fish and wildlife habitat conservation areas shall include: a. City of Bainbridge Island master land use application

(http://www.bainbridgewa.gov/161/Documents-Forms-Applications);

4. The city may request technical review of an HMP from other agencies to ensure consistency with state, federal or tribal management recommendations.

E. Development Standards – Streams.

1. All designated streams require a buffer pursuant to Table 1 of this section. Buffers shall remain as undisturbed or enhanced vegetation areas for the purpose of protecting the integrity, function, and value of stream resources. Any buffer modification proposed shall be through an approved buffer enhancement plan. No uses or activities shall be allowed within the buffer unless allowed by this section. If the buffer has previously been disturbed, the director may require the disturbed buffer area be enhanced, including revegetation with native plant species, pursuant to an approved buffer enhancement plan meeting the requirements of BIMC 16.20.180. No refuse, including but not limited to household trash, yard waste and commercial/industrial refuse, shall be placed in the buffer.

2. The required minimum buffers listed in Table 1 of this section are based on the assumption that the buffer is well vegetated with native species appropriate to the site. If the buffer does not consist of vegetation adequate to provide stream protection and buffer functions, the director may require that the buffer be planted to achieve such protection and function.

Table 1: Stream Buffers

Stream Type	Buffer Width
F	200
Np	100

Ns (connected to F or Np)	75
Ns (not connected to F, Np)	50

3. Buffer distances shall be measured from the ordinary high water mark (OHWM) or from the top of each bank where the OHWM cannot be identified.

4. The buffer width shall be increased to include streamside wetlands which provide overflow storage for stormwater, feed water back to the stream during low flow, or provide shelter and food for fish. In braided channels, the ordinary high water mark or top of bank shall be defined to include the entire stream feature.

5. Streams in Ravines – Buffers. For streams in ravines outside the mixed use town center with ravine sides 10 feet or greater in height, the buffer width shall be the greater of:

a. The buffer width required for the stream type; or

b. A buffer width which extends 25 feet beyond the top of the ravine.

6. Increased Buffer Provisions. The director may increase buffer widths up to 50 percent greater than the applicable buffer set in this chapter for critical areas with known locations of endangered, threatened, or state monitored or priority species for which a habitat management plan indicates a larger buffer is necessary to protect habitat values for such species. Such determination shall be based on site-specific and project-related conditions.

7. Structure or Hard Surface Setback. A structure or hard surface setback line of 15 feet is required from the edge of any stream buffer. Minor structural or impervious surface intrusions into the areas of the setback, such as but not limited to fire escapes, open/uncovered porches, landing places, outside walkways, outside stairways, retaining walls, fences and patios, may be permitted if the department determines upon review of an analysis of buffer functions submitted by the applicant that construction and/or maintenance of such intrusions will not encroach into the stream buffer or adversely impact the stream. The functional analysis shall include a functional methodology supported by best available science. The setback shall be identified on a site plan and filed as an attachment to the notice on title as required by BIMC 16.20.070.G (Notice on Title).

8. Buffer Modification. On each site, only one of the following modifications to buffer widths may be allowed provided the applicant demonstrates the need for modification through mitigation sequencing pursuant to BIMC 16.20.030.

a. Buffer Width Averaging. The width of a required buffer may be averaged if the applicant can demonstrate that averaging can provide equal or greater functions and values as would be provided under the required buffer and all of the following conditions are met:

i. The total area of buffer after averaging is equal to the area required without averaging.

ii. Averaging cannot result in any portion of the buffer being reduced more than 25 percent of its required width.

b. Buffer Width Reduction. The width of a required buffer may be reduced if the applicant can demonstrate that the reduction will provide equal or greater functions and values as would be provided under the required buffer and all of the following conditions are met:

i. The buffer may not be reduced more than 25 percent of its required width.

ii. Native vegetation on other portions of the site is retained in order to offset habitat loss from buffer reduction.

c. Any request for buffer modification outlined above shall be reviewed in conjunction with the underlying land use or construction permit. A critical area permit is not required. Requests for buffer averaging or buffer reduction shall include a buffer enhancement plan prepared by a qualified consultant that meets the requirements of BIMC 16.20.180. Buffer enhancement plans shall be reviewed pursuant to the criteria in BIMC 16.20.070.

d. The city may request technical review of a buffer enhancement plan from other agencies to ensure consistency with state, federal or tribal management recommendations.

e. Any other buffer modification, other than noncompensatory enhancement, requires a reasonable use exception pursuant to BIMC 16.20.080.

F. Development Standards – Other Fish and Wildlife Habitat Conservation Areas.

1. All development, uses and activities within known fish and wildlife habitat conservation areas require submittal and approval of a habitat management plan (HMP) as specified in BIMC 16.20.180, Critical area reports. The HMP shall consider measures to retain and protect the fish and wildlife habitat and shall consider the effects of land use intensity, buffers, setbacks, impervious surfaces, erosion control and retention of existing native vegetation.

2. In the case of bald eagles, the HMP shall comply with the federal Bald and Golden Eagle Protection Act (16 U.S.C. 668) to avoid impacting eagles and their habitat.

G. Standards for Specific Development, Uses and Activities. The following development, uses and activities may be allowed within fish and wildlife habitat conservation areas and their buffers. Any proposal for the following development, uses and activities requires a critical area permit pursuant to BIMC 16.20.070 and shall comply with the standards of this section and other applicable state, federal and local regulations. The director may waive the requirement for a HMP when project impacts are demonstrated to be de minimis through mitigation sequencing pursuant to BIMC 16.20.030.

1. Stream Crossings. Any private or public road or driveway expansion or construction proposed to cross streams classified within this chapter shall comply with the following minimum development standards. All other state and local regulations regarding water crossing structures shall apply, and the use of the Water Crossing Design Guidelines (WDFW, 2013), or as amended, is encouraged.

a. Bridges or bottomless culverts shall be required for all Type F streams. Other alternatives may be allowed upon (i) submittal of a habitat management plan which demonstrates that other alternatives would not result in significant impacts to the fish and wildlife conservation area and (ii) as determined through the hydraulic project approval (HPA) process administered by the Washington Department of Fish and Wildlife. The plan must demonstrate that fish habitat will not be reduced in area or function;

b. Crossings shall not occur in fish-bearing streams unless no other feasible crossing site exists. For new development proposals, if existing crossings are determined to adversely impact salmon spawning or passage areas, new or upgraded crossings shall be located as determined necessary through coordination with Washington Department of Fish and Wildlife;

c. Bridge piers or abutments shall not be placed in either the floodway or between the ordinary high water marks unless no other feasible alternative placement exists;

d. Crossings shall not diminish flood carrying capacity;
e. Crossings shall serve multiple properties whenever possible;

f. Where there is no reasonable alternative to providing a conventional culvert, the culvert shall be the minimum length necessary to accommodate the permitted activity.

2. Stream Relocations. Stream relocations may be allowed only for the purpose of flood protection and/or fisheries restoration and only when consistent with a Washington Department of Fish and Wildlife hydraulic project approval (HPA) process and the following minimum performance standards:

a. The channel, bank, and buffer areas are replanted with native or equivalent vegetation that replicates a natural, undisturbed riparian condition;

b. For those waters designated as frequently flooded areas pursuant to Chapter 15.16 BIMC, a professional engineer licensed in the state of Washington provides information demonstrating that the equivalent base flood storage volume and function will be maintained; and

c. Relocated stream channels are designed to meet or exceed the functions and values of the stream to be relocated.

3. Pesticides, Fertilizers and Herbicides. No pesticides, herbicides or fertilizers may be used in fish and wildlife conservation areas or their buffers, except those approved by the U.S. Environmental Protection Agency (EPA) and approved under a Washington Department of Ecology water quality modification permit for use in fish and wildlife conservation area environments and applied by a licensed applicator in accordance with the safe application practices on the label.

4. Land Divisions and Land Use Permits. All land divisions and land uses proposed on a site that includes fish and wildlife habitat conservation areas shall comply with the following procedures and development standards:

a. The open water area of lakes, streams, and tidal lands shall not be permitted for use in calculating minimum lot area.

b. Land division approvals shall be conditioned so that all required buffers are designated as an easement or covenant encumbering the buffer. Such easement or covenant shall be recorded together with the land division and represented on the final plat, short plat or binding site plan.

c. In order to avoid the creation of nonconforming lots, each new lot shall contain at least one building site that meets the requirements of this chapter, including buffer requirements for fish and wildlife habitat conservation areas. Each lot must also have access and a sewage disposal system location that are suitable for development that do not adversely impact the fish and wildlife conservation area.

d. After preliminary approval and prior to final land division approval, the director may require that the common boundary between a required buffer and the adjacent lands be identified using permanent signs. In lieu of signs, alternative methods of buffer identification may be approved when such methods are determined by the director to provide adequate protection to the aquatic buffer.

5. Trails and Trail-Related Facilities. Construction of public and private trails and trail-related facilities, such as benches, interpretive centers, and viewing platforms, are allowed in fish and wildlife conservation areas or their buffers when the following standards are met:

a. Trails and related facilities shall be placed on existing road grades, utility corridors, or any other previously disturbed areas if present at the site and consistent with an applicant's trail planning objectives;

b. Trails and related facilities shall be planned to minimize removal of trees, shrubs, snags and important wildlife habitat and disturbance to soil and existing hydrological characteristics;

c. Viewing platforms, interpretive centers, benches and access to them, shall be designed and located to minimize disturbance of wildlife habitat and/or critical characteristics of the affected conservation area. Viewing platforms shall be limited to 100 square feet in size, unless demonstrated that a larger structure will not result in a net loss of fish and wildlife habitat functions;

d. Trail planning shall utilize mitigation sequencing in BIMC 16.20.030 to first avoid siting trail and trail-related facilities within fish and wildlife habitat conservation areas and their required buffers. Trails and trail-related facilities are allowed in fish and wildlife conservation areas or their buffers if there are no reasonable alternatives for meeting the applicant's trail planning objectives and it is demonstrated through a habitat management plan that the proposal will not result in a net loss of critical area functions;

e. Trails shall be limited to nonmotorized use. Trail width shall not exceed six feet unless there is a demonstrated need, subject to review and approval by the director. Trails shall be constructed with pervious materials unless otherwise approved by the director.

6. Utilities. Placement of utilities within designated fish and wildlife conservation areas may be allowed pursuant to the following standards:

a. Construction of utilities may be permitted in fish and wildlife conservation areas or their buffers, only when no practicable or reasonable alternative location is available and the utility meets the requirements for installation, replacement of vegetation and maintenance outlined below.

b. Sewer or On-Site Sewage Utility. Construction of sewer lines or on-site sewage systems may be permitted in fish and wildlife conservation areas or their buffers when the applicant demonstrates it is necessary to meet state and/or local health code requirements; there are no other practicable alternatives available; and construction meets the requirements of this section. Joint use of the sewer utility may be allowed.

c. New utilities shall not be allowed in fish and wildlife conservation areas with known locations of federal- or state-listed endangered, threatened or sensitive species, heron rookeries or nesting sites of raptors which are listed as state candidates except in those circumstances where an approved habitat management plan indicates that the utility will not significantly impact the conservation area.

d. New Utility Construction. Utility construction and maintenance shall protect the environment of fish and wildlife conservation areas and their buffers.

i. New utilities shall be aligned whenever possible to avoid cutting or root damage to trees greater than 12 inches in diameter at breast height (four and one-half feet) measured on the uphill side.

ii. Any area of disturbance shall be revegetated with appropriate native or equivalent vegetation at not less than preconstruction vegetation densities or greater, immediately upon completion of construction or as soon thereafter as possible due to seasonal growing constraints. The utility or landowner responsible for installation shall ensure that such vegetation survives.

iii. Any additional access for maintenance shall be provided wherever possible at specific points rather than by parallel roads. If parallel roads are necessary, they shall be of a minimum width but no greater

than 15 feet; and shall be contiguous to the location of the utility corridor on the side away from the conservation area.

e. Utility maintenance shall include the following measures to protect the environment of regulated fish and wildlife habitat conservation areas.

i. Utility towers shall not be sandblasted or spray-painted. Lead-based paint is prohibited.

ii. Pesticides, Fertilizers and Herbicides. No pesticides, herbicides or fertilizers may be used in fish and wildlife habitat conservation areas or their buffers, except those applied by a licensed applicator in accordance with the safe application practices on the label.

7. Bank Stabilization.

a. A stream channel and bank may be stabilized when naturally occurring earth movement threatens existing structures (defined as requiring a building permit pursuant to the applicable building code), public improvements, unique natural resources, public health, safety or

welfare, or the only feasible access to property, and, in the case of streams, when such stabilization results in maintenance of fish and wildlife habitat, flood control, and improved water quality.

b. Where bank stabilization is determined to be necessary, bioengineering or other nonstructural methods should be the first option for protection. Structural methods, or hard stabilization, may only be utilized where it can be demonstrated by a professional engineer licensed in the state of Washington that an existing primary residential structure or essential public facility cannot be safely maintained without such measures, and that the resulting hard stabilization is the minimum length necessary to provide a stable building area for the structure. The director may require that bank stabilization be designed by a professional engineer licensed in the state of Washington with demonstrated expertise in hydraulic actions of shorelines. Bank stabilization projects may also require a city of Bainbridge Island clearing or grading permit and hydraulic project approval from the Washington Department of Fish and Wildlife.

c. Nonstructural streambank protective techniques are preferred to bulkheads or other types of streambank armoring. Nonstructural techniques include but are not limited to vegetation plantings and bioengineering.

8. Fencing and Signs. Prior to approval or issuance of permits for land divisions or other new development, the director may require that the common boundary between a required buffer and the adjacent lands be identified using fencing or permanent signs. In lieu of fencing or signs, alternative methods of buffer identification may be approved when such methods are determined by the director to provide adequate protection for the buffer.

9. Forest Practice, Class IV General and Conversion Option Harvest Plans (COHPs). All timber harvesting and associated development activity, such as construction of roads, shall comply with the provisions of this chapter, and the stormwater management standards in Chapters 15.20 and 15.21 BIMC, including the maintenance of buffers, where required.

10. Road/Street Repair and Construction. Any private or public road or street expansion or construction which may be allowed in a fish and wildlife habitat conservation area or its buffer shall comply with the following minimum development standards:

a. No other reasonable or practicable alternative exists and the road or street crossing serves multiple properties whenever possible;

b. Expansion or construction of any private or public road shall only be allowed when adverse impacts can be avoided;

c. Public and private roads should provide for other purposes, such as utility crossings, pedestrian or bicycle easements, viewing points, etc.;

d. The road or street construction is the minimum necessary, as required by the department of public works, and shall comply with the department of public works' guidelines to provide public safety and mitigated stormwater impacts; and

e. Construction time limits shall be determined in consultation with Washington Department of Fish and Wildlife in order to ensure habitat protection. (Ord. 2018-01 § 2 (Exh. A), 2018)

KITSAP COUNTY
Chapter 19.600
CRITICAL AQUIFER RECHARGE AREAS

https://www.codepublishing.com/WA/KitsapCounty/html/Kitsap19/Kitsap19600.html

Sections:

19.600.605 Purpose.

19.600.610 19.600.615 19.600.620

Critical aquifer recharge area categories. Development standards.
Activities with potential threat to groundwater quality.

19.600.605 Purpose.

. This chapter does not affect any right to use or appropriate water as allowed under state or

federal law. In addition, these requirements do not apply to those activities that have potential contaminant sources below threshold amounts as set forth in applicable statutes of the Revised Code of Washington or local regulations.

It is the policy of Kitsap County to accomplish the following:

B. Recognize the relationship between surface and groundwater resources;

Potable water is an essential life-sustaining element for people and many other species. ent of this chapter is thus to identify and classify aquifer recharge areas in accordance with RCW 36.70A.170 and address land use activities that pose a potential to directly or indirectly contaminate or otherwise threaten aquifer water quality and quantity

A. Identify, preserve and protect aquifer recharge areas that are susceptible to

contamination by preventing degradation of the quality and, if needed, the quantity of

potable groundwater;

C. Give priority to potable water resource areas per WAC 365-190-100 in the planning and regulation of land uses that may directly or indirectly contaminate or degrade groundwater; andThe majority of Kitsap County drinking water comes from groundwater supplies in aquifers. Critical aquifer recharge areas are very important to ensure the quality and quantity of shallow and deepwater aquifers. Once groundwater is contaminated, it is difficult, costly, and sometimes impossible to clean up. Preventing contamination is necessary to avoid exorbitant costs, hardships, and potential physical harm to people and ecosystems. In addition, without replenishment, the amount of water for potable use can be diminished or even depleted.

The int

D. Balance competing needs for water supply while preserving essential natural functions and processes, especially for maintaining critical fish and wildlife habitat conservation areas.

(Ord. 545 (2017) § 5 (Appx. (part)), 2017: Ord. 351 (2005) § 34 (part), 2005)

19.600.610 Critical aquifer recharge area categories.

As defined at Section 19.150.210, “critical aquifer recharge areas” means those land areas that contain hydrogeologic conditions that facilitate aquifer recharge and/or transmit contaminants to an underlying aquifer. Critical aquifer recharge areas under this title may be established based on general criteria, specifically designated due to special circumstances, or based on scientific studies and mapping efforts. Factors considered in the identification of critical aquifer recharge areas include depth to water table, presence of highly permeable soils (specifically Group A hydrologic soils), presence of flat terrain, and the presence of more permeable surficial geology.

A. Category I Critical Aquifer Recharge Areas. Category I critical aquifer recharge areas are those areas where the potential for certain land use activities to adversely affect groundwater is high. Category I critical aquifer recharge areas include:

1. Areas inside the five-year time of travel zone for Group A water system wells, calculated in accordance with the Washington State Wellhead Protection Program.

2. Areas inside the ten-year time of travel zones in wellhead protection areas when the well draws its water from an aquifer that is at or above sea level and is overlain by permeable soils without any underlying protective impermeable layer.

3. Areas identified as significant recharge areas due to special circumstances or identified in accordance with WAC 365-190-100(4) as aquifer areas of significant potable water supply with susceptibility to groundwater contamination, including but not limited to the following:

a. Hansville Significant Recharge Area. The Hansville aquifer is a significant potable water supply that is highly susceptible to the introduction of pollutants. Additional information regarding this aquifer is available from the Kitsap public utility district.

b. Seabeck Significant Recharge Area. The Seabeck aquifer is a significant potable water supply that is being developed for use in central and north Kitsap County. Additional information regarding this aquifer is available from the Kitsap public utility district.

c. Island Lake Significant Recharge Area. The Island Lake aquifer is a significant potable water supply for the Silverdale area. Additional information regarding this aquifer is available from the Silverdale water district.

d. Gorst Significant Recharge Area. Aquifers in the Gorst basin are highly susceptible to the introduction of pollutants and provide significant potable water supplies for the city of Bremerton.

e. Poulsbo Significant Recharge Area. The Poulsbo aquifer is highly susceptible to the introduction of pollutants and provides a significant potable water supply for the Kitsap public utility district and city of Poulsbo.

4. The department may add, reclassify or remove Category I critical aquifer recharge areas based on additional information about areas of significant potable water supply with susceptibility to groundwater contamination or supply reduction, or based on changes to sole source aquifers or wellhead protection areas as identified in wellhead protection programs.

B. Category II Critical Aquifer Recharge Areas. Category II critical aquifer recharge areas are areas that provide recharge effects to aquifers that are current or potentially will become potable water supplies and are vulnerable to contamination based on the type of land use activity. The general location of these areas is available on the Kitsap County geographic information system. Category II critical aquifer recharge areas include:

1. Highly permeable soils (Group A hydrologic soils). The general location and characteristics of Group A hydrologic soils in Kitsap County are given in the Soil Survey of Kitsap County by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). The soil survey information is available on the Kitsap County geographic information system (GIS).

2. Areas above shallow aquifers or surface areas that are separated from the underlying aquifers by an impermeable layer that provides adequate protection from contamination to the aquifer(s) below. The general location of shallow aquifers in Kitsap County is based upon the professional judgment of licensed hydrogeologists with knowledge of the area. The location of shallow aquifers is available on the Kitsap County geographic information system (GIS).

3. Areas above the Vashon aquifer. Surface areas above the Vashon aquifer that are not separated from the underlying aquifers by a poorly permeable layer that provides adequate protection to preclude the proposed land use from contaminating the Vashon aquifer below. Vashon aquifers in Kitsap County are typically mapped as “Qva” (Vashon advance aquifer) or “Qvr” (Vashon recessional aquifer) on geologic maps. Best available information concerning the location of Vashon aquifers is available on the Kitsap County geographic information system (GIS).

4. Areas with high concentration of potable water supply wells.
5. The department may add, reclassify or remove Category II critical aquifer

recharge areas based on additional information about areas of potential potable water supply with susceptibility to groundwater contamination or supply reduction, or based on changes to sole source aquifers or wellhead protection areas as identified in wellhead protection programs.

C. Mapping. Kitsap County, in coordination with water purveyors and other agencies, will produce maps indicating the location of critical aquifer recharge areas and their defining characteristics.

(Ord. 545 (2017) § 5 (Appx. (part)), 2017: Ord. 351 (2005) § 34 (part), 2005)

19.600.615 Development standards.

A. Category I Critical Aquifer Recharge Areas.

1. Land uses identified in Table 19.600.620 are prohibited in Category I critical aquifer recharge areas, unless a waiver is granted by the department.

2. Requests for waivers for activities listed in Table 19.600.620 shall include a hydrogeological report (see Chapter 19.700, Special Reports) that includes a detailed risk-benefit analysis that considers credible worst-case scenarios. The hydrogeological report shall evaluate potential impacts of a proposed land use or activity on both groundwater and surface water quality and quantity. The waiver will be evaluated and treated as a special use review (Section 19.100.145) and be reviewed by the department, Kitsap public health, affected tribes, and the affected water purveyors.

B. Category II Critical Aquifer Recharge Areas.

1. Land uses identified in Table 19.600.620 that are proposed in a Category II aquifer recharge area may be required to submit a hydrogeological report (see Chapter 19.700, Special Reports), as determined in subsection (B)(2) of this section. The scope of the report shall be based on site-specific conditions.

2. The need for a hydrogeological report will be determined by the department, the health district and the affected water purveyor when the proposed land use or activity may impact groundwater and surface water quality and quantity. Based on the results of the report, controls, mitigation, and/or other requirements will be established as a condition of approval.

C. Notification and Review.

1. Affected water purveyors, tribes and Kitsap public health will be notified and invited to comment during the preliminary phases of the county’s review of any development application in a critical aquifer recharge area. The purveyor may recommend appropriate mitigation to reduce potential impacts and the department will consider these recommendations to develop appropriate permit conditions.

2. The department will also notify Kitsap public health and affected water purveyors through the environmental review process when those development activities listed in Table 19.600.620 are proposed outside the areas designated critical aquifer recharge areas.

D. Storm Water. Storm water best management practices shall be accomplished in accordance with Title 12.

(Ord. 545 (2017) § 5 (Appx. (part)), 2017: Ord. 351 (2005) § 34 (part), 2005)

19.600.620 Activities with potential threat to groundwater quality.

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Table 19.600.620
Activities with Potential Threat to Groundwater Quality

Above- and Below-Ground Storage Tanks

Hazardous and industrial waste treatment

Hazardous and industrial waste storage

Hazardous material storage

Animal Feedlots

Commercial Operations

Gas stations/service stations/truck terminals

Petroleum distributors/storage

Auto body repair shops/rust proofers

Auto chemical supply stores/retailers

Truck, automobile, and combustion engine repair shops

Dry cleaners

Photo processors

Auto washes (if not on a sewer system with a treatment plant)

Laundromats (if not on a sewer system with a treatment plant)

Beauty salons (if not on a sewer system with a treatment plant)

Research or chemical testing laboratories, which handle significant quantities of hazardous materials

Food processors/meat packers/slaughterhouses

Airport maintenance/fueling operation areas

Junk and salvage yards

Storing or processing manure, feed, or other agricultural byproducts by commercially permitted businesses

Large-scale storage or use of pesticides, insecticides, herbicides, or fertilizer by commercial or agricultural operations
Golf courses

Cemeteries

Deep Injection Wells

Wastewater disposal wells (wells that, after treatment, inject water back into the aquifer)

Oil and gas activity disposal wells

Mineral extraction disposal wells

Deicing Salts Storage Piles

Industrial Operations

Furniture strippers/painters/finishers

Concrete/asphalt/tar/coal companies
Industrial manufacturers: chemicals, pesticides/herbicides, paper, leather products, textiles, rubber, plastic/fiberglass, silicone/glass, pharmaceuticals, electrical equipment
Metal platers/heat treaters/smelters/annealers/descalers

Wood
preserves

Chemical reclamation facilities

Boat refinishers

Hydrocarbon extraction

Land Application

Wastewater application (spray irrigation)

Wastewater byproduct (sludge) application

Petroleum refining waste application

Hazardous waste applications

Landfills

Industrial hazardous and nonhazardous landfill

Municipal sanitary landfill

Material Transfer Operations

Hazardous and industrial waste transfers

Hazardous material transfers

Materials Stockpiles

Mining and Mine Drainage

On-Site Septic Systems (Large On-Site Septic System or LOSS Category)

Pipelines

Hazardous and industrial waste transfer

Hazardous material transfer

Radioactive Disposal Sites and Processing of Radioactive Wastes

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G.
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K. L. M.

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O. Sand and Gravel Mining Operations
(Ord. 545 (2017) § 5 (Appx. (part)), 2017: Ord. 351 (2005) § 35, 2005)

RCW 36.70A.550 Aquifer conservation zones.
https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.550

(1) Any city coterminous with, and comprised only of, an island that relies solely on groundwater aquifers for its potable water source and does not have reasonable access to a potable water source outside its jurisdiction may designate one or more aquifer conservation zones.

Aquifer conservation zones may only be designated for the purpose of conserving and protecting potable water sources.

(2) Aquifer conservation zones may not be considered critical areas under this chapter except to the extent that specific areas located within aquifer conservation zones qualify for critical area designation and have been designated as such under RCW 36.70A.060(2).

(3) Any city may consider whether an area is within an aquifer conservation zone when determining the residential density of that particular area. The residential densities within conservation zones, in combination with other densities of the city, must be sufficient to accommodate projected population growth under RCW 36.70A.110.

(4) Nothing in this section may be construed to modify the population accommodation obligations required of jurisdictions under

this chapter. [2007 c 159 § 1.]

COBI Climate Action Website

https://www.bainbridgewa.gov/1331/Climate-Action

Climate Action Plan 2022

https://www.bainbridgewa.gov/DocumentCenter/View/16973/2022-Annual-CAP-Progress-Report?bidId=

Shoreline Master Program Project Website

https://wa-bainbridgeisland.civicplus.com/184/Shoreline-Master-Program

SMP Periodic Review Website – Supporting Documents

https://cityofbainbridgeisland.civilspace.io/en/projects/smp-periodic-review