
Call to Order (Attendance, Agenda, Ethics)
Review and Approve Minutes – November 20, 2018 and December 5, 2018
Review DRAFT Goals from December 5, 2018 Meeting
Discuss 2019 Meetings Location
Discuss Agenda for Next Regular Meeting – January 16, 2019 (No meeting on January 2, 2019)
Public Comment
Adjourn

Call to Order (Attendance, Agenda, Ethics)

Chair Maradel Gale called the meeting to order at 7:02 PM. Steering Committee Members in attendance were Vice-Chair Micah Strom, Sam Marshall, Michael Loverich, Mark Tiernan and John Decker. Donna Harui, Asaph Glosser and Scott Anderson were absent and excused. Sarah Blossom (City Council) and Jane Rein (Design Review Board) were also in attendance. City Staff present were Planning Director Gary Christensen, Long Range Senior Planner Jennifer Sutton and Administrative Specialist Jane Rasely who monitored recording and prepared minutes.

The agenda was reviewed. There were not any changes in status.

Review and Approve Minutes – November 20, 2018 and December 5, 2018

November 20, 2018

Motion: I move to accept the minutes as distributed.

Decker/Marshall: Passed unanimously

December 5, 2018

Motion: I move to accept the minutes as distributed.

Strom/Tiernan: Passed Unanimously

Review DRAFT Goals from December 5, 2018 Meeting

Chair Gale led the discussion of draft goals.

Discuss 2019 Meetings Location

Future meetings will be held at city hall.

Discuss Agenda for Next Regular Meeting – January 16, 2019 (No meeting January 2, 2019)

Public Comment

Robert Dashiell, Citizen – Provided his summary on groundwater to Steering Committee members.

Adjourn

Meeting adjourned at 8:41 PM.



Island Center Subarea Planning Process Steering Committee

December 19, 2018

PLEASE PRINT

[illegible]

Bainbridge Island Groundwater Simplified

Bainbridge Island receives an average annual rainfall of 39 inches. Over the 27.61 sq. miles of island land, that equates to an annual average of **18.7 billion gallons**.

The **most conservative estimate** of BI aquifers recharge from rainfall (rainfall that penetrates below the vegetation root line) from **multiple professional sources** is **11.3 inches**. That's 29% of the 39 inches of rainfall, or **5.4 billion gallons of recharge**. The other **13.3 billion gallons** (71%) is water runoff, remains in lakes, ponds and wetlands, is absorbed by vegetation, is transpired by plants back into the atmosphere, etc.

Total water withdrawal for all BI water uses is currently about **860 million gallons**, **16%** of the rainfall annually that gets below the vegetation root zone.

More recharge than withdrawal is a good situation ... that's the prime safety factor to keeps aquifers from possibly becoming chloride compromised from sea water intrusion.

USGS water report (2011) had three future BI population water use scenarios:

- Extraordinary high growth (50,000+ residents by 2031)
- Expected growth 33,000+ residents by 2015)
- Minimal growth. (26,000+ residents by 2035)
- Actual growth in the 7 years since the report was issued has been between the **minimal and expected growth projections ... averaging 210 people per year.**

The USGS model projected 25 years forward until 2035.

The final conclusion was that **even under the extraordinary high growth model, there would be sufficient water resources and no salt water intrusion.**

The City then wanted a longer range model study ... **100 years.**

To perform that study, Aspect Consulting was hired and made multiple changes the USGS model to be more conservative ... **using a precautionary principal**. The most extreme was a 20% reduction in groundwater recharge even though annual rainfall is projected to increase 20% with global warming. More rain in winter, less in summer.

From Aspect Consulting (COBI's primary consulting hydrologists) to City of Bainbridge Island March 25, 2016: Certifying were Peter Bannister, Associate Groundwater Resources Engineer, and Timothy Flynn, Principal Hydrogeologist:

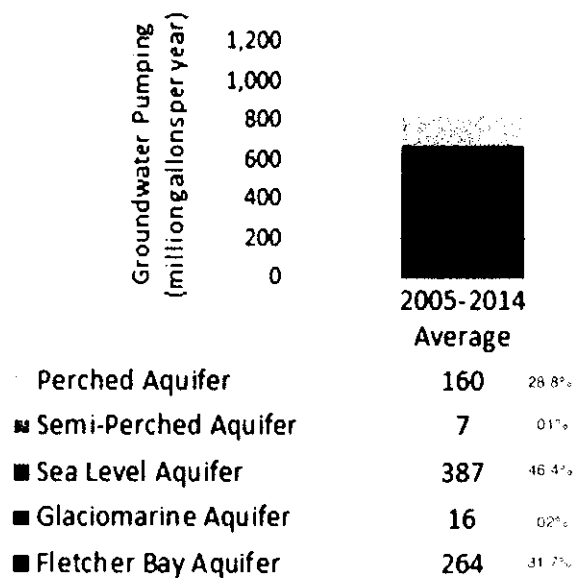
"In summary, the Bainbridge Island groundwater model was used to assess long-term changes in groundwater conditions associated with increased groundwater withdrawal rates. Adjustments to the model and input assumptions ... included consideration of future potential climate-change

From Robert Dashiell turned in at 12/19 Island Center Mtg.

effects (decreased groundwater recharge rates and increased sea level) and a 50 percent increase in groundwater withdrawal across Bainbridge Island. **The 100-year simulated model results indicated no seawater intrusion and the rates of groundwater level decreases were less than the Early Warning Level (EWL)."**

Bottom line: No water shortage problems expected for the next 100 years. No salt water intrusion expected.

Five aquifers underly Bainbridge Island. This graph from Aspect Consulting provides pumping and current use percentages:



The City and/or KPUD monitor water levels on 70+ BI wells. Well water levels vary as expected depending largely on the season. If a well level drops more than expected, it can trigger a Early Warning Level. BI has not been experiencing well water levels triggering an EWL.

Public wells are are tested for Health Department water quality parameters. No significant problems have occurred. If a problem would occur, immediate notification to water users would occur, and the problem would be resolved before the system would be allowed to supply water.

BI has been classified as having a **Sole Source Aquifer** since 50% of more of BI's drinking water comes from the five underlying aquifers. That designation only

means **federal funded projects** require an environmental review to ensure the aquifers are not polluted or water quantity sacrificed.

Bainbridge Island has **spent more than one million dollars on aquifer studies in the last 10 years**. It's arguably the most studied groundwater system of any island in the United States.

The City's Water Resources library has in excess of 125 Bainbridge Island water studies and key well reports after the City hired a consultant (Battelle Institute) to go through the water library and eliminate non-essential reports and well logs.

The South end of Bainbridge Island has limited groundwater because of clay and bedrock layers. That limits new wells, and water for South Bainbridge will be supplied from nearby existing or new wells where aquifer water is available.

Although there is no foreseen groundwater shortage, if there ever was one, the City has two options. First, there is a surplus of groundwater in North Kitsap, just across the Agate Pass bridge. Water is safe to move in pipelines, and that is a known water source option. Second, desalinization of surrounding Puget Sound water is technically feasible, although it takes more energy to produce a gallon of desalinated water, and water costs would increase. That process could be used for incremental water quantity adds during the dry season if ever needed. As of 2018, the Department of Natural Resources has granted 13 desalination operations, most of them relatively small, in San Juan County because those islands are primarily bedrock and do not have the extensive aquifers the are beneath Bainbridge Island.