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CRITICAL AREAS ORDINANCE
AQUIFER RECHARGE PROTECTION AREA (ARPA)

critical aquifer recharge areas

A new requirement to designate a Aquifer Recharge Protection Area (ARPA) of up to 65% of a site is included.

Where did the idea come from?

The entirety of Bainbridge Island is designated as a critical aquifer recharge area. The CAO requires designation of an aquifer recharge protection area (ARPA) in the R-0.4, R-1 and R-2 zoning districts. This designation supports the Island-wide Land Use Concept developed for the 2016 Comprehensive Plan:

> Outside of Winslow and the Designated Centers, the Island has a rural appearance with forested areas, meadows, farms and winding, narrow, heavily vegetated roadways. These characteristics represent an important part of the Island's special character that is so highly valued by its residents.
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> As important as preserving Island character is to its residents, of equal importance is the protection of the Island's environmentally sensitive areas. These outlying areas contain much of the Island's sensitive areas – **the major recharge areas for the Island's aquifers,** wetlands and streams that serve a variety of important functions. Much of the area serves as fish and wildlife habitat. There is strong public support to encourage a pattern of development that preserves and protects this portion of the Island. [See Comprehensive Plan Land Use Element, Policy LU 1.2.]

The City's development regulations, including the critical areas ordinance, are required to support and implement the Comprehensive Plan. The purpose and intent of the critical areas ordinance states, in part **(emphasis added)**, "The beneficial functions and values provided by critical areas include, but are not limited to, water quality protection and enhancement, fish and wildlife habitat, food chain support, flood storage, conveyance and attenuation of flood waters, groundwater recharge and discharge, erosion control, wave attenuation, and protection from hazards and the impacts of climate change. **Groundwater recharge is of particular concern for the city because the Island's drinking water is supplied solely by groundwater."**

The ARPA requirement grew out of a review and assessment of the City's adoption of new state stormwater regulations that emphasize the use of Low Impact Development (LID) Best Management Practices (BMPs). A new requirement to designate a Aquifer Recharge Protection Area of up to 65 percent of a site is included in the critical areas ordinance because the City's stormwater regulations allow for "engineered solutions" which may not include any native vegetation retention.

The hydrologic system of our region, and Bainbridge Island, evolved from, and is dependent on, the characteristics of undisturbed Pacific Northwest watersheds – including mature forest canopy and uncompacted soils – and cannot be expected to have the same hydrologic regime when significant portions of a site are disturbed.

Retaining mature native vegetation and soil protection areas is a primary objective for LID in order to maintain the natural hydrological function of the site and watershed and is the most efficient and cost-effective tool for managing stormwater quantity and quality. The LID technical manual for Puget Sound, developed based on empirical data and hydrologic modeling analysis, provides that **a minimum 65 percent on-site native vegetation retention is the best means to maintain or more closely mimic the natural hydrologic function of the site and watershed.** Retaining existing native vegetation will increase the amount of precipitation available for groundwater recharge over the full range of rainfall intensities and durations by increasing stormwater storage, infiltration and dispersion.

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What is it and where does it apply?

The requirement to designate an ARPA is triggered only when development or redevelopment results in greater than 800 square feet of hard surfaces or greater than 7,000 square feet of land disturbing activity. ARPAs are also required for subdivisions and forest practice conversions. These thresholds are tied to the City's stormwater regulations, which require a site assessment review (SAR) at these same levels.

Existing properties do not have an ARPA unless development is proposed. If you are not proposing something meeting the thresholds above, your property does not have a ARPA.

The ARPA includes all existing native vegetation on a site, up to a maximum of 65 percent of the total site area. **A lower percentage may be allowed if needed to achieve a development area of at least 12,500 square feet on a parcel.**

All properties will retain their existing allowable density as determined by the size of the property.

If a site has less than 65 percent native vegetation, then only the existing native vegetation is required to be designated in a ARPA.

The location and configuration of the ARPA is determined through completion of a Site Assessment Review (SAR) **already required by the City's stormwater regulations for projects meeting these thresholds.**

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.

The total area required must be retained once established, but **the location and configuration of the ARPA may change over time.**

Maintenance pruning of trees within the ARPA is allowed without the restrictions in the tree and vegetation section of the critical areas regulations.

Submittal of a ARPA stewardship plan may allow for more extensive use of the ARPA than specified in the regulations.

The ARPA is not a "no-touch" area. A number of uses and activities are allowed in the ARPA, including:

- Tree and vegetation activities specified in BIMC 16.20.090.
- Installation of native plants.
- Removal of invasive plant species.
- Passive recreation, including pervious trails.
- Potable water wells and well houses.
- Low impact fencing or signs marking the ARPA boundary.
- On-site sewage drainfield facilities, if construction of the system will not require the use of heavy equipment or removal of significant trees.
- 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.
- Accessory solar panels, small wind energy generators, composting bins, rainwater harvesting barrels, and cisterns, as defined in Chapter 18.36 BIMC.
- Other structures or hard surfaces with a total footprint of no greater than 200 square feet.
- Driveways may be allowed to pass through the ARPA.
- Removal of any significant tree, other than hazard tree removal, with city review and preapproval of an aquifer recharge protection area stewardship plan.

Any structure or activity is allowed in the ARPA as long as the structure or activity 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.