

Part Two – Critical Areas

Critical Aquifer Recharge Areas

Critical aquifer recharge areas (CARAs) are areas in King County that overlie significant groundwater resources and are particularly susceptible to ground water contamination should pollutants be released on the surface or in the shallow subsurface (such as from a leaking fuel tank, a landfill, or pesticides on a golf course). Significant groundwater resources include those used by public water wells as well as sole-source aquifers. The idea is to control contaminants so that they are not released into the soil to seep into our water supply. Once contaminants are released, they are difficult to contain and remove, and so the intent is to prevent future spills. Another element of CARA is the protection of groundwater recharge; this element is addressed countywide via clearing and grading standards and storm water standards that aim to protect and maximize existing groundwater recharge.

This portion of the code affects mainly new commercial development proposals, but some new residential developments are also affected through new standards applied to septic systems. Septic systems are designed to neutralize human waste through bacterial action which removes nitrates and other contaminants. However, a concentration of septic systems could result in the effluent leaving the drainfields delivering more nitrate to the groundwater than is acceptable for drinking water supply, and this could contaminate the ground water supply and affect nearby water wells.

CARAs are located along many major rivers in King County and along some of the largest tributaries of those rivers. This is due to the abundant groundwater supplies that are close to the land surface in those areas and because those areas have high permeability soils. Vashon and Maury Island are entirely covered by CARAs, but these are a special case with respect to the rest of the county because Vashon and Maury, being isolated islands surrounded by undrinkable salt water, depend exclusively on well water from local recharge for their water supply. It is no stretch to say that if not for clean well water on Vashon and Maury Island, people could not be living there as they are today.

Mapped Areas and Categories

Attached to the ordinance is a map that the county has adopted showing the locations and categories of critical aquifer recharge areas. The CARAs were mapped based on the geology and physical characteristics of the soils in the county, depth to groundwater, and known aquifers and active groundwater supplies. An assessment of the relative sensitivity of the areas led to the classification of CARAs into three categories (numbered I, II, and III), with Category I being the most critical

and Category III the least. Areas of the county that do not fall into any of the three classifications are thought to have low potential for the contamination of groundwater and a low dependence on local groundwater. However, property owners should be aware that groundwater exists essentially everywhere and that all chemical spills, and even the casual home use of cleaners, pesticides and herbicides, may have the potential for some degree of environmental damage if proper protections are not taken.

There are three categories of Critical Aquifer Recharge Areas:

1. **Category I** critical aquifer recharge areas include those mapped areas that King County has determined are highly susceptible to groundwater contamination and that are located within a sole source aquifer or a wellhead protection area.
2. **Category II** critical aquifer recharge areas include those mapped areas that King County has determined:
 - have a medium susceptibility to ground water contamination and are located in a sole source aquifer or a wellhead protection area; or
 - are highly susceptible to ground water contamination and are not located in a sole source aquifer or wellhead protection area.
3. **Category III** critical aquifer recharge areas include those mapped areas that King County has determined have low susceptibility to groundwater contamination and are located over an aquifer underlying an island that is surrounded by saltwater. This includes all of Vashon and Maury Islands that is not either Category I or Category II.

It is possible to contest the classification of a particular property. Upon application for a reclassification supported by a critical areas report that includes a hydrogeologic site evaluation, the county may determine that an area either does not meet the criteria for a critical aquifer recharge area and declassify that area, or has the wrong critical aquifer recharge area classification and determine the correct classification.

The DDES GIS will include a GIS map layer to indicate which parcels are in which categories of CARA. Any reclassifications will also be shown in the coverage. The coverage will be updated whenever the King County Council adopts newer maps of CARA as new information becomes available.

Development Standards and Restrictions

New Developments in Category I Areas

Except as otherwise provided, the following new development proposals and alterations are **not allowed** on a site located in a Category I critical aquifer recharge area:

1. Transmission pipelines carrying petroleum or petroleum products;
2. Sand and gravel, and hard rock mining unless:
 - the site has mineral zoning as of the effective date of this section; or
 - mining is a permitted use on the site and the critical aquifer recharge area was mapped after the date a complete application for mineral extraction on the site was filed with the department;
3. Mining of any type below the upper surface of the saturated ground water that could be used for potable water supply;
4. Disposal of radioactive wastes, as defined in chapter 43.200 RCW;
5. Hydrocarbon extraction;
6. Commercial wood treatment facilities on permeable surfaces;
7. All underground storage tanks, including tanks that are exempt from the requirements of chapter 173 WAC, with hazardous substances, as defined in chapter 70.105 RCW, that do not comply with standards of chapter 173-360 WAC and K.C.C. Title 17;
8. Above-ground storage tanks for hazardous substances, as defined in chapter 70.105 RCW, unless protected with primary and secondary containment areas and a spill protection plan;
9. Golf courses;
10. Cemeteries;
11. Wrecking yards;
12. Landfills for hazardous waste, municipal solid waste or special waste;
13. On lots smaller than one acre, an onsite septic system, unless:
 - the system is approved by the Washington State Department of Health and the system either uses an up flow media filter system or a proprietary packed-bed filter system or is designed to achieve approximately 80 percent total nitrogen removal for typical domestic wastewater; or
 - the Seattle-King County Department of Public Health determines that the systems described above will not function on the site.

New Developments in Category II Areas

Except as otherwise provided the following new development proposals and alterations are **not allowed** on a site located in a Category II critical aquifer recharge area:

1. Mining of any type below the upper surface of the saturated ground water that could be used for potable water supply;
2. Disposal of radioactive wastes, as defined in chapter 43.200 RCW;
3. Hydrocarbon extraction;
4. Commercial wood treatment facilities located on permeable surfaces;
5. A. Except for a Category II critical aquifer recharge area located over an aquifer underlying an island that is surrounded by saltwater (meaning on Vashon and Maury Islands), underground storage tanks with

- hazardous substances, as defined in chapter 70.105 RCW, that do not meet the requirements of chapter 173-360 WAC and K.C.C. Title 17.
- B. For a Category II critical aquifer recharge area on Vashon and Maury Islands, all underground storage tanks, including tanks that are exempt from the requirements of chapter 173 WAC, with hazardous substances, as defined in chapter 70.105 RCW, that do not comply with standards of chapter 173-360 WAC and K.C.C. Title 17.
6. Above-ground storage tanks for hazardous substances, as defined in chapter 70.105 RCW, unless protected with primary and secondary containment areas and a spill protection plan;
 7. Wrecking yards;
 8. Landfills for hazardous waste, municipal solid waste, or special waste;
 9. On lots smaller than one acre, an onsite septic system, unless:
 - the system is approved by the Washington State Department of Health and the system either uses an up flow media filter system or a proprietary packed-bed filter system or is designed to achieve approximately 80 percent total nitrogen removal for typical domestic wastewater; or
 - the Seattle-King County Department of Public Health determines that the systems described above will not function on the site.

New Developments in Category III Areas

Except as otherwise provided the following new development proposals and alterations are **not allowed** on a site located in a Category III critical aquifer recharge area:

1. Disposal of radioactive wastes, as defined in chapter 43.200 RCW;
2. Hydrocarbon extraction;
3. Commercial wood treatment facilities located on permeable surfaces;
4. Underground storage tanks, including tanks that are exempt from the requirements of chapter 173 WAC, with hazardous substances, as defined in chapter 70.105 RCW, that do not comply with standards of chapter 173-360 WAC and K.C.C. Title 17;
5. Above ground storage tanks for hazardous substances, as defined in chapter 70.105 RCW, unless protected with primary and secondary containment areas and a spill protection plan;
6. Wrecking yards; and
7. Landfills for hazardous waste, municipal solid waste, or special waste.

Improvement Proposals for Developments with Existing Underground Storage Tanks

The following standards apply to development proposals and alterations that are substantial improvements on a developed site located in a critical aquifer recharge area:

1. The owner of an underground storage tank, including tanks that are exempt from the requirements of chapter 173 WAC, with hazardous substances, which are located in a Category I or III critical aquifer recharge area or a Category II on Vashon and Maury Islands shall either bring the tank into compliance with standards of chapter 173-360 WAC and K.C.C. Title 17 or properly decommission or remove the tank, and;
2. The owner of an underground storage tank in a Category II critical aquifer recharge area that is not on Vashon and Maury Islands shall bring the tank into compliance with the requirements of chapter 173-360 WAC and K.C.C. Title 17 or shall properly decommission or remove the tank.

Other Provisions

Some other provisions of the CARA restrictions call for water well decommissioning and monitoring as well as instituting best management practices to limit storm water runoff. These include:

1. In any critical aquifer recharge area, property owners shall properly decommission all wells that are abandoned. This may include plugging the abandoned well with an approved inert and impervious substance so that groundwater contamination is not possible in the future. State Department of Ecology regulations describe the requirements for decommissioning in WAC 173-160-381, which is already required by state law.
2. Within the urban growth area, proposals for new residential development shall incorporate best management practices included in the King County Surface Water Design Manual in order to infiltrate storm water runoff to the maximum extent practical.
3. On an island surrounded by saltwater (this applies exclusively to Vashon and Maury Islands), the owner of a new well located within 200 feet of the ordinary high water mark of the marine shoreline shall test the well for chloride levels using testing protocols approved by the Washington State Department of Health. The owner shall report the results of the test to Seattle-King County Department of Public Health (attention Environmental Health Division, Drinking Water Program) and to the Department of Natural Resources and Parks (attention: Water and Land Resources Division, Groundwater Protection Program). If the test results indicate saltwater intrusion is likely to occur (or has occurred), the King County Department of Natural Resources

and Parks, in consultation with Seattle-King County Department of Public Health, shall recommend appropriate measures to prevent saltwater intrusion.

Nonconforming Development Proposals and Future Evaluation

On sites greater than 20 acres, the department may approve development proposals otherwise prohibited by this ordinance if the applicant demonstrates through a critical areas report that the development proposal is located outside the critical aquifer recharge area and that the proposal will not cause a significant adverse environmental impact to the critical aquifer recharge area. King County may also evaluate and implement, as appropriate, ground water management plans and wellhead protection programs to further protect ground water resources. Guidance on these measures will be added to this document as they become available.