

RAINWATER CATCHMENT Topic Paper

Prepared by the Surface Water and Groundwater Subcommittees of the Island County WRAC

Approved by the Island County Water Resource Advisory Committee, 1/8/04

Approved by the Board of Island County Commissioners, 1/21/04

Island County / WRIA 6 Watershed Planning Process

RAINWATER CATCHMENT

Issues

1. Retaining water on a site is considered desirable because it protects or restores the natural hydrology of a building site. Use of retained water on-site will reduce groundwater withdrawals from an aquifer-based water supply. Retaining the stormwater on a building site is at the core of “Low impact Development”. Rainwater catchments are one example of retaining water for beneficial use. However, the use of the retained water for beneficial use, such as irrigation, currently requires a water right permit from the Department of Ecology (DOE).

Under what circumstances can water from rainwater catchments, or cisterns, be applied for non-potable uses without a water right permit?

2. Rainwater catchments are one of the mechanisms used in Low Impact Development (LID). LID runoff control seeks to minimize disturbance of land by reducing the effective impervious cover that would otherwise replace native vegetation.

By recognizing stormwater needs early in site planning activities, construction can plan for and incorporate natural hydrologic functions into the site plan.

3. Health and Building codes strive to avoid human contact with surface water that includes captured rainwater unless it can be reliably treated. Water for non-potable uses such as irrigation may be less of a concern, although local access to irrigation water could also be a health concern.

What are the health or building concerns that should restrict the use of water from cisterns?

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1 **Introduction and Background**

2 3 Rainwater Catchment Definition

5 Rainwater either falls directly on the ground where it can be absorbed given appropriate
6 circumstances, or it falls onto impervious surfaces, where it will run off. The water
7 collected from impervious surfaces, such as roof or footing drains, can be stored in open
8 or closed catchments or cisterns for treatment as appropriate and required. It then can be
9 re-used for potable and non-potable uses, such as human consumption, outdoor irrigation,
10 and “gray water” plumbing. This topic paper focuses on outdoor, non-potable use only.

12 Sole Source Aquifer Protection

14 Use of retained water for on-site irrigation will reduce groundwater withdrawals,
15 especially during peak withdrawal periods during dry summer months. Whidbey and
16 Camano Island residents have an aquifer-based water supply for drinking water. Since
17 more than 50% of Island County residents rely on an aquifer-based water supply, the
18 county is designated with Sole Source Aquifer Status, allowing communities, individuals,
19 and organizations to petition EPA for protection of the groundwater that is the “sole or
20 principle” source of drinking water. While it is not anticipated that any of the current
21 wells will run dry in the immediate future, reduction of groundwater withdrawal is a
22 benefit to Island County residents.

24 Benefits of Water Retention and Infiltration

26 The money savings of water retention and infiltration on a building site are enduring, and
27 are related to building construction, groundwater recharge, and water quality.

29 Building construction requires creating a system to convey rainwater / storm water.
30 Rainwater not directed away from the structure to a planned system can puddle and cause
31 structural settlement, form channels that cause erosion and under some conditions
32 flooding either on or off property. All are highly undesirable.

34 If a rainwater catchment system is constructed, the water can be collected during the wet
35 periods and used during dry and drought periods for landscape irrigation. In this manner,
36 rainwater catchment serves as groundwater conservation, thereby reducing the water
37 demands on a finite supply of water from an individual or community well. It also
38 reduces the building owner’s water costs during the summer when some community
39 systems charge a premium for water usage over the winter indoor average.

41 Regardless of the catchment or storm water system, some water will likely run off the
42 building site. If the water is released more slowly than it falls on a site, the reduced

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1 volume rate will not carry as much sediment or contaminants, and the receiving lake,
2 stream and Puget Sound waters will benefit from higher water quality.
3

4 Current Department of Ecology Requirements

5
6 Rainwater harvesting is practiced worldwide, and a few systems have been built in
7 Washington State. State water codes require a water right permit for any surface water
8 source including captured rainwater that is used beneficially for purposes such as
9 irrigation or household water supply. The water codes apply to rainwater because
10 atmospheric water is defined as the State's water (RCW 43.27A.020). The state water
11 codes do not contain any exemption for small surface water sources.
12

13 Current Island County Health Department Requirements

14
15 Two issues bring the Island County Health Department into the discussion. Public Health
16 concerns over the potable reuse of storm water are strong enough to cause a denial of
17 such use for any indoor purposes. Disinfection alone is not adequate treatment; positive
18 filtration must be also used if the water is for potable purposes. The cost and assumed
19 liability to ensure a properly functioning treatment system exceed the benefits of potable
20 reclaimed rainwater, so the Health Department would not approve catchment water reuse
21 for indoor purposes. San Juan and Kitsap Counties have approved rainwater catchment
22 systems as a source of potable water.
23

24 Current Island County Building Code Requirements

25
26 Currently one can obtain an exemption for 5,000 gallons or less per site for tanks that are
27 supported on or in the ground. The ratio of height to diameter or width must be 2:1 (Sec.
28 106.2.6 of 1997 Uniform Building Code). While non-potable uses of reclaimed water are
29 permitted in commercial buildings, the code is silent on residential, potable uses of
30 reused water. Outdoor uses of reclaimed water are not addressed, and a building site
31 would be limited to the 5,000 gallon tank exemption.
32
33

34 **Issue Discussion**

35 Current Situation

36 Due to the large backlog of water right applications, the goal of obtaining a new and
37 separate water right for individual rainwater harvesting is stymied. However, through the
38 2514 Watershed Planning process Island County can propose new approaches to the
39 regulation of rainwater catchments / cisterns. Department of Ecology has provided advice
40 to watershed planning groups that a general permit could be developed to provide state
41 authorization for a local process that permits individual rainwater harvesting systems.
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1 The Island County Water Resource Advisory Committee (WRAC) is interested in
2 identifying requirements that will make use of rainwater catchments easy for an
3 interested party to implement. The current Island County Drainage Code and the
4 Comprehensive Plan allow for low impact development; WRIA 6's Water Resource
5 Advisory Committee will need to develop requirements for size, use and implementation
6 of this specific LID method. These regulations would then be clarified in the Island
7 County Drainage Manual.

Components of a Department of Ecology General Permit

11 Definition: Rainwater Harvesting Systems are systems that capture the rainwater falling
12 on a man-made impervious surface and conveyed and stored for any beneficial use.

14 Applicability: The general permit would apply to any rainwater harvesting system that
15 captures less than 25,000 gallons of rainwater water annually. The quantity is derived
16 from a chart that calculates the average rainfall from 22 to 32 inches per year, the holding
17 capacity necessary for that amount of rainfall, and the assumption of 21,300 gallons
18 demand for average summer, outdoor irrigation. Larger systems would require an
19 individual water right.

21 Limitation: The general permit will be limited to a certain total annual quantity of
22 rainwater in a hydrologically related area. That is, rainwater harvesting systems could be
23 built under the general permit up to the point where the annual quantity of captured water
24 of all the systems equals a predetermined total annual quantity. That quantity of rainwater
25 capture will be established basin-by-basin, as determined to be safely intercepted and
26 used in the basin of origin without impairing other users or natural systems. Local
27 hydrology will be the basis of the determination, which will be established as the permit
28 application is received, and the determination will be recommended by Island County
29 surface water staff and approved by the WRAC.

31 Reporting and Administration: WRIA 6 will keep a record of volume of water captured
32 through the building permit process and an annual reporting process. The annual report
33 will simply state the system owner's name, location, amount of water stored and estimate
34 of water used. If the system is no longer in use, this will also be stated.

36 Enforcement: Ecology will maintain the ability to enforce provisions of the general
37 permit, but they will rely on Island County for oversight, which will come primarily
38 through the permitting and annual reporting process. Enforcement of a non-functioning
39 system will not be an issue from a functionality standpoint. However, any exposed cistern
40 systems will need to be formally decommissioned to avoid a hazard and potential
41 accident.

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Reasons for Seeking Change

Local change would allow the county to recognize benefits of certain Low Impact Development methods, encourage citizens to implement lower-cost measures of dealing with surface water runoff, and enable the county to consider site-specific soil, steep slope and other conditions during a building permit submittal. Given the groundwater recharge interests of an island community, and the possible contributions of rainwater catchments to groundwater recharge, this regulatory change is a low-risk opportunity to facilitate on-site storage of rainwater, reduce overall drainage infrastructure costs, increase groundwater infiltration, and improve the water quality of storm water runoff.

Options

Option #1: Discourage rainwater catchments during the permitting process. While this “status quo-minus” option does not change the possibilities for rainwater harvesting, discouragement of catchment usage would likely reduce voluntary participation as well.

Option #2: Permit the allowable 5000 gallon cistern, but don’t follow up on dispersal of the water collected. This status quo option will still require an interested party to obtain a DOE water rights permit for any water collection system, while exempting them from a special building permit. Due to the large backlog of water rights applications, interested parties will be discouraged from constructing a collection system. Better than option A, this option does enable folks to establish small-scale rainwater harvesting systems, but it turns a blind eye toward usage of the system, which is of interest to DOE.

Option #3: Seek a change in the state water codes from the legislature. The legislature could amend state law to provide an exemption for the collection of rainwater. This change has been proposed several times in the past years but has never been adopted. A legislative remedy also runs the chance that the terms of a state-wide exemption (i.e. size, type of use) may not fit the needs of Island County.

Option #4: Seek a regulatory remedy from the Department of Ecology. For DOE to establish an independent remedy, they would need to create a process appropriate to the entire state. The same permit components of applicability, limitation, reporting and enforcement would be established. Due to the larger scale of the permit, the time frame for the final implementation is questionable.

Option #5: Seek a regulatory remedy from the WRIA 6 Watershed Planning process. Under this recommendation, the WRAC would recommend that DOE establish the permit parameters (as noted from *page 3, line 27*) for WRIA 6. DOE would develop a permit for WRIA 6 that allowed builders to include rainwater catchment systems for a holding capacity not to exceed 25,000 gallons per site. When this program comes to the local

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1 level for implementation, aesthetics of above-ground tanks will be a concern and should
2 be considered in the permitting process. The Board of Island County Commissioners as
3 part of the 2514 Watershed Plan approval would ultimately approve the recommendation.

4

5 **Recommendation**

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10 WRIA 6 that allowed builders to include rainwater catchment systems for a holding
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12 level for implementation, aesthetics of above-ground tanks will be a concern and should
13 be considered in the permitting process. The Board of Island County Commissioners as
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