

POSITIVE CONSERVATION IDEALS

1. Use drip irrigation, soaker hose systems and root irrigation wherever practical.
2. Use water basin techniques to water plants, shrubs and trees that are more isolated.
3. Routinely water deeply and less frequently.
4. Weed control is an important part of water conservation.
5. Wild bushes, berries and roses as well as excessive scrub trees, consume huge amounts of precipitation. If these plants are not needed for erosion control they should be removed.
6. For your landscaping select drought tolerant plants, shrubs and trees wherever possible and stay away from heavy water consumers.
7. Limit the amount of irrigated lawn. It takes a disproportionate amount of water to be kept green.
8. Mulch your garden as well as isolated plants, trees and shrubs. A heavy bark mulch is excellent for bare ground to help keep weeds under control and conserve water.
9. Use shade and windbreaks to assist in water conservation.
10. Where applicable practical terracing can assist in erosion control and water conservation at the same time.
11. Schedule watering over a number of days to prevent excessive drawdown in your well.
12. Use shut-off nozzles whenever hand watering.
13. Use timers at faucets to control drip and soaker irrigation systems.
14. Limit use of spray watering and sprinklers and certainly not on windy days.

1. Whole house hot water recirculating systems or point-of-use hot water devices save substantial amounts of water.
2. Low flow water closets, shower heads and water conserving dish and clothes washers have all proven themselves more reliable than when first introduced and prices are much more competitive.
3. Dry wells and French drains to handle perimeter drains and downspouts runoff are a vast improvement over a runoff line over the bank and into seawater.
4. Rainwater catchment systems that corral rainwater from manmade surfaces and into storage with a dry well or French drain for overflow protection is a successful way of conserving water for irrigation or even potable water if properly engineered and inspected to meet State and local standards.

Recommendations for Marrowstone Island

Ground water, and to some extent rainfall-catchment systems, provide the only affordable and reliable source of fresh water on Marrowstone Island. Water conservation provides the best (and, essentially, only) means of preventing additional intrusion on the Island. Some measures that would help to decrease or prevent the spread of sea-water intrusion on the island are:

- ❖ Continue educating residents about the importance of efficient water use;
- ❖ Require that water-conserving devices such as low-volume toilets and plumbing fixtures be installed during construction of new residences, or during ownership changes of existing residences;
- ❖ Condition building permits for new residential construction to limit ground-water use to potable in-house uses only. Encourage residents to use alternative water sources such as rainfall collection systems and cisterns to supplement water needs;
- ❖ Through the building permit process, require that existing residences be retrofitted with water conserving toilets and fixtures when they are remodeled;
- ❖ Develop incentive programs to encourage residents to retrofit established residences with water conserving toilets and fixtures and to redesign outdoor watering systems to minimize water use;
- ❖ Educate residents about methods to eliminate waste of potential ground-water recharge. For example, currently there are numerous pipes that divert roof runoff or wetland waters directly to the sea. Roof runoff could possibly be piped to inland detention basins or dry wells to supplement recharge;
- ❖ Wetlands should not be drained since they may play an important role in the recharge of Marrowstone Island aquifers;
- ❖ Require full inorganic analyses of water samples from newly constructed wells. This information will reveal areas of incipient intrusion where chloride concentrations may still be relatively low;
- ❖ Enlist a group of Island residents to periodically monitor water levels in selected wells, to gain more data on the island's seasonal and long-term ground-water-level fluctuations. The wells should be equipped with totalizing flow meters to enable concurrent tracking of water use. In selecting wells for monitoring, care should be taken to choose wells that show little tidal influence. Tidal influence on each monitoring well should be carefully quantified so correction factors can be developed. Long-term water-level and water-use monitoring will help to detect whether ground-water use is exceeding recharge. If possible, the land-surface elevations for these wells should be surveyed to allow one to interpret the direction of ground-water flow and the relative distribution of head in the island's aquifers;
- ❖ Enlist a group of island residents to expand the precipitation monitoring network. Such information is necessary to better define aquifer recharge patterns and to interpret ground-water level information;
- ❖ Re-sample the wells monitored during this and previous USGS studies at least once every 2-3 years for chlorides. We recommend that the sampling be done during June to be comparable to previously collected data for these wells.

Summary and Conclusions

FROM DOE, Geology, Water Resources &
Seawater intrusion assessment of
Marrowstone Island, Jefferson Co, Wash.
12.1

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WATER CONSERVATION MEASURES LIST

1. Roof and other intercepted precipitation shall be routed to on-site detention ponds and/or other approved means and allowed to be released to the soil slowly.
2. Water collected from storm water and roof catchments may be used for watering lawns and gardens. Unless catchments water has been treated to meet drinking water standards, there shall be no cross connections allowed between the potable supply and impounded water.
3. Water withdrawn from wells on each property shall not be used for watering of lawns and/or gardens.
4. Ground water withdrawn from each property shall be restricted to a rate of three (3) gallons per minute.
5. Installation of water conserving fixtures such as low flow toilets, faucets and shower restrictors and other water saving plumbing fixtures.
6. Landscaping plan (xeriscaping, native vegetation with minimal amounts of irrigation).

PLEASE NOTE:

**THIS IS A WORK IN PROGRESS LIST
AND MAY HAVE ADDITIONS / DELETIONS MADE AT ANY TIME.**

USE CURRENT LIST