

Introduction to Rainwater Capture

- Given the recent deluges, some Nicasio residents might be wondering how to capture future rainfall and store it on their property for drier times of the year.
- This document offers some suggestions, using slides from a rainwater expert who recently designed a home system in Nicasio. The system pipes water from rooftop to underground storage to landscape and a pool. That water could also have been piped indoors and heated for laundry.

Nicasio Rainwater Capture

As you can see from the following slides, designing and installing a rainwater capture system is not a simple process. It can require obtaining the assistance of a licensed engineer experienced in designing such systems; complying with County and State regulations; installing plumbing, and bulky and not particularly attractive storage tanks; and potentially spending a substantial amount of money. However, designing and installing a more modest system will have many water conservation/fire-fighting benefits and should be within the affordable range for many Nicasio property owners.

Definitions

Rainwater:

Rainwater collected from roof surfaces or other impervious manmade, above-ground collection surfaces

Graywater:

*Includes wastewater from bathtubs, showers, bathroom washbasin, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks, dishwashers, or toilets. **Graywater will be addressed in a future document.***

Other Alternate Nonpotable Water Sources:

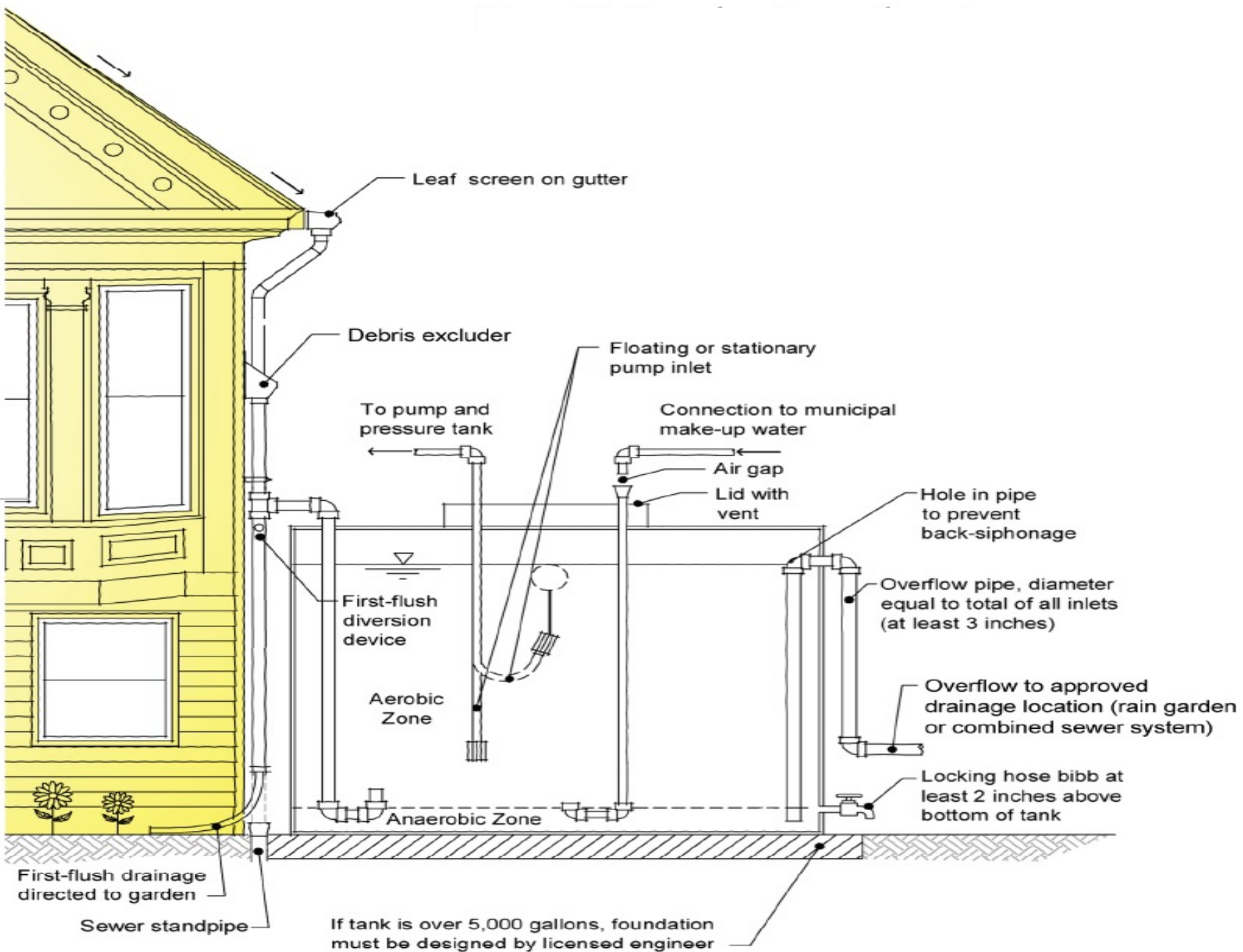
Surface runoff, shallow groundwater, foundation drains, recycled water

Residential Uses of Rainwater

- ❖ *Car Washing*
- ❖ *Irrigation*
 - *Surface, subsurface & drip irrigation*
 - *Spray irrigation*
 - *Maintaining water levels in swimming pools, ornamental fountains & other water features*
- ❖ *Clothes washing (requires treatment and heating of this water before piping it into washing machines)*
- ❖ *Fire suppression*
- ❖ *Toilet Flushing*

Components of Rainwater System

- ❖ *Roof Catchment Area and Gutter System*
- ❖ *Debris Excluder*
- ❖ *First-flush Bypass (optional)*
- ❖ *Storage Tank (Cistern)*
 - *Overflow Provisions*
 - *Access and security*
 - *Secondary filtration*
 - *Potable water make-up (optional)*
- ❖ *Treatment , if needed . Distribution – gravity or pumping*
- ❖ *O&M Plan*
- ❖ *Signage and Safety*
- ❖ *Homeowners should consult an engineer for advice on how to construct and operate any rainwater system.*



Leaf screen on gutter

Debris excluder

Floating or stationary pump inlet

To pump and pressure tank

Connection to municipal make-up water

Air gap

Lid with vent

Hole in pipe to prevent back-siphonage

First-flush diversion device

Overflow pipe, diameter equal to total of all inlets (at least 3 inches)

Aerobic Zone

Overflow to approved drainage location (rain garden or combined sewer system)

Anaerobic Zone

Locking hose bibb at least 2 inches above bottom of tank

First-flush drainage directed to garden

Sewer standpipe

If tank is over 5,000 gallons, foundation must be designed by licensed engineer





Rainwater system completed by Dig Cooperative for the Oakland Rain Barrel Program.



Debris Excluder – 1/16” Mesh



Rainwater harvesting system at local residence



BlueBarrel Rainwater Catchment Systems (Napa)

Permit Not Required For:

- ❖ *Outdoor non-spray irrigation uses*
- ❖ *Outdoor spray irrigation using water from a tank with max storage capacity of 360 gallons*
- ❖ *Storage tanks that are:*
 - *<5,000 gallons*
 - *supported entirely on grade*
 - *No electrical power required for operation*
 - *No connection to potable water supply for make-up water*

Applicable Regulations

California Plumbing Code (CPC)

- ❖ *Title 16. Nonpotable Rainwater Catchment Systems*

Marin County Ordinance Code 18.06

- ❖ *No specific requirements for rainwater catchment*

Useful Resources

[Homeowners Guide To Stormwater Management \(San Anselmo\)](#)

[Watershed Progressives](#)

Residential Nonpotable Water Reuse

Rainwater Catchment
&
Graywater Irrigation

Norman Hantzsche, PE
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