

Stream, River and Bay-Friendly Homes

2018 Land & Water Conservation Summit

Presenters:

Alicia Lehrer, Executive Director, WRWC

Sara Churgin, District Manager, ERICD

Bob McMahon, Superintendent of Providence Parks (Retired)



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What We'll Cover

- Why make homes more stream, river and bay-friendly?
- Who is our target audience?
- How do we reach them?
- How do we select project sites?
- What are some of the practices we use to retrofit homes?
- Can signage create future demand?



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Why Retrofit Homes?



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Why Retrofit Homes?

- OPPORTUNITY: In medium to densely populated neighborhoods, homes = 60 to 100% impervious cover
 - ✓ Small projects everywhere work better than large end of pipe projects
- Runoff from roofs, driveways and walkways
 - ✓ Carries pollution to the nearest water body
 - ✓ Taxes overworked and often old storm & sewer systems
 - ✓ Causes flashy floods – too much water, too fast
 - ✓ Bypasses natural hydrology – moves water far from where it falls



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Who is Our Target Audience?

- Middle class homeowners – most likely participants
 - ✓ They can commit and sign an agreement
 - ✓ They want to do the right thing for their local water bodies
 - ✓ They “keep up with the Joneses”
 - ✓ They generally have time and possibly a little money to invest

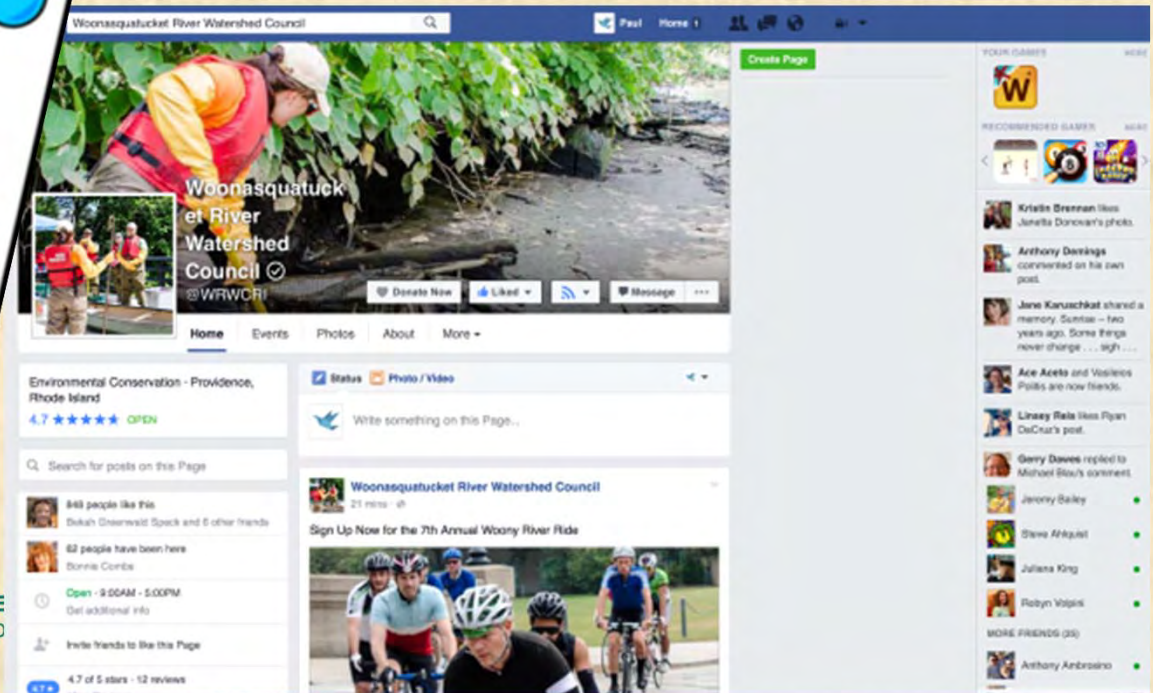


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How Do We Reach Them?

1. Partner w/ local council person on a public meeting
2. Door Hangers/Flyers
3. Facebook/Nextdoor posts



ERICD's Flyer

EFFECTS OF STORMWATER IN RESIDENTIAL NEIGHBORHOODS



Many of us have fond childhood memories of puddle-stomping or dancing in the rain. But as we get older, we lose that wistful sense of enjoyment. Instead, rain is often considered a nuisance and a source of discomfort whether we find ourselves commuting to work or forgetting our umbrellas at home. However, we rarely think about the logistics of rainstorms. Where does all that water go? What happens to the rain that hits a parking lot, a roof, or some other man-made structure? ***Stormwater is where things start getting dicey!***

May 16, 2017 5:30

THE EASTERN RI CONSERVATION DISTRICT
(Partner in the Green Infrastructure Coalition)
RSVP schurgin.ericd@gmail.com/401-934-0842

Middletown Fire Dept Community Room

239 Wyatt Road



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Public Meetings – Great Education Op



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Pleasant Valley Stream Project
Making happy water - a neighborhood project



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Project Overview



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GREEN INFRASTRUCTURE
COALITION



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Components

- 1. Tree filters**
- 2. Homeowner surveys**
- 3. Making stream-friendly homes**
- 4. Stream planting**
- 5. Dog-poop collection stations**
- 6. Signs**



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Home owner surveys

Roof storm water directed to driveway to street

Roof storm water directed into underground pipe that connects to city storm sewer which then flows into PV stream



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Home Owner Surveys



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Home owner surveys

- Visit 300 homes
- Goal is to get 100 surveys completed
- Call for volunteers to conduct the surveys



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ERICD Used This Flyer & Survey Monkey (handout)



Welcome to the Aquidneck Island Bay Friendly Homes Campaign!

Polluted stormwater runoff is unhealthy for our communities on Aquidneck Island. The Rhode Island Green Infrastructure Coalition has a solution and is very happy to invite our coalition members on Aquidneck Island to join our efforts to improve drinking water and the waters of our Narragansett Bay. We want the Aquidneck Island Community to plant rain gardens, use rain barrels, create pervious surfaces, and find other ways to soak up the rain to protect and restore clean water in our local bays, neighborhood streams, and estuaries. We are specifically looking for locations that demonstrate connectivity to the watershed's impaired waters, such as Bailey's Brook, Maidford River and Paradise Brook. We are also looking for projects that will be visible to the public.



Eastern Rhode Island Conservation is a member of [The Green Infrastructure Coalition](#). The Coalition [includes as partners](#) not-for-profit organizations, architects, designers, builders, city planners and other officials, who work together to promote and construct pathways for rainwater, melting snow, and other run-off to avoid pavement and infiltrate earth.

With the generous support of the van Beuren Foundation, the Green Infrastructure Coalition is offering **homeowner grants** this year to make improvements to your property that will use natural and artificial components to "soften" the urban hard structures; to provide climate-change resilience, shade, oxygen, air-quality improvement, and to infiltrate stormwater into the ground.

We are reaching out to our members in Newport, Middletown and Portsmouth across the Aquidneck Island watershed to join our campaign. This is an opportunity to improve your neighborhood, increase your property values and make a positive impact on your environment and the water quality of the Bay.

Support for installing rain barrels, rain gardens and permeable pavement are just some of the projects that are being funded in this residential program. You can manage runoff and add color and character to your property at the same time.

How can I participate in this residential stormwater management program?

It's very easy!

Step 1: Take our simple on-line survey. (<https://www.surveymonkey.com/r/AIstormwater>) By completing the survey, the Rhode Island Green Infrastructure Coalition will learn about your interest in managing stormwater runoff on your property.

Step 2: Invite us to visit your property so we can talk about the possible improvements the can be made. This program is completely voluntary and non-regulatory.

Step 3: Apply for a grant to get started this Spring on managing pollution that maybe running into our drinking water and the Narragansett Bay. Grants can be used to install rain barrels, plant rain gardens and together we can begin to soak up the rain and make a difference in our communities.

Clean water on Aquidneck Island starts with you! Green infrastructure solutions create a clean, healthy community. Join us and be part of the solution for clean water.

- 40 Responses after 1 Week!
- Follow-up with Calls



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How Do We Select Project Sites?

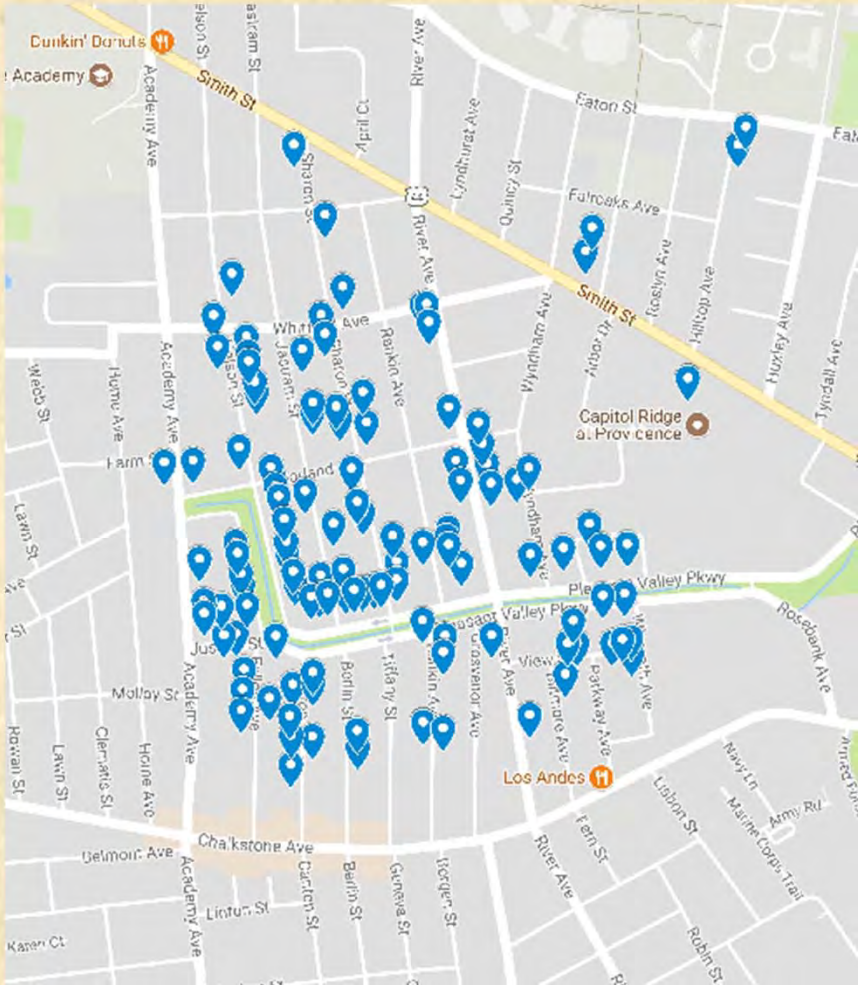
- Interest – People Who Indicated Strongest Interest
 - ✓ Willing to Commit
 - ✓ So Eager They Might Consider Paying for All or Part of Costs
 - ✓ Okay With Allowing People to Tour Project
- Location – Visibility
- Sites Allow for Diversity of Projects



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Initial Results from PVP Surveys



Home owner surveys

- Visited 130 homes
- Completed 130 surveys Used neighborhood
- Volunteers conducted surveys
- We selected top 20 based on selection criteria to follow up



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Following Up w/ Homeowners

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PLEASANT VALLEY STREAM STORM WATER MANAGEMENT

HOME ADDRESS: XXXX
HOME OWNER: XXXX

CONTACT INFO: XXXX

SITE PHOTO(S)



ISSUE: Prevent five existing downspouts' storm water flowing into stand pipes into street storm sewer and into Pleasant Valley Stream

PROPOSAL: a) Disconnect two front downspouts from stand pipes and divert downspout water into adjacent new garden areas; b) install planter boxes for two rear downspouts; c) install small area of permeable pavers for garage downspout.

SITE ASSESSMENT: Review with homeowner proposal; determine how each of the downspouts that can be diverted.

DEVELOP SPECIFIC DIVERSION TECHNIQUE FOR EACH DOWNSPOUT

REVIEW PLANS WITH HOMEOWNER

SIGN HOMEOWNER AGREEMENT

MEET WITH BOB/KATE AND DEVELOP MATERIALS LIST

INSTALLATION PLAN: WHO AND WHEN



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What are some of the practices we use to retrofit homes?

- Rain Barrels
- Downspout Diversions
- Rain Gardens
- Rain Boxes
- Permeable Pavers
- Rock Infiltration Gardens



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Making happy water - a neighborhood project



Rain barrels

PVS – 24 Participants
“Making your ‘own’ workshop”



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Make Your Own Workshop



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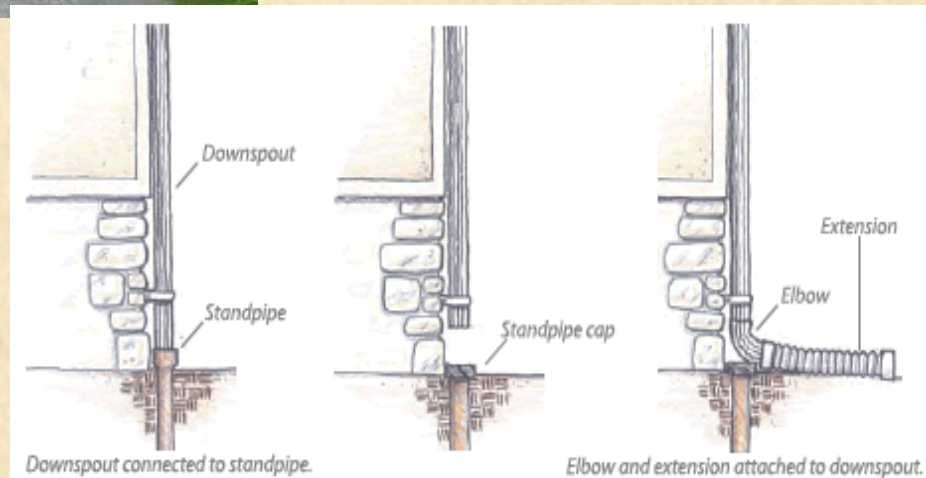
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Downspout diversions



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Rain Gardens & Rain Boxes



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Permeable Pavers



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Rock infiltration gardens



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Our Plan for Pleasant Valley Parkway



Nature at Work

- Rain Boxes (Green circle)
- Rain Gardens (Yellow circle)
- Down Spout Diversion (Red circle)
- Permeable Pavers (Blue circle)



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Practices in the Field



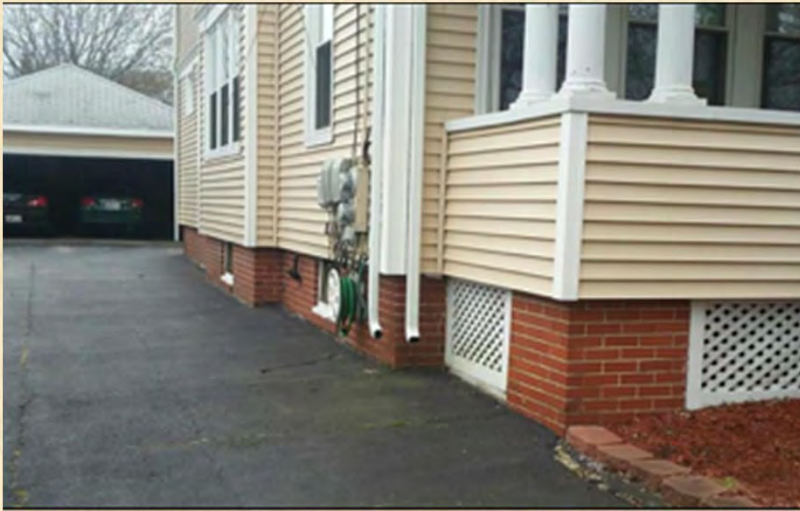
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Downspout Diversions

"Stream Unfriendly" Downspouts



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Creating “Stream Friendly” Downspouts

Residential Retrofit in PVS Demo Area

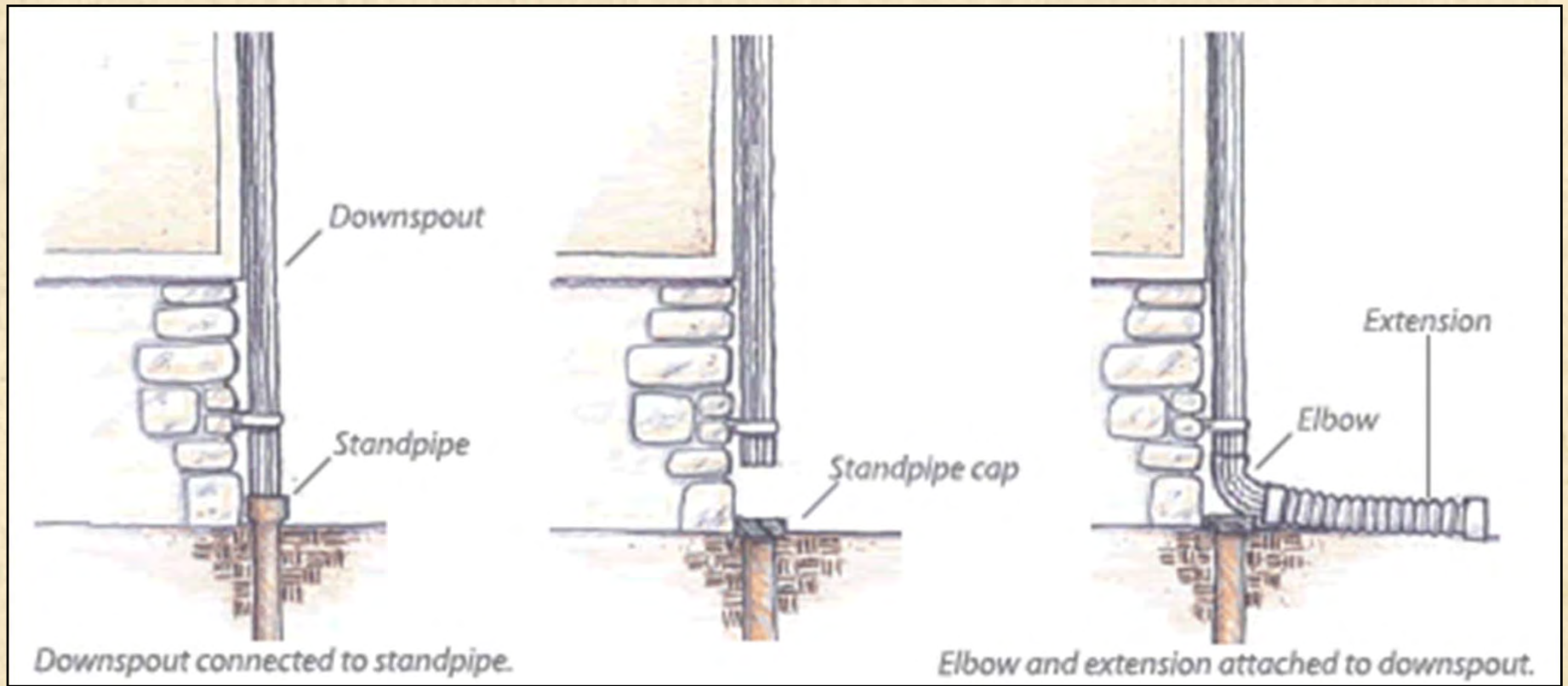
1. Diversion into Existing Landscape Areas
2. Diversion into New Rain Garden Areas
3. Diversion into Rain Barrels
4. Diversion into Planter Boxes
5. Diversion into Permeable Pavers



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1. Downspout Diversion into Existing Landscape Area: Overview



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1. Downspout Diversion into Existing Landscape Area: Example A



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What About the Standpipe Opening?



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1. Downspout Diversion into Existing Landscape Area: Example B



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Another Standpipe Plug Challenge



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2. Downspout Diversion into New Rain Garden Area



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Rain Gardens: Pleasant Valley Demo Sites



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Rain Garden Considerations

- **Yard Suitability**
- **Location**
- **Size**
- **Design**

- **Plant Selection**
- **Planting Season**
- **Installation**
- **Maintenance**
- **Cost: Install & Maint.**



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3. Downspout Diversion into Rain Barrels

Why Rain Barrels?

- Water conservation/water for plants
- Storm water management for downspouts that are difficult to divert to landscape areas
- “Gateway Jug”



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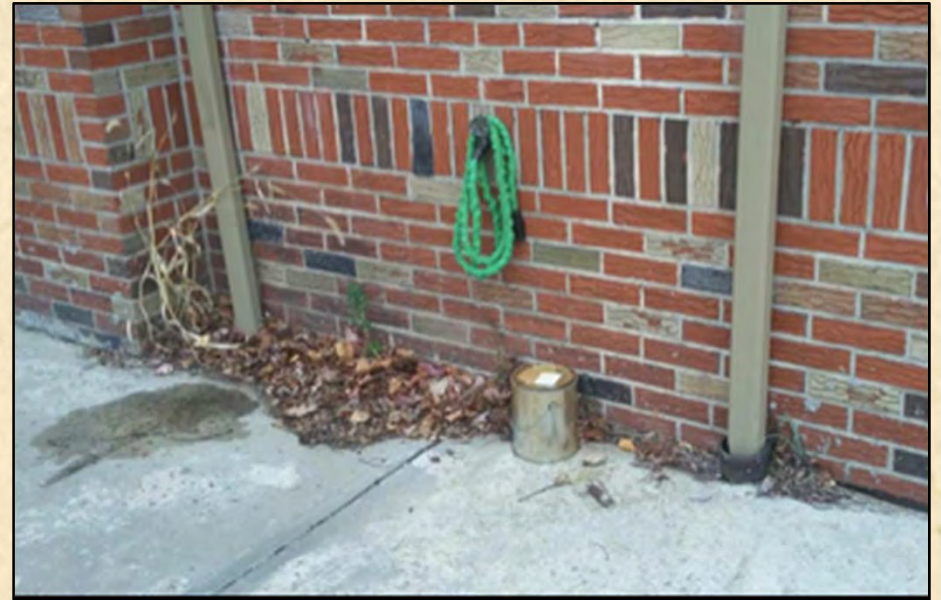


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Typical Rain Barrel Candidate Sites



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Rain Barrel Considerations



- Rain Barrels easy to install
- Local supplier: RI Water Lady
- Downspout diverter source: Amazon
- Need firm surface underneath
- Rain barrels can be linked
- Typical Total Cost/unit: \$120
- Need to be winterized/off line 3+ months/year
- **Best results if you build install into program**



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4. Downspout Diversion into Planter Boxes

Why Planter Boxes?

- Water conservation/water for plants
- Storm water management for downspouts that are difficult to divert to landscape areas
- Adds an aesthetic element to your landscape

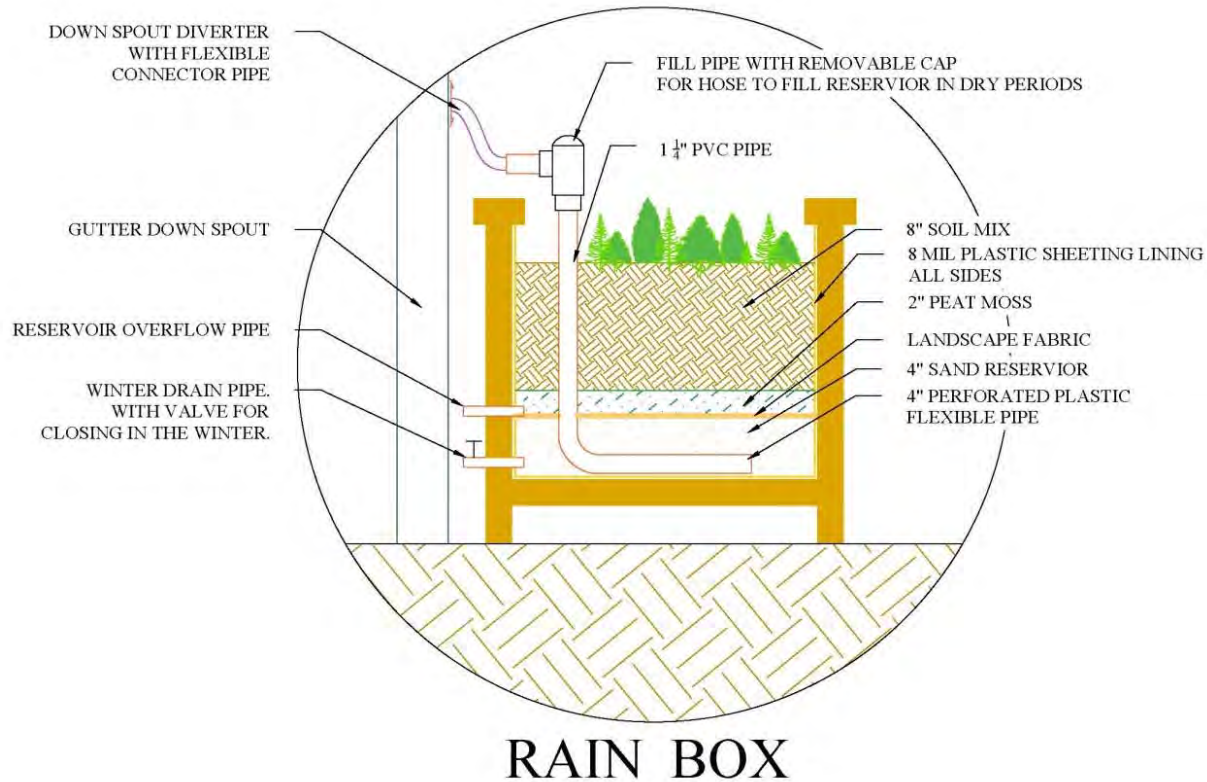


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Design for a Self-Irrigating Planter Box (Rain Box)



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Example Installation of a Self-Irrigating Planter Box



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Example Installation of a Self-Irrigating Planter Box



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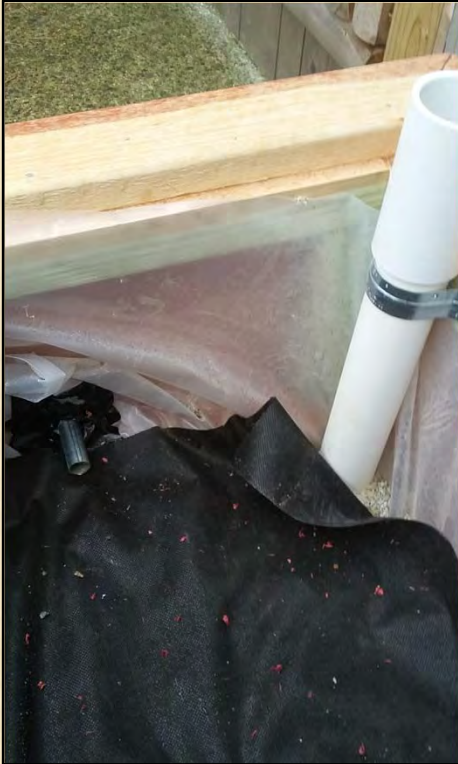


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Example Installation of a Self-Irrigating Planter Box



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Example Installation of a Self-Irrigating Planter Box



Self-Irrigating Planter Box Costs

(For a 3' x 3' x 2' Planter)

• Plastic sheeting	\$ 2
• PVC parts, flexible perforated pipe	\$ 16
• Landscape fabric	\$ 2
• Sand	\$ 4
• Peat moss	\$ 4
• Soil	\$ 7
• Downspout diverter	<u>\$ 25</u>
Subtotal	\$ 60
Garden Shop Planter	<u>\$40-60</u>
TOTAL	\$100-\$120



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5. Downspout Diversion into Permeable Pavers

Why Permeable Pavers?

- Storm water management for “non-point” impermeable surfaces, such as driveways and sidewalks.
- Storm water management for “point source” downspouts where diversion to a landscape area is not possible.



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5. Downspout Diversion into Permeable Pavers: Example A



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5. Downspout Diversion into Permeable Pavers: Example A



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5. Downspout Diversion into Permeable Pavers: Example A



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5. Downspout Diversion into Permeable Pavers: Example A



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5. Downspout Diversion into Permeable Pavers: Example A



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5. Downspout Diversion into Permeable Pavers: Example B



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5. Downspout Diversion into Permeable Pavers: Example B

Do-it-yourself ?

Tools

- Concrete cutting saw rental; or contractor cuts concrete
- Shovel and wheelbarrow to remove concrete
- Tape measure
- Rubber mallet
- Level
- Rake
- Vibratory compactor rental
- Broom
- Hose

Materials

- Pavers
- Sand
- 1/8" aggregate

Permeable Paver Installation Costs (20 sf. job)

Contractor

Contractor does the entire job:

\$18-20/sf.

Homeowner

Homeowner does the whole job

- Materials—pavers, sand, aggregate \$5.00/sf.
- Concrete cutting saw rental (1/2 day) \$2.20/sf.
- Vibratory compactor rental (1 day) \$3.75/sf.

Total **\$10.95/sf.**



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Can Signage Create Future Demand?

**Pleasant Valley
Stream-Friendly Home**

**Nature
at
Work**

for more info, visit wrwc.org

Rain Barrel

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The Nature Conservancy
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We Think So. Wouldn't You Want To Be Them?

Pleasant Valley Stream-Friendly Home

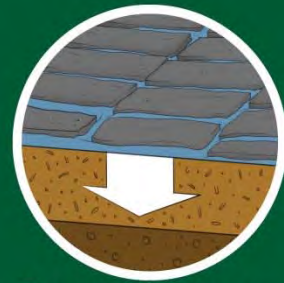
for more info, visit wrrwc.org



Rain Box



Rain Garden



Permeable Pavers



Downspout Redirect



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