

Rain Gardens

The key to managing stormwater and protecting Puget Sound

And Low Impact Development Success



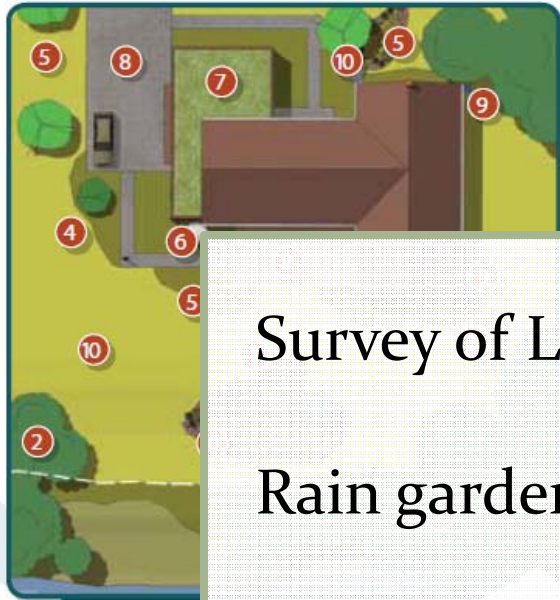
Green Gardening

Puget Sound
Starts Here

It Is Everyone's Job



Rain Gardens and Low Impact Development



- 1 Rain Garden
- 2 Preserve Existing Trees
- 3 Compost
- 4 Natural Lawn (No Pesticides or Fertilizers)
- 5 Retain/Restore Native Plantings as Lawn Alternatives
- 6 Rainwater Harvesting/Cisterns
- 7 Green Roofs
- 8 Permeable Pavement
- 9 Splash Blocks for Roof Downspouts
- 10 Soil Amendments

Survey of LID rebate programs in Puget Sound

Rain gardens clusters as an outreach tool

Rain Water Harvesting

Rain Garden Handbook for Western WA

LID Rebate Programs in Puget Sound

Success – Number of programs is increasing

Jurisdiction	Rebate
Olympia, Tumwater, Lacey, Thurston Cty	\$400 rain garden; stormwater fee reduction
City of Tacoma (retooling program)	\$2000 rain garden; stormwater fee reduction
Puyallup	\$7500 pervious pavers; \$1000 rain garden
Kitsap County	\$1000 rain garden and menu of LID practices
Shoreline	\$1600 rain garden; conservation landscaping
Lake Forest Park	\$1000 residential RG; \$2000 community RG
Bellingham	\$6000 rain garden Lake Whatcom area
Port Angeles	\$750 rain garden; \$150 disconnect downspouts
Everett	\$2500 rain garden, North Everett areas
Kirkland	Residential pilot with menu of LID practices
Seattle/King County	RainWise \$4500; rain garden and cisterns

Rain Gardens in Clusters



Success

- Inspires community building
- Uses resources efficiently
- Measurable stormwater impact
- Models are installed to scale
- Leverages other programs
- Creates partnerships

Puyallup rain gardens



8th Ave NW Puyallup



7 rain garden cluster in 2009; live radio show Gardening with Ciscoe
Cover story in This Old House Magazine; King 5 News coverage
13 rain gardens added 2010-2012; PSE energy campaign
Green Street completed in 2013; 11 roadside rain gardens

8th Ave NW Puyallup

Stewardship Partners and Puget Sound Energy present SUSTAINABLE NEIGHBORHOODS

FREE RAIN GARDENS

8th Ave homeowners are eligible for free rain gardens through a generous grant from The Russell Family Foundation. Rain gardens soak up polluted runoff from downspouts, driveways, and sidewalks, while protecting our local waterways. These rain garden installations are provided at no cost to the homeowner given the following criteria:

- Live on **8th Ave NW** (see map)
- Maintain the garden for 5 years
- Gardens visible from street
- Well draining soil



To learn more about free rain gardens please call (206) 292-9875 or visit www.StewardshipPartners.org

Visit the seven rain gardens installed on 8th Ave NW back in August of 2009.



FREE ENERGY ASSESSMENT

Want to save money on your energy bill? Puget Sound Energy's HomePrint™ Assessment is a free overview of your home's energy use. Provided by an independent PSE-Qualified Specialist, this in-home service will provide you with a better understanding of your home's basic energy consumption, and cost-effective ways to use less energy. You will receive:

- Helpful energy efficiency tips
- Free compact fluorescent light bulbs
- Info on PSE energy-efficient product rebates
- Info on contractor referrals

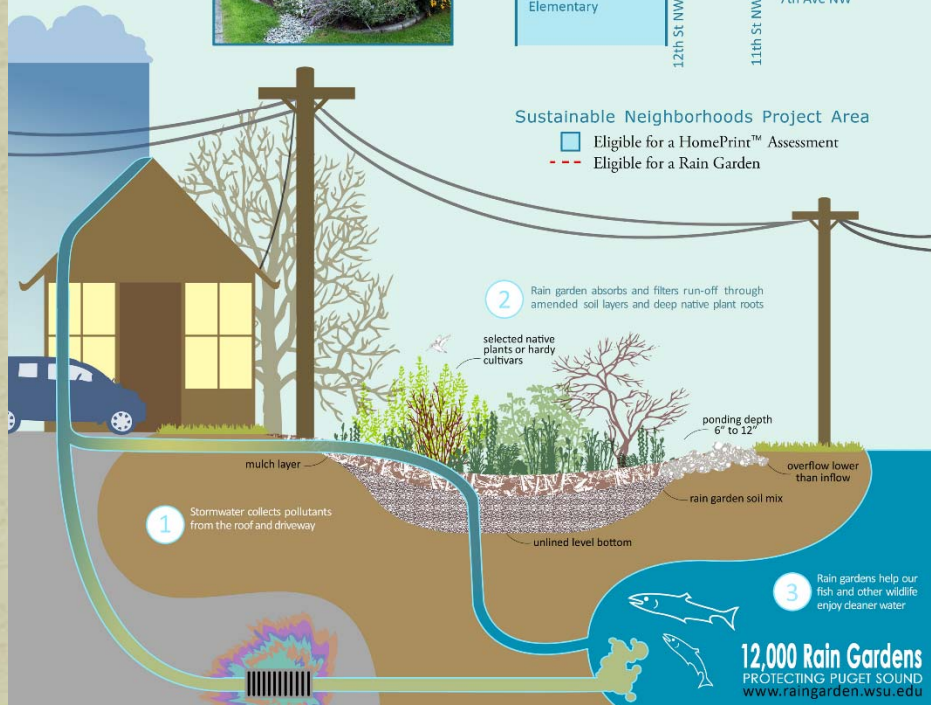


To schedule a HomePrint™ Assessment please call 1 (800) 562-1482 or visit www.PSE.com/HomePrint



Sustainable Neighborhoods Project Area

- Eligible for a HomePrint™ Assessment
- - - Eligible for a Rain Garden



City of Puyallup

Rain Garden Project

1000 Block of 8th Ave NW
Puyallup, WA 98371
Sat & Sun Aug 15/16, Sat Aug 22*
9:30am - 4:30pm

Please RSVP at (253) 845-2973 or streamteam@piercesoundcd.org

Presented by

STEWARDSHIP PARTNERS



Helping Landowners Preserve the Environment

WSU Native Plant Salvage Project



Thank You Partners & Sponsors



City of Puyallup



KIRO



LeMay Inc.



Lowe's



Pierce Stream Team



Puyallup River Watershed Council



Waste Connections Inc.

***Gardening with Ciscoe**
Live Broadcast
Saturday, Aug 22
10 am - 1 pm!



8th Ave NW Puyallup



8th Ave NW Puyallup



8th Ave NW Green Street

Before



After



8th Ave NW Green Street-- By The Numbers



Porous Asphalt
Roadway



25' wide, 630' long

Permeable Paver
Sidewalk



5' wide, 620' long

Pervious Concrete
Sidewalk



4' wide, 620' long

8th Ave NW – Before



8th Ave Green Street – After



8th Ave Green Street – After



Eatonville – The Rain Garden Capital



37 rain gardens in multiple clusters 2009 - 2014

High per capita concentration: Rain Garden Capital

Partnerships between several agencies and Town

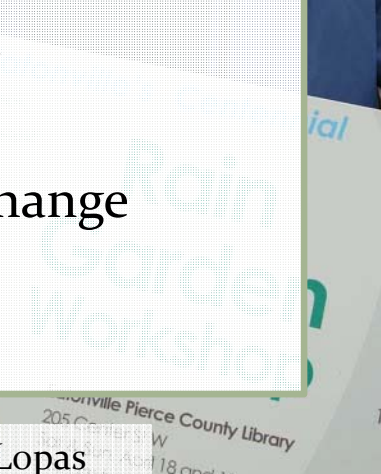
PBS documentary series “Long Live the Kings”

NY Times cover story on adapting to climate change

LID centric comprehensive stormwater plan

10 rain garden cluster along Orchard Ave

Ciscoe Morris and Myrna Lopas



Town of Eatonville Library



PBS – Long Live the Kings



Filming rain garden construction and planting



NAPA Auto Parts store rain gardens

Eatonville Stormwater Plan

TOWN OF EATONVILLE

Comprehensive Stormwater Plan Update

October 2013



Partnership between Town and Nisqually Tribe

Updated draft 2003 plan with EPA \$\$ to Tribes

LID focused and prioritized capital projects list

Outreach and education campaign; partnership matrix

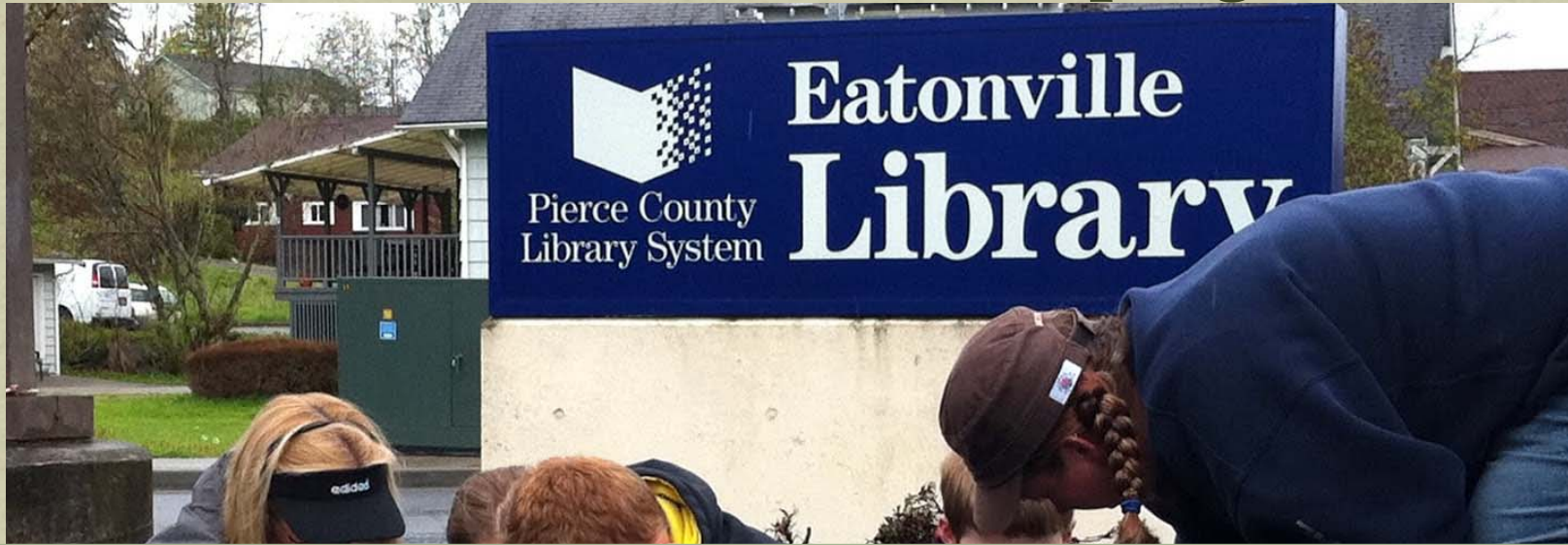
Increased stormwater rates and charges for maintenance

Capital program entirely grant funded; grant matrix

Prepared by AHBL



Stormwater Plan Campaign



Educates and inspires residents to change behavior

Creates opportunities for all Eatonville residents to participate

Informs and attracts outside investors and partnerships

Completes the funding and implements the capital and programmatic elements

Stormwater Plan Campaign

Table 8-2: 5 Year Campaign Schedule

Campaign Activity and Resources	Lead (L) and Supporting (S) Partners	Notes
Year 1: 1st Quarter		
Develop detailed campaign implementation plan - annual updates	L-Town; S-NRF	Utilize outline and shape according to anticipated resources. Create detailed plan for 1st year and placeholders for rest. NRF, Nisqually River Foundation
Press release and announcements of Plan and Campaign	L-Town; S-NRF, PCD	Announce 2-year NRF Rain Garden Program; Borrow from Puget Sound Starts Here (PSSH) Pierce ECO Net and other campaigns; mailers in utility bills to all rate payers; in depth Eatonville Dispatch news story
Assess grant and partnership opportunities	L-Town; S- NRF, Advisory	Regularly attend Nisqually River Council Meetings - brief on Plan and Campaign
NRF Rain Garden design efforts underway	L-NRF	Establish rain garden locations and working, rain garden design with students, recruiting business owners
Grant applications	L-Town, NRF	National Estuary Program, The Russell Family Foundation, Boeing Corporation
Year 1: 2nd Quarter		
Submit capital projects to 3-year HWS	L-Town; S-NRD	NRD, or Natural Resources Division, Habitat Work Schedule, or HWS
Prepare Town Council for Pierce Conservation District (PCD) Resolution	L-Town; S-PCD	
Establish advisory committee	L- Town; S-NRF	Broad representation to guide Campaign and Plan
Develop media tools	L-NRF; S-Town	FaceBook, Twitter, website Update, campaign brochure, event templates and slide presentation
NRF Rain Garden design efforts underway	L-NRF	Outreach to school district and Eatonville residents continues
Nisqually Streams Stewards Events	L-NRD; S-NRF	Rain garden maintenance event or related

Stormwater Plan Collaboration

Table 8-1: Collaboration and Partnership Opportunities

Organization	Program	Type	Web Site Address	Contact Info	Notes
Nisqually Tribe	Lead Entity for Salmon Recovery	Tribal	http://www.nisqually-nsn.gov	Cynthia Iyall, Tribal Chair, 360.456.5221	Charitable Fund proponent; Advocacy for Plan and Campaign
Nisqually Tribe Natural Resources	Salmon Recovery Technical Support to Tribe	Tribal	http://www.nisqually-nsn.gov/content/natural-resources	David Troutt, Director, 360.456.5221 x2134	Advocacy and resource support for Plan and Campaign implementation; Nisqually Stream Stewards support to outreach and education
Nisqually River Council (NRC)	Nisqually River Stewardship	NGO	http://nisquallyriver.org	Ashley Von Essen, Nisqually River Council Program Coordinator, 360.438.8715	Advocacy for Plan and Campaign; Eatonville has seat on the Council
Nisqually River Foundation (NRF)	Support to NRC	NonProfit	http://nisquallyriver.org/who-we-are/nisqually-river-foundation/	Justin Hall, Executive Director, NRF, 360.438.8715	Grant funding support; River Education Project; Advocacy for Plan and Campaign; Representation on Alliance for Healthy South Sound
Nisqually Land Trust	Natural Resource Conservation	NonProfit	http://www.nisquallylandtrust.org/	Joe Kane, Executive Director, 360.489.3400	Land acquisition in Eatonville; potential stormwater infiltration areas; Advocacy for Plan and Campaign
Stewardship Partners	Natural Resource Conservation	NonProfit	http://www.stewardshippartners.org/	David Burger, Executive Director, 206.292.9875	Advocacy for Plan and Campaign; funding for rain garden construction, outreach and education
WSU Extension	LID Education	University	http://puyallup.wsu.edu/stormwater/	Curtis Hinman, Director, 253.445.4590	Outreach and education support; Pierce County WSU Extension; Advocacy for Plan and Campaign
Pierce Conservation District	Natural Resource Conservation	Special Purpose District	http://www.piercecountycd.org/funding.html	Ryan Mello, Executive Director, 253.845.9770 x107	Green Partnership Fund; staff support to outreach and education for Campaign; outside grant support
Pierce County SWM	NPDES Management	County	http://www.co.pierce.wa.us/index.aspx?NID=1595	Harold Smelt, Director, 253.798.2725	Interlocal agreement; grant partnership opportunities; outreach and education support staff; Advocacy for Plan and Campaign
Pierce County SWM	Outreach and Education	County	http://www.piercecountywa.org/index.aspx?NID=2812	Tiffany Odell, Outreach and Education Coordinator, 253.798.2468	SWM staff support for education activities, campaign information sharing and collaboration
Pierce County Executive	Pierce County Sustainability Program	County	http://www.co.pierce.wa.us/?nid=2058	Ryan Dicks, Sustainability Manager, 253.798.8603	Advocacy for Plan and Campaign; outreach and education support

Stormwater Plan Grants

Table 9-6: Grant Matrix - Eatonville

Funding Source	Program	Type	Call for Projects	App Due	Award Date	Match	Web Site Address	Contacts	Notes
Washington State Department of Ecology	National Estuary Program	State	Annually	4/5/2013	-	None	http://www.ecy.wa.gov/groundsheet/grants_fed_watershed.html	Kim Harper, 425.649.4451	Conducting watershed-based stormwater retrofit planning and pre-design in Puget Sound watersheds
Washington State Department of Ecology	SWRLID Program	State	Annually	TBA	-	25%	http://www.ecy.wa.gov/programs/wq/funding/FundingPrograms/OtherFundingPrograms/StWa12a/FY12aStWa.html	Patricia Brommer, 360.407.6216	Provides funds for permit holders to plan, design, and construct stormwater retrofit or low-impact development (LID) projects
Washington State Department of Ecology	Centennial Clean Water Grant	State	Annually	November	-	None	http://www.ecy.wa.gov/programs/wq/funding/FundingPrograms/Centennial/Cent.html	David Dunn, 360.407.6566	
Washington State Department of Ecology	Section 319 Federal Grant Program	State	Annually	December	-	None	http://www.ecy.wa.gov/programs/wq/funding/FundingPrograms/Section319/Sec319Prgm.html	Alissa Ferrell, 360.407.6509	
Washington State Recreation and Conservation Office	Land and Water Conservation Fund	State	February 1 even numbered years	May 1 - even numbered years	June 1 - odd numbered years	50%	http://www.rco.wa.gov/grants/lwcf.shtml	360.902.3000	Land acquisition for purposes on creating stormwater infiltration areas in natural and open spaces. Requires recreation and conservation plan prior to application
Washington State Recreation and Conservation Office	SRFB	State	Annually	TBA		None	http://www.rco.wa.gov/boards/srfb.shtml	Kim Gridley, 360.456.5221 x2145	Protect and restore salmon habitat. Apply through Nisqually Tribe
EPA Grants to Tribes - NWIFC	Puget Sound Action Agenda	Federal	Annually	TBA	-	None	http://www.epa.gov/pugetsound/funding/	David Troutt, 360.456.5221 x2134	Tribal projects to protect and restore Puget Sound, consistent with the Puget Sound Action Agenda. Apply through Nisqually Tribe

Rain Water Harvesting

What is it? Benefits?



Display at WA State Fair

Capture and storage of rainwater

Includes rain tanks and rain gardens

Beautiful landscape features and water storage

Storage for irrigation and drinking water

Prevent flooding and improve water quality

Create habitat and increase home values

Rain Water Harvesting

What is the law on RWH?



Water right permit not required

Rain water to be used on site

Collected from existing structures

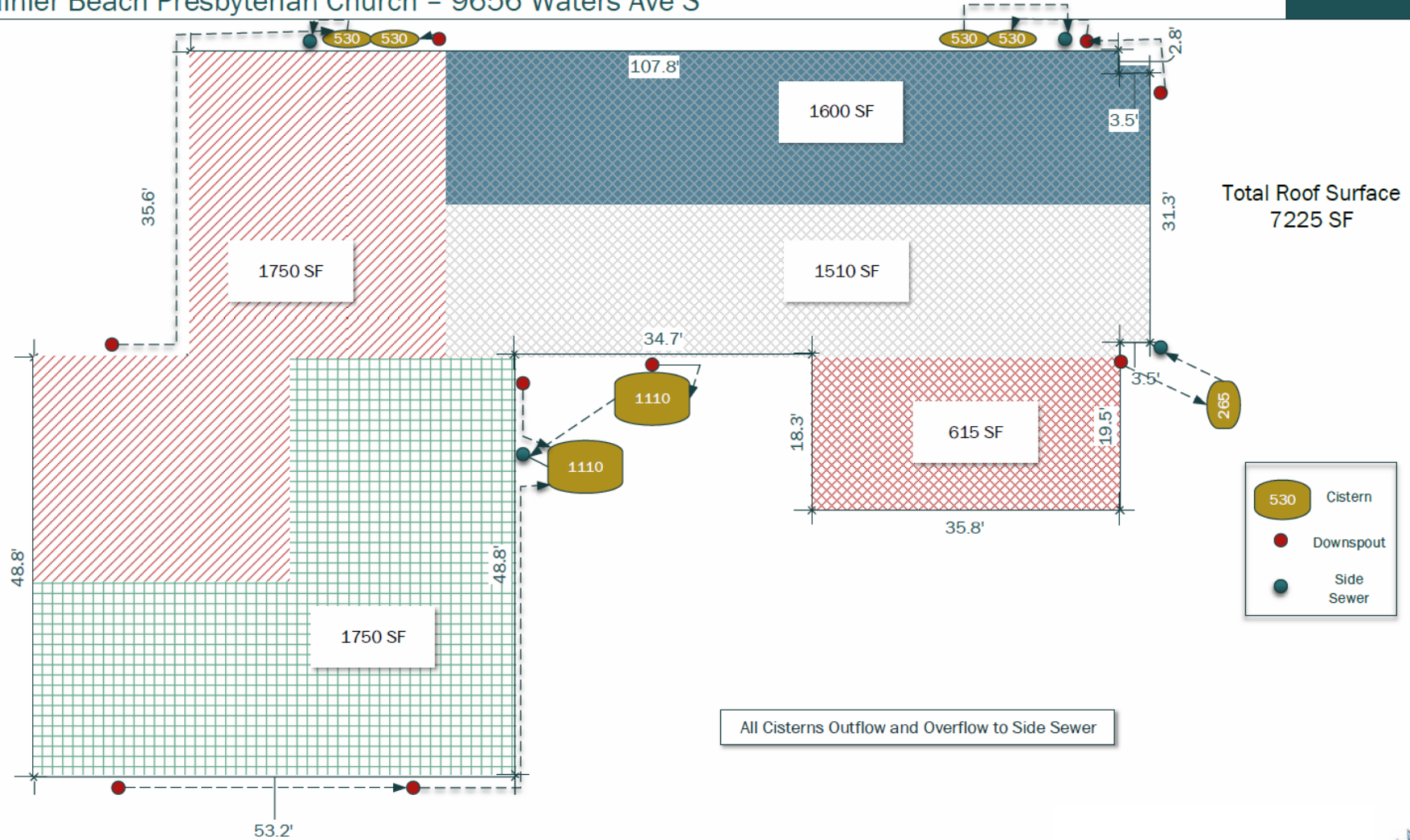
Doesn't impair instream flows/water rights



205 Gallon Tanks

Church RWH Installation

Rainier Beach Presbyterian Church - 9656 Waters Ave S



Church RWH Installation



Church RWH Installation



Church RWH Installation

123,000 gallons/year
4500 gallons of storage

530 gallon cisterns



1110 gallon cisterns

Rain Water Harvesting Tools



Washington State Department of Ecology Rainwater Harvesting Calculator

Fill in your own numbers in all green cells and view results under the blue highlighted rows below and graphs on other sheets - see details right of entry boxes for help.

Rainwater Harvesting Water Usage & Storage (gallons)	
Select the city nearest where you live. This determines your precipitation and irrigation duties so try to choose a city with a similar climate.	Seattle (UW)
Estimate household or building daily indoor use in gallons per day (gpd)	
Enter lawn in square feet that you want to keep green (1 acre = 43,560 s.f.)	
Above square foot of lawn converted to acre	0.000
Enter rainwater harvesting cistern storage capacity (gallons)	
Enter roof size in s.f. (assumes 100% roof dedicated to catchment and 80% or rain/snow that falls on roof is captured)	7,225
Are you concerned if your cistern goes dry during the summer (is rainwater your sole source or is it a source augmentation)? If you are concerned, click yes. If not, click no. A yes entry will trigger a reduce/resize message below under Desired Use below if your cistern runs dry - this ensures your needs can be met.	<input type="radio"/> Yes <input checked="" type="radio"/> No

Precipitation varies locally even within a city, so be sure the precipitation on the Precip & Irrig Data sheet accurately reflects what you receive. If it doesn't, enter your own data there under the city nearest you and choose that city at left.

See Avg Indoor Use sheet for help determining how much water you really need. A typical average use is 60-65 gpd per person, less with conservation.

While a larger cistern is necessary to get you through the summer, more often than not it's the size of your roof that's the limiting factor. Try experimenting with different size combinations of roof and cistern to see what works best.

If you are concerned about your cistern going dry in the summer, please see the blue safety factor consideration box bottom left.

Given inputted indoor use and lawn size, this shows how much water you annually want to use and actually can use (indoor use is prioritized over outdoor use if all needs cannot be met)	Gallons	
	Actual Use	Desired Use
Your total indoor use	0	0
Your total outdoor use	0	0
Total annual use (indoor and outdoor use)	0	0

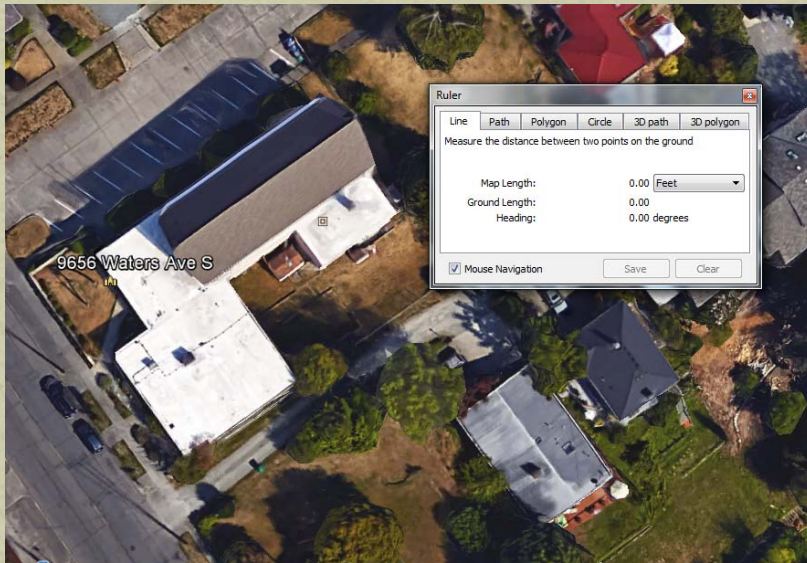
If you see a "resize/reduce" message under the Gallons heading, your desired use is too high for the size of your roof/cistern. If you don't care if your cistern goes dry, change that setting above.

Safety factor consideration: The box to the right shows your average monthly cistern levels. August/September is when Washingtonians have the lowest cistern levels due to the dry summer. If you're relying on rainwater for potable supply, you want to make sure that you don't let your cistern get too low during that time period as we don't always receive average precipitation every year.

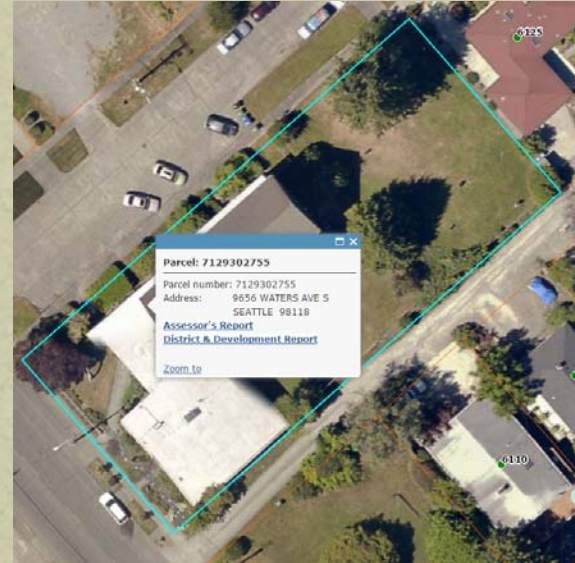
Month	Cistern Volume Carryover (gallons)	Cistern Overflow (gallons)
Jan	0	17,159
Feb	0	14,089
Mar	0	11,921
Apr	0	8,128
May	0	6,177
Jun	0	5,202
Jul	0	2,601
Aug	0	3,324
Sep	0	6,177
Oct	0	11,090
Nov	0	16,907
Dec	0	20,411
Total		123,186

Given your inputted lawn size, these are your estimated irrigation requirements (values from Washington State Irrigation Guide)		
Month	Inches	Need (gallons)
Apr	0	0
May	1.99	0
Jun	3.91	0
Jul	5.57	0
Aug	4.39	0
Sep	2.21	0
Oct	0.04	0
Total	18.1	0

Rain Water Harvesting Tools



Google Earth Pro



King County iMAP



RainWise Cistern Rebate Calculator	
Contractor Name	Rain Dog Designs
Client Name	Church RWH Installation
Project Address	
Notes	
Contributing Roof Area	1,600 sf
No. Connected Cisterns	2
Cistern Type	Bushman BSLT530e
Cistern Overflow Height	3 ft
Total Cistern Height	4 ft
Single Cistern Volume	6 gal
RainWise Cistern Rebate	
% Construction Rebate	93%
Construction Rebate Rate	\$3.24 per square foot contributing area
Total Rebate	\$5,184.00
Notes:	
<ol style="list-style-type: none"> 1. Roof area contributing runoff to one cistern or multiple connected cisterns controlled by one low flow orifice. A minimum of 400 square feet of impervious roof area must be mitigated to qualify for a rebate. Rebates can be calculated for contributing areas ranging between 400 and 4,200 square feet. 2. Qualifying cisterns must have a 0.25 inch low flow orifice and a minimum head (storage height above the orifice invert) of 3 feet. Multiple cisterns may be connected but may have only one low flow orifice. 3. Cistern overflow height is measured from the invert (bottom) of the flow control outlet to the invert (bottom) of the overflow outlet (see RainWise Details Sheet 9). 4. Total cistern height as specified by manufacturer. 5. Cistern volume as specified by manufacturer. 6. Maximum construction rebate for cisterns is 98% of the \$3.50/square foot rebate (i.e., \$3.43/square foot contributing area). 	
gal - gallons	ft - feet
sf - square feet	no. - number
Version: 03-13-2015	

RainWise Calculator

RWH Installation



RWH Installation



RWH Installation



RWH Installation



Rain Gardens

The key to managing stormwater and protecting Puget Sound

And Low Impact Development



Puget Sound
Starts Here

Thank you