County: Jefferson
Grant No: SEANWS-2017-JeCoWS-00003

PROJECT TITLE: Jefferson County MRC Operations and Projects

DELIVERABLES FOR **TASK NO: 3-Rain Gardens**

T3.6 Rain Garden Summary Report

PROGRESS REPORT: [ ] FINAL REPORT [X]

PERIOD COVERED: July 1, 2018 – September 30, 2018

DATE SUBMITTED: Oct. 15, 2018

(see Task 3.5 for RG#2 photos, PR, permit, etc.)

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2018 Jefferson MRC Rain Garden Summary Report

Jefferson MRC 2017-8 Grant Task 3, Deliverable T3.6

This report is a summary of the two 2018 JCMRC rain garden projects with background information, photos, media coverage, drawings and permits.

2018 Installations

The two new 2018 rain gardens were installed in areas identified as priority storm water management areas. This completes the Jefferson MRC's Puget Sound Partnership's 2016 Action Agenda NTA #2016-0109 (Hood Canal LIO).

A *2016 Assessment and Prioritization for Bioretention Projects in East Jefferson County Report* created an initial working list of priority sites for the MRC. Although we used this Report In 2016 and 2017 to identify sites, it was meant to be a guidance and not a checklist, due to the following considerations:

- Some of the "sites" were general target areas to explore rather than specific sites.
- City of Port Townsend continued to develop its Stormwater Management Plan
- Jefferson County Water Quality Dept has continued to collect new information about problem areas and determine potential causes of high *E. coli* counts
- WSU Extension partner Bob Simmons, Associate Professor in Water Resources, continued looking into various sites, some of which turned out to be unsuitable for rain gardens due to drainage considerations, permitting or ownership considerations.

This year, WSU Extension worked with the City of Port Townsend and Jefferson County to identify sites where rain gardens could be installed in 2018 and 2019. The two selected sites for 2018 were high visibility sites for the public, vetted and approved by the MRC Rain Garden sub-committee:

- Another rain garden on Garfield St (NW corner of Garfield and Madison) in Port Townsend that intercepts stormwater coming from a different drainage area than the previous Garfield St installations. It eventually still feeds into the same Monroe St outfall pipe.
- The corner of Van Buren and Lincoln rain garden gets a lot of flow, including several streets and the large St Mary's Church parking lot. The water ultimately flows to the Lawrence St stormwater conveyance which ends up in Port Townsend Bay via an outfall at the end of Kearny Street.

Bob Simmons developed both rain garden designs, worked with the Assistant City Engineer and public works staff, obtained approval from landowners, and arranged for all the necessary permits. Bob also supervised and worked with the City's Public Works staff, who excavated and graded both of the 2018 rain garden sites per Bob's design, backfilled with appropriate rain garden soil mix and placed rock as necessary to prevent erosion.

The Jefferson MRC subcommittee discussed and approved the proposed sites. MRC staff coordinated volunteer recruitment, helped with logistics and managed the administrative end, including invoices.

The MRC also worked with the Native Plant Salvage Foundation (experts in rain garden installations and affiliated with WSU Extension in Thurston County). Their staff procured the plants and other materials for both rain gardens, provided tools for volunteers and assisted with educational efforts using their AmeriCorps staff. Their staff helped direct the planting and mulch placement, which was done with the assistance of MRC members, WSU Master Gardeners and other interested community members, including a school group.

The new Garfield/Madison Street rain garden was installed on June 26, 2018. Adjacent landowner Jan Burr is committed to maintaining the installation. Dimensions are 16' x 30'.

The Van Buren Street rain garden was installed on Sept 25, 2018. Adjacent landowners Sarah and Owen Fairbank have made a commitment to maintain the installation. Dimensions are approximately 14' x 40'.

An exemption for the cost of both permits was approved by the City of PT as part of the City's contribution to that project.

Some of the WSU Extension's expertise was invoiced (up to the allocated budget) and the remaining time was tracked as volunteer match, since Bob continued to work on both projects as part of his WSU Extension duties.

Both rain gardens are functioning well after several rainfall events.

<u>Square Footage Area of 2018 Rain Gardens Installed: 1,040 square feet</u>

Garfield/Madison - 480 sq ft

VanBuren/Lincoln – 560 sq ft

Total cumulative area of all eight MRC-co-sponsored rain gardens: **6,572 sq ft**

Community Engagement and Outreach

MRC staff helped recruit volunteers for both rain garden installations. A total of 31 community volunteers (12 in June and 19 in September) donated 138.5 hours. Twenty-six (26) of these volunteers are not regular MRC volunteers, although a few were involved in previous rain garden installations in Port Townsend. These numbers include the nine students and one teacher from the Port Townsend School District's OCEAN program who participated in the September planting.

Bob gave brief status reports about the rain gardens at two BOCC public meetings, which led to nice article in the Port Townsend Leader, written by one of their reporters.

In September, interpretive signs were installed at the 2017 Chetzemoka Park site and the Van Buren/Lincoln site.

2019 Rain Gardens

We applied what we'd learned during the 2017 installations, and the 2018 rain garden installations went very smoothly.

We also started conversations with a new landowner about a rain garden installation adjacent to Center Rd at the north end of the Quilcene community. (A teacher at the Quilcene Middle/High School helped install a rain garden on that campus last year.) The landowner was very receptive to the idea, so we approached Jefferson County about associated curb work along this County Road. They had already been planning to do some road work there in 2019, so we are now working in collaboration to make that happen next year. We may end up doing one large rain garden there, rather than two small ones, but will know more once drainage calculations are completed.

The Quilcene rain garden will catch stormwater that now flows into a storm drain that dumps it directly into Cemetery Ditch, which flows directly to Quilcene Bay a short distance away. Some of the MRC Rain Garden subcommittee members met out there and identified this potential site.

Evaluation of Rain Garden Effectiveness

Regional:

New regional protocols are part of a two-year project funded by WA Department of Ecology to develop a standard method to evaluate the effectiveness of rain gardens in managing polluted runoff and serving as community amenities. Other partners on this project, besides Washington State University, include the City of Puyallup and the non-profit organization Stewardship Partners.

These citizen-science protocols involve various techniques for monitoring rain garden functions, community value, and aesthetic appeal. Some of the research questions under this project include:

- Does the rain garden infiltrate stormwater during storm events?
- Is the facility supporting plant growth?

- Do existing vegetation community conditions create enhanced green spaces?
- How well do soils reflect infiltration conditions?
- Do site design, construction and maintenance activities correlate with other signs of rain garden success?
- Does the rain garden offer community value to neighbors and passersby?
- Does the rain garden age correlate with other signs of functional success and community acceptance?

The "beta" version of these protocols have been used on all of the rain gardens installed by the Jefferson MRC, except the one located at Taylor and Clay Streets. Data was collected this past year by WSU Extension but will not be fully assessed prior to November 30, 2018.

Local Evaluation of Inflow - Outflow Data:

In order to measure effectiveness of the rain gardens built early in 2015, WSU Extension and MRC also installed small monitoring wells, water flow meters and weirs to measure inflow and outflow. The monitoring was intended to measure the reduction in the volume of water entering the Monroe Street storm water pipe (that flows directly to Port Townsend Bay) as a result of the two 2015 rain garden installations on Garfield Street. We had problems in the winter of 2015-16 with mulch and leaves clogging the weirs and malfunctioning with data loggers and were unable to collect useful data. The data loggers were not deployed in the winter of 2017-18.

Anecdotally, no overflow and discharge was observed at the outflow of the second downstream Garfield Street rain garden in 2016 or 2017, although some outflow was observed in 2015. The two rain gardens in combination seem to be functioning well in reducing a significant amount of stormwater from the drainage area they are designed to serve.

2018 Partnerships—needs to be updated

Total of Matching In-Kind Services and Materials: $10,959

Grant Funds Expended: $21,481

Sources of Matching Funds:

$3,928	Community/AmeriCorps volunteers: 135.5 hrs @ $28.99/hr (PSP approv'd rate)
$8,111	WSU Extension contribution: 131 hrs donated staff time for 2 RG
$4,340	City of Port Townsend's staff time, site work, materials, permit waiver.

$2,170 total per Rain Garden

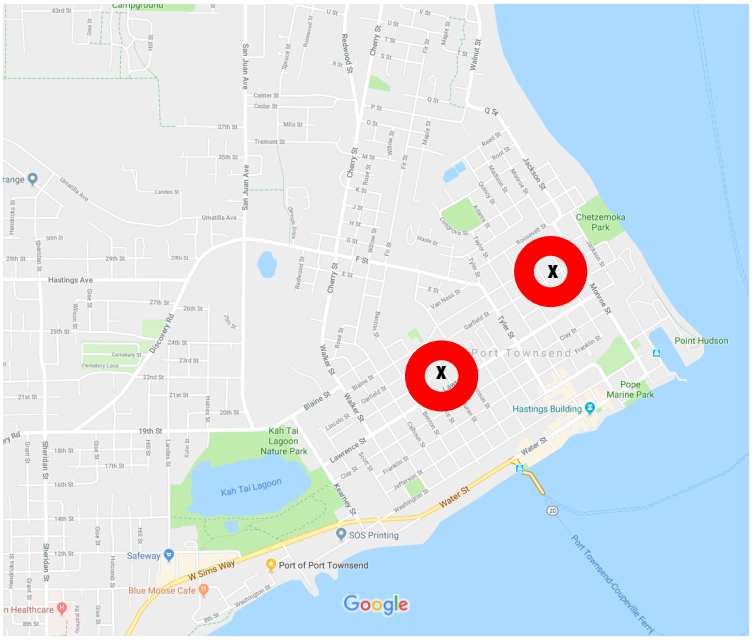
2018 Estimates of City contribution (calculated by WSU Extension) *assumes wages from WA OES Databook +40% benefits:

- 25 hrs public works/excavator operators & staff @$40/hour w benefits = $1,000/RG
- Environmental review – city staff = 2.5 hours @ $45/hour = $112/RG
- Minor Improvement permit fees donated = $240/RG
- Bioretention soil 15 cubic yards @$30/yd =$450/RG
- 8 yds mulch @ $16/yd= $128/RG
- Soil transport costs for three 5-yard loads @ $75/load = $240/RG

Attachments (below):

1. Map with locations of new rain gardens
2. Photos of completed rain gardens
3. Drawing of RG design #1 and #2
4. Media articles (PT Leader, PTMSC Volunteer News, WSU Beach Naturalist news)
5. Sign-in sheets for volunteers from June and September 2018.
6. Permits

Rain Garden Locations in Port Townsend



Photos

Photos by Cheryl Lowe unless otherwise noted.

Garfield/Madison Rain Garden Planting Crew in June 2018.

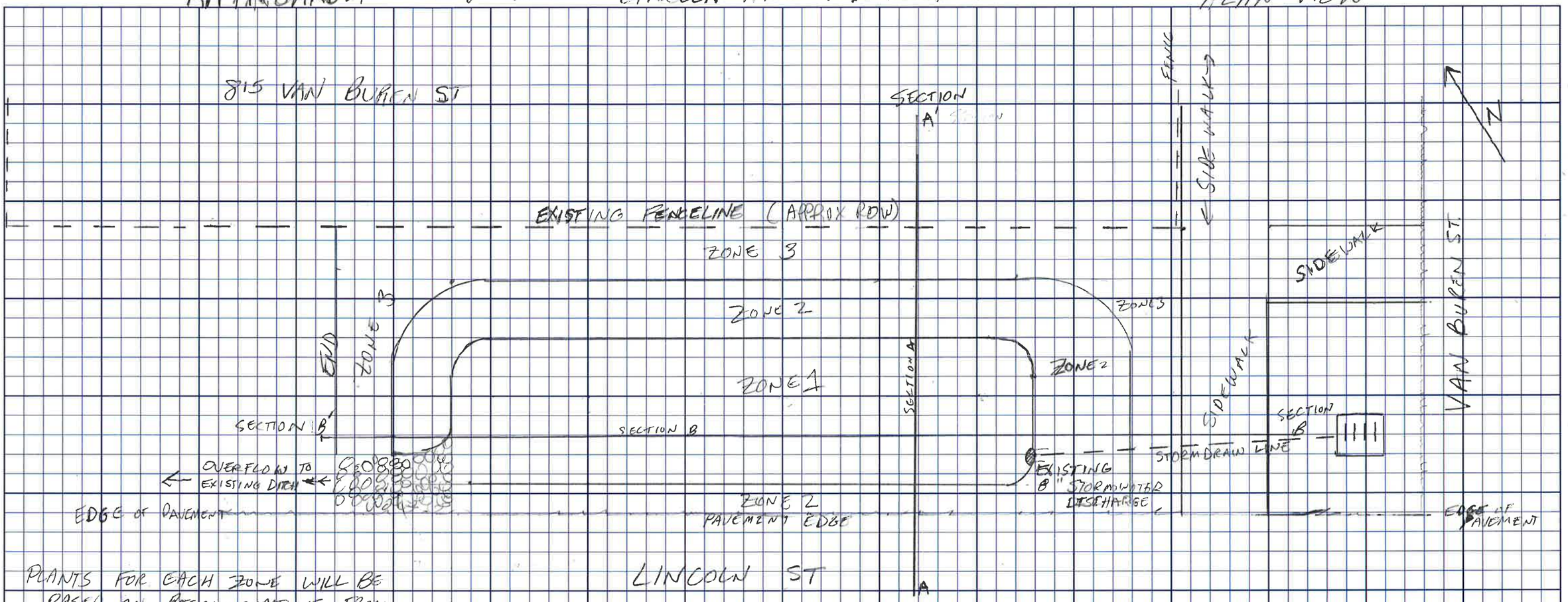
Garfield/Madison Rain Garden planted but not yet mulched

Volunteers planting the Van Buren/Lincoln Rain Garden

Van Buren/Lincoln Rain Garden during first rains (photo by Sarah Fairbank).

RAIN GARDEN: NW CORNER LINCOLN AND VAN BUREN ST

PLAN VIEW



PLANTS FOR EACH ZONE WILL BE BASED ON RECOMMENDATIONS FROM THE "RAIN GARDEN HANDBOOK FOR WESTERN WASHINGTON"

FINISHED SLOPES SHALL NOT EXCEED 2:1

INFILTRATION RATE = 16 in/hr

PONDING DEPTH = 6"

NO UTILITIES WITHIN WORK AREA

MATERIALS NEEDED

15 yds^3 BIORETENTION SOIL MIX (60% SAND, 40% COMPOST)

0.5 yd^3 RIVER ROCK 2"-6"

0.5 yd^3 DRAIN ROCK 1½" - 2"

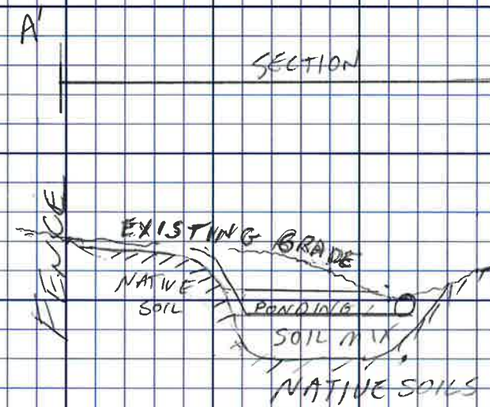
8 yd^3 WOOD CHIPS (MULCH)

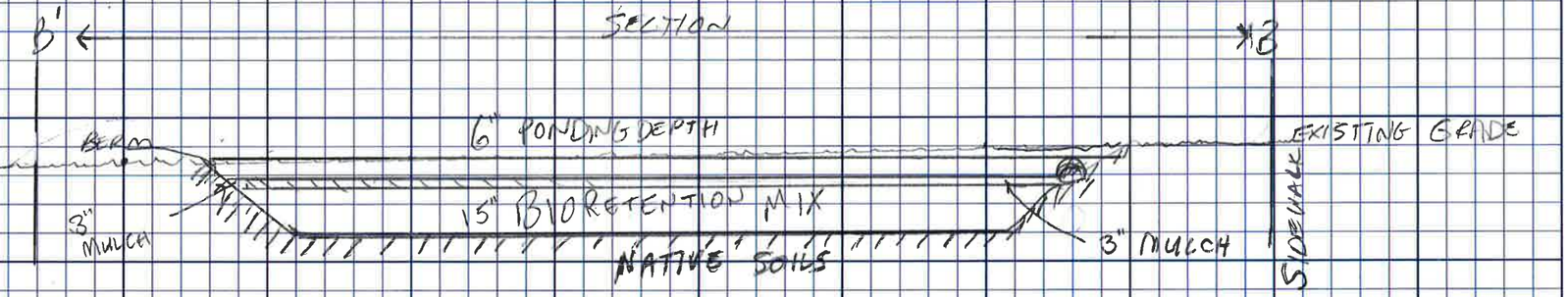
SCALE 5'

R. SIMMONS, WSU 9/2018

RAINGARDEN: N/W CORNER LINCOLN AND VAN BUREN ST. CROSS-SECTION VIEW

815 VAN BUREN ST





6" PONDING DEPTH

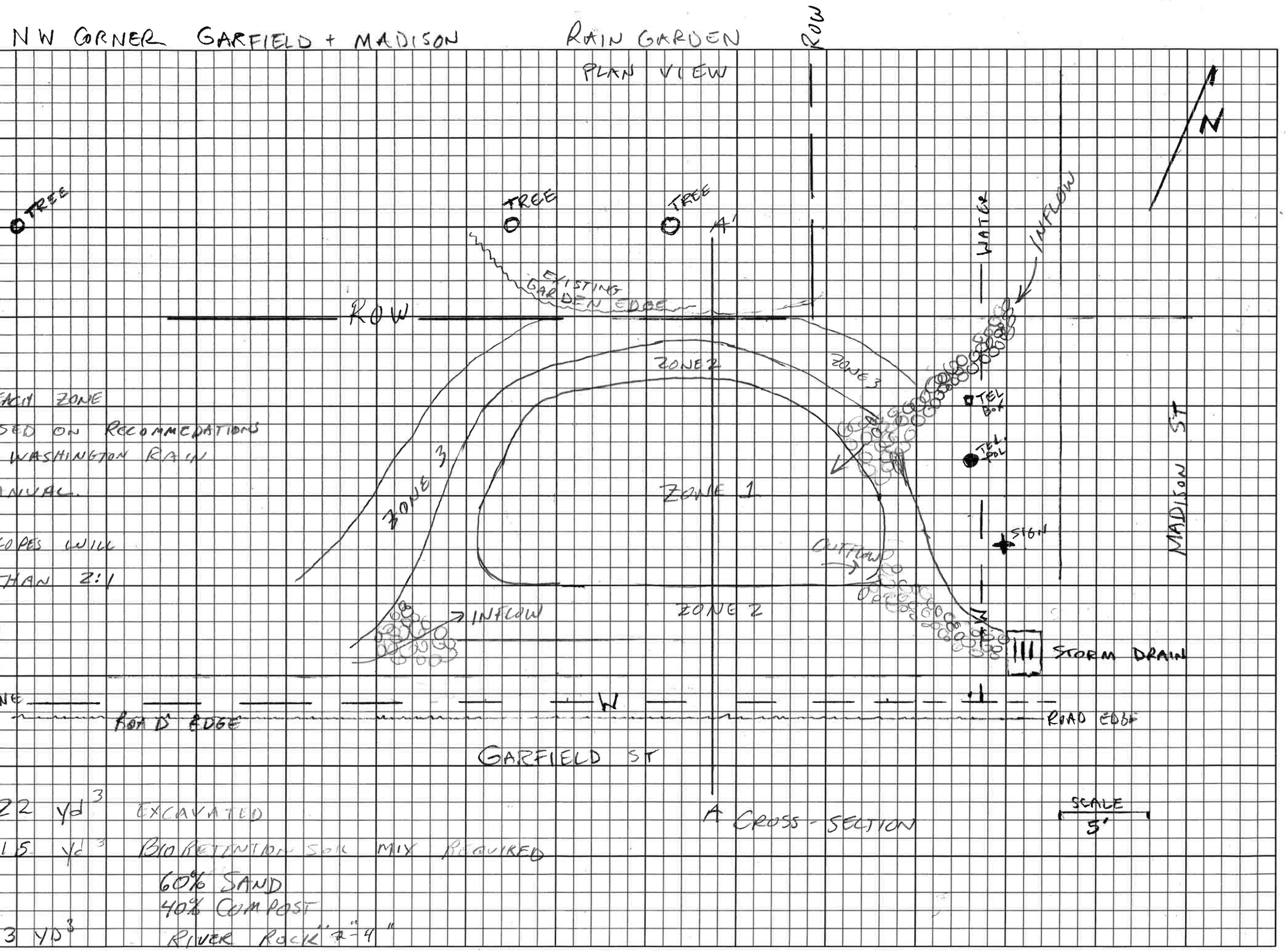
3" MULCH DEPTH

SCALE 5'

R. SIMMONS 9/2018

NW CORNER GARFIELD + MADISON RAIN GARDEN

PLAN VIEW



PLANTS FOR EACH ZONE WILL BE BASED ON RECOMMENDATIONS IN THE W. WASHINGTON RAIN GARDEN MANUAL.

FINISHED SLOPES WILL GREATER THAN 2:1

APP

APPROX 22 yd^3 EXCAVATED

APPROX 15 yd^3 BIORETENTION SOIL MIX REQUIRED

60% SAND
40% COMPOST

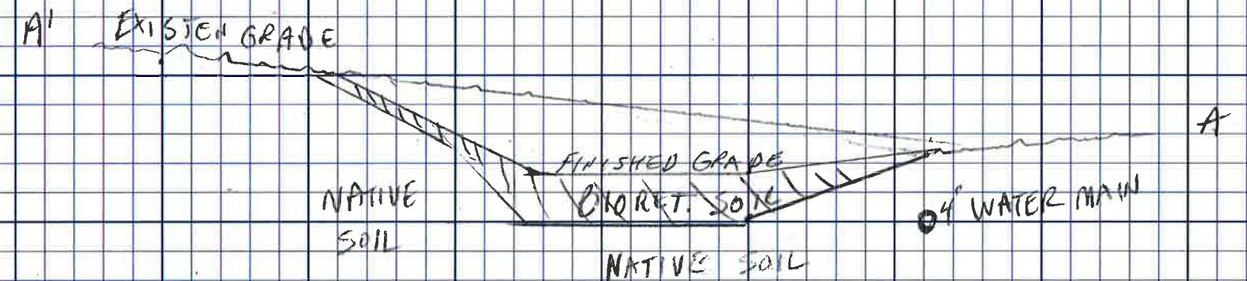
APPROX 3 YD^3 RIVER ROCK 2"-4"

A CROSS-SECTION

SCALE 5'

R. SIMMONS, JUNE 2018

NW CORNER GARFIELD + MADISON RAIN GARDEN CROSSECTION VIEW



6" PONDING DEPTH

3" MULCH DEPTH

R SIMMONS JUNE 2018

http://www.ptleader.com/news/planting-rain-gardens-to-reduce-pollution/article_25e600da-c735-11e8-9157-d718caa7f219.html

Planting rain gardens to reduce pollution

Lily Haight lhaight@ptleader.com Oct 3, 2018

Homeowner Owen Fairbank works on planting a rain garden in the right-of-way near his home. The rain garden will help soak up and purify water, so pollutants do not reach the Puget Sound.

Leader photo by Lily Haight

The corner of Van Buren and Lincoln streets were transformed Sept. 25, as volunteers and Blue Heron middle-schoolers worked with the WSU Extension to turn the plain, grassy area where weeds once flourished, and water pooled up, into a luscious rain garden, filled with flowers, grasses, herbs and shrubs.

The rain garden was planted in a strategic spot, where water will collect and drain into the soil, instead of running down the roads and into the Puget Sound.

“I have worked with the city over the past couple of years to identify locations that are getting higher flows (of water runoff) and also have a direct contribution to those flows going into the bay,” said Bob Simmons, water resources faculty member from the WSU Extension.

The WSU Extension, in partnership with the Marine Resources Committee, the city, and many volunteers, works with homeowners in Port Townsend to plant rain gardens, which help prevent water runoff from going into the bay.

Sarah and Owen Fairbank noticed that the right-of-way next to their house, on the corner of Van Buren and Lincoln streets would be inundated with water during the rainy months.

“I noticed that, in the rain, this whole corner would go underwater, and then it would travel down Lincoln Street in a little stream,” said Sarah Fairbank, who had been volunteering as a master gardener with the WSU Extension, and knew about WSU’s rain garden program.

She brought forward the idea of turning the street corner into a rain garden, and Simmons helped connect with the city, who excavated the right-of-way and brought in special bioretention soils, which are made up of 60 percent sand and 40 percent compost.

The rain garden, once fully planted, will encourage water to soak into the ground instead of running off along the surface, as well as clean up polluted runoff. The soil helps with that: the sand soaks up the water, while the compost purifies it.

The problem with rain water flowing into the bay is that, while it runs down roads, it picks up toxins, such as vulcanizers from tire compounds, copper from brake pads, other heavy metals from vehicles, and bacteria from dog waste. These toxins run into the Puget Sound, where they affect the entire food chain of marine life.

“The big problems are heavy metals,” Simmons said. “They tend to short-circuit the brains of fish. They damage the wirings of their brains … They lose their olfactory sense and they often cannot swim in a straight line anymore.”

While the effects of the contaminants are not lethal to fish, according to Simmons, research has found that the contaminants make species like Coho salmon easier prey. This could likely be the same for other marine life, Simmons said, such as the fish that salmon feed on, like sand lance and sculpin. Not only that, but if the salmon are easier prey for seals and sea lions, then there are fewer of them for the resident orcas, who are endangered, and competing with other marine life for food.

“We have a responsibility to leave the earth as we found it, or better, particularly with climate change,” Sarah Fairbank said.

For her, maintaining the rain garden won’t be difficult, since she already has a love for gardening and considers herself a “plant nerd.”

Fairbank worked with Erica Guttman, a WSU Extension water resources faculty member, who heads the Native Plant Salvage Project.

According to Guttman, choosing the plants is extremely strategic. They need to be able to withstand flooding during the winter and spring, when the soil soaks up the water runoff, but also withstand summer drought. In a town like Port Townsend, the plants also need to be deer resistant, and hopefully bring some beauty to the street, as well.

“We want it to be attractive and safe, and add to the pleasantness here,” Guttman said. “Here in Port Townsend, people are really into planting. There are a lot of beautiful gardens along the street, and we wanted to continue that tradition of having beautiful plantings. The aesthetics are important, the deer are important, the hydrology, or the water, is important, and the sun and shade is important.”

Plants like the fragrant Hummingbird Mint, and a plant called “red hot poker,” are too strong for deer to eat, while native grasses and barberry shrubs are hearty, and can withstand the shade and sun.

“I’m excited because many of the plants are pollinator plants, many of the plants are native, and many of them are unique, in that they can take both periods of wet and periods of drought, so they’re tough, tough plants,” Fairbanks said. “It adds beauty, it cleans up the water, and it extends my garden.”

For those who think that a rain garden at their property might help prevent runoff going into the Puget Sound, they should visit extension.wsu.edu/raingarden to read more about rain gardens. According to Simmons, a rain garden is not always necessary in an area, even if it gathers a lot

of water. Still, Simmons said he is always willing to come out to a home to do a preliminary evaluation, to see if a rain garden might be needed.

“You have to work upstream and catch the flows closer to where they’re starting from,” he said. “If people want to put a rain garden in, I’m willing to come out and assess, and see if it would be useful.”

Subject: Volunteer Update - Citizen Science opportunity this Sunday, kelp forest collaboration
Date: Saturday, September 15, 2018 at 2:00:22 PM Pacific Daylight Time
From: Gabriele Sanchez
To: Lowe, Cheryl B

PORT TOWNSEND
MARINE SCIENCE CENTER
AT FORT WORDEN STATE PARK

Volunteer Update

Week of September 16, 2018

A Kelp Forest Collaboration Thank You

From Diane Quinn

When we first talked about turning the 10 x 10 foot event tent into a kelp forest constructed of soft-sculpture bull kelp whose fronds filled the overhead space, photo-printed plush fish swimming between the stipes, and 3-D anemones and sea stars attached to rocks, it sounded like a lovely but ambitious dream. We called it our prototype, and decided if it worked

From WSU Jefferson Extension & Jefferson MRC

Help plant another rain garden!
Tuesday, September 25th
Shifts: 9:30am -12 noon or 1- 3:30 pm

"Fall is for planting", even if your passion is conservation of marine habitats and species. Jefferson MRC is teaming up with our partners to install another rain garden to filter and treat stormwater before it reaches Port Townsend Bay. This will be our 8th rain garden in 4 years of planning, collaboration and action with our community partners.

Jefferson MRC and WSU Extension need your help planting this new rain garden in the uptown area of Port Townsend. The rain garden will capture and treat stormwater runoff from portions of Harrison, Lincoln, and Van Buren Streets and will prevent contaminants from reaching Port Townsend Bay. This project is a collaborative effort with the Jefferson County Marine Resources Committee, WSU Extension, the City of Port Townsend and community volunteers like you!

Choose a morning or afternoon shift or just come for as long as you can.

RSVP to Cheryl Lowe (cheryl.lowe@wsu.edu) with the time you'll be there. I'll get back to you with more details about location and what to bring at the end of next week.

Read more about how stormwater affects Puget Sound at this link: https://www.eopugetsound.org/magazine/stormwater
For more tips on how to reduce stormwater pollution visit: http://www.ci.bremerton.wa.us/498/Storm

Dear Beach Naturalists & Stream Stewards--

Hard to believe it's almost June. I love running into so many of you at various places, now that we're living here and part of this amazing community.

The 2018 Beach Naturalist class has launched, and they are already doing meaningful work. Recent BN graduates **Kathy, Shelley, Gregg, Abbey, Yanna, Narayana and Sheldon** served as Beach Naturalist guides with the Blue Heron 5th graders shoreline walk earlier this month. Thanks for all your organizing and work!

Several great volunteer opportunities coming up. Hope to see you at one of them.

Yours,

Cheryl Lowe, WSU Jefferson County Extension
cheryl.lowe@wsu.edu
(360) 379-5610 ext. 230
http://ext100.wsu.eu/jefferson/
---How we spend our days is, of course, how we spend our lives. -- Annie Dillard

2018 Beach Naturalists helping to monitor Olympia oysters in Quilcene Bay.

VOLUNTEER OPPORTUNITIES

WSU Jefferson Extension

Beach Naturalists Guides for 1st & 2nd Graders

June 12th in Port Townsend

For more information or to sign up, please email Bob Simmons at simmons@wsu.edu or call him at 360-789-8694.

Jefferson Co. Marine Resources Committee

Rain Garden Installation

June 26th in uptown Port Townsend

9:30am – 12pm and 1 – 3:30pm shifts

Mark your calendars! Jefferson MRC and WSU Extension are installing another rain garden to filter stormwater and help clean up Port Townsend Bay. More details to come. For more information or to sign up, email Bob Simmons at simmons@wsu.edu or call him at 360-789-8694.

City of Port Townsend

Development Services Department
250 Madison Street, Suite 3
Port Townsend WA 98368
Phone: 360-379-5095
Fax: 360-344-4619
www.cityofpt.us

MIP - No Fee

Street & Utility Development Permit Application

MIP No.	SDP No.	BLD No.

Applicant: Janet Burr	**Phone:** 360 774-3512
Mailing Address: 909 Madison St	Fax:
City, State, Zip: Port Townsend WA 98368	E-mail: jburr@olympus.net
Property Owner's Name(s): Janet Burr	**Phone:**
Mailing Address: Same	
City, State, Zip:	E-mail:
Authorized Representative: Bob Simmons	**Phone:** 360-789-8694
Address: 121 Oak Bay Rd, Pt Hadlock	E-mail: SIMMONS@WSU.edu

Property Site Street (and address if assigned:)

Zoning District: Parcel #:

Legal Description: Addition: NW CORNER GARFIELD + MADISON ST Block: Lot(s):

Water/Sewer/Street Contractor			
Mailing Address:			
Phone:	Fax:	Cell Phone:	
State License #:	Expiration:	City Business License #:	Expiration:
Estimated value of utility and/or street construction: $			

Describe work to be conducted under this permit and purpose:

Install a 36' x 21' Rain Garden in ROW at NW CORNER OF GARFIELD ST & MADISON ST

Describe any related work on private property such as landscaping, clearing, grading:

How many acre(s) will be disturbed? < 0.05	Where will the overflow discharge?
Is Latecomer Proposed?	For what Utility?

Will trees or vegetation be removed in the right-of-way? ☐ Yes ☒ No

If yes, Describe & show on site plan

I hereby certify that the information provided is correct, that I am either the owner or authorized to act on behalf of the owner and that all the activities associated with this permit will be in accordance with State Laws and the Port Townsend Municipal Code.

Signature of Owner or Authorized Representative: Janet Burr Date: 6/21/18

Print Name:

City of Port Townsend

Development Services Department
250 Madison St., Suite 3
Port Townsend, WA 98368
360-379-5095 Fax 360-344-4619

Exempt Permit Application

Project Address:
815 Van Buren St.
Cross Streets: Van Buren and Lincoln
Parcel#(s): 965 702 402

Legal Description:
Addition: Kuhn's Ranch
Block: T
Lot(s): Lots 1 & 3 (E 90')

Property Owner/Applicant:
Name: Sarah & Owen Fairbank
Address: 815 Van Buren St.
City/St/Zip: Port Townsend, Wa. 98368
Phone: 360-385-2346
Email: sofairbank@olympus.net
sarah@olympus.net

Office Use Only
Permit EXE16-
Associated Permits:

Request:

- ☐ Tree Removal
  - o In ROW
  - o Private Property
- ☐ Dumpster Placement
- ☐ Vegetation Removal
- ☐ Special Inspection
- ☐ Signage not requiring a permit
- ☐ Other
- ☒ Work in Right-of-way (ROW)

Date(s): September 12-30, 2018

Description: Install a 14' X 40' (approximate) rain garden within the ROW along Lincoln St adjacent to parcel.

Please Note: This Exempt Permit may include staff time fees for inspections or a minimum fee of $76.00 per hour of staff time.

I hereby certify that the information provided is correct, that I am either the owner or authorized to act on behalf of the owner and that all activities associated with this permit will be in accordance with State Laws and the Port Townsend Municipal Code (PTMC).

Print Name: Owen Fairbank

Signature: Owen Fairbank Date: Sept. 10, 2018