



Jefferson County
**Marine
Resources
Committee**



Jefferson County

WASHINGTON STATE UNIVERSITY
EXTENSION

Educational and Outreach Materials Toolkit for Stormwater Runoff



Jefferson County Marine Resources Committee

and

Washington State University Jefferson County Extension

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Introduction

The Jefferson County Marine Resources Committee (MRC) and our partners at Washington State University Extension (WSU Extension) developed this Educational and Outreach Materials Toolkit for Stormwater Runoff to be shared amongst Marine Resources Committees (MRCs). The toolkit was designed to assist MRCs with outreach efforts related to stormwater runoff.

According to the Washington Department of Ecology, stormwater runoff is considered the leading source of toxic pollution to the Salish Sea. Stormwater runoff mobilizes a large mixture of chemical contaminants from impervious surfaces such as roads, roofs and parking lots into nearby lakes, rivers, and streams that drain into the Salish Sea. Stormwater runoff is, therefore, a large contributor to the declining health of our aquatic ecosystems.

This Toolkit includes stormwater-related outreach and educational materials to help bring awareness to this critical issue. The materials are designed for use by non-experts interested in stormwater-related outreach. In addition to highlighting the negative impacts of stormwater runoff, information and resources on low impact development technologies, such as rain gardens and pervious surfaces, are also included.

Prepared by Michelle Chow, Program Assistant for Jefferson MRC. November 2018

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1. Newsletter Templates

This section is broken into components for creating your own stormwater-related newsletters or media outreach to neighborhood groups, on-line postings or local media. Tag lines, definitions, prevention tips, and complete templates are provided. Pick and choose as needed.

1.2. Tag Lines

- How does stormwater impact (*insert city name*)?
- What can YOU do to protect our local waterways?
- Preventing stormwater pollution 101
- Only rain down the drain
- Only rain down (*insert city name*) drains
- Useful tips for preventing stormwater pollution
- 5 Steps to prevent stormwater pollution
- Stopping stormwater starts with you!
- “No dumping drains to sound/river”
- Why care about stormwater?
- Slow your flow
- Clean water starts with me

1.3. Definition

- Stormwater runoff is recognized as the leading source of toxic pollution in Puget Sound. Every time it rains, stormwater transports little pieces of our everyday activities, including pet waste, fertilizers and car fluids, into the nearest body of water without any treatment or contaminant removal. Stormwater pollution is a major threat to salmon and other aquatic life that depend on clean water.
- Chances are, you have probably heard of stormwater runoff. Did you know that stormwater is the #1 source of toxic pollution to Puget Sound? Stormwater carries any contaminants found on roads, roofs, parking lots and yards into nearby waterways.
- When it rains, stormwater runoff carries pollution from our everyday activities into nearby waterways. This can include pet waste, lawn fertilizer, vehicle fluids such as oil, gas and windshield wiper fluid. Even pharmaceuticals and caffeine are detected in stormwater. Luckily, there is a lot we can do as citizens to help prevent stormwater pollution from occurring!
- Stormwater runoff is a two-part problem - it involves both the quality and quantity of runoff. Low impact development, including rain gardens and pervious surfaces, are designed to deal with both. Low impact development slows the flow of runoff and reduces the introduction of contaminants into nearby waterways.



1.4. Prevention Tips

1. Clean up after your pet! Scoop the poop, bag it, and put it in the trash. Dog waste can end up in stormwater and contribute high levels of disease-causing bacteria.
2. Identify and fix automobile leaks. Oil leaking from cars is a major source of water pollution. Any oil that drips onto a road or driveway ends up in a nearby waterway. If the repair is not possible right away, put a drip tray under your car and recycle the collected oil.
3. Dispose properly of used motor oil. If you change your own oil, make sure to dispose of the used oil properly - don't just pour it down the drain!
4. Take your car to a commercial car wash. Commercial car washes treat their water before it enters a local waterway. If you choose to wash your car at home, wash your car on the lawn or another permeable surface. Washing your car on your driveway contributes a large mixture of chemicals to stormwater.
5. Use fewer, if any, lawn and garden chemicals. Pesticides are toxic to fish and can contaminate drinking water. Fertilizers, both chemical and organic, can cause excessive plant growth in water and reduce oxygen availability for aquatic animals.
6. Maintain your septic system. Failing systems can introduce disease-causing bacteria to local waterways making shellfish unsafe to eat and waters unsafe for swimming.
7. Plant more trees, shrubs and mulched beds. Pervious surfaces are the secret to stopping stormwater!
8. Direct stormwater to areas where it can seep into the ground.
9. Bag or compost leaves. Decomposing leaves introduce excess nutrients to waterways.
10. Install a rain garden on your property. Rain gardens are beautiful, low maintenance and inexpensive gardens designed to treat stormwater runoff.

1.5. Example Newsletter Articles

Below are several template articles that may be submitted to your community's newsletter. Included are three different article lengths: short (150 words), mid-length (300 words), and long (600 words; word lengths are approximations). Articles may be edited as each MRC sees fit. Local website links may be more appropriate for your community. See Section 5 for links and resources.

1.5.1. Short newsletter article (150 words, including links)

How Is Stormwater Impacting Our Community?

Stormwater runoff is recognized as the leading source of toxic pollution in Puget Sound. Every time it rains, stormwater transports little pieces of our everyday activities, including pet waste, fertilizers and car fluids, into the nearest body of water without any treatment or contaminant removal. Stormwater pollution, therefore, is a major threat to salmon and other aquatic life that depend on clean water.

How can you help protect Puget Sound? Your actions make a difference!

1. Clean up after your pet! Scoop the poop, bag it, and put it in the trash.
2. Use fewer, if any, lawn and garden chemicals
3. Take your car to a commercial car wash
4. Identify and fix automobile leaks
5. Plant more trees, shrubs, and mulched beds. Pervious surfaces are the secret to stopping stormwater!

To read more on how stormwater affects Puget Sound visit:

<https://www.eopugetsound.org/magazine/is/stormwater-mystery>

For more tips on how to reduce stormwater pollution visit:

<http://www.ci.bremerton.wa.us/498/Stormwater-Pollution-Prevention>



1.5.2. Mid-length newsletter article (~300 words)

As Washingtonians, we've all been caught in the rain. Have you ever wondered where all of that rain goes?

As soon as rain hits the ground, it's no longer called rain; instead, we call it stormwater. While rain is simply water, stormwater contains little pieces of our everyday activities. Stormwater includes waste from our beloved pets; fertilizers that feed our garden; vehicle fluids such as oil, gas and windshield wiper fluid; even pharmaceuticals and caffeine.

Stormwater runoff isn't a problem if you live in a forest, but many of us live in a town or community. Without forest soils to absorb the rain, stormwater is collected by the nearest storm drain, along with the mixture of contaminants it carries, and dumped into the nearest waterway. That's right – stormwater runoff carries pollution directly into (*insert waterway name*) with zero treatment or contaminant removal.

In Puget Sound, stormwater is recognized as the #1 source of toxic pollution. Stormwater runoff affects all levels of the food web, from invertebrates to orcas. Polluted stormwater can reduce the survival and health of fish and invertebrates, changing the ecology of the natural environment and posing a threat to human health.

As a community, we can start to tackle the issue of stormwater runoff by changing some of our everyday behaviors. Together, we can work towards controlling stormwater pollution in (*insert city name*)!

Here are 5 actions that you can do to reduce stormwater pollution:

1. Clean up after your pet! Scoop the poop, bag it, and put it in the trash
2. Use fewer, if any, lawn and garden chemicals
3. Take your car to a commercial car wash
4. Identify and fix automobile leaks
5. Plant more trees, shrubs, and mulched beds. Pervious surfaces are the secret to preventing stormwater from entering waterways.

To read more on how stormwater affects Puget Sound visit:

<https://www.eopugetsound.org/magazine/is/stormwater-mystery>

For more tips on how to reduce stormwater pollution visit:

<http://www.ci.bremerton.wa.us/498/Stormwater-Pollution-Prevention>



1.5.3. Long newsletter article (~600 words)

As Washingtonians, we've all been caught in the rain. Have you ever wondered where all of that rain goes?

As soon as rain hits the ground, it's no longer called rain; instead, we call it stormwater. While rain is simply water, stormwater contains little pieces of our everyday activities. Stormwater includes waste from our beloved pets; fertilizers that feed our garden; vehicle fluids such as oil, gas and windshield wiper fluid; even pharmaceuticals and caffeine. Stormwater is recognized as the #1 source of toxic pollution to Puget Sound.

Stormwater runoff isn't a problem if you live in a forest, but many of us live in a town or community. Without forest soils to absorb the rain, stormwater is collected by the nearest storm drain, along with the mixture of contaminants it carries, and dumped into the nearest waterway. That's right – stormwater runoff carries pollution directly into (*insert waterway name*) with zero treatment or contaminant removal.

The contaminants introduced by stormwater runoff threaten the health and sustainability of aquatic ecosystems. Stormwater runoff has been shown to cause premature mortality of adult coho salmon, impair the development and survival of Pacific herring, and reduce the diversity and reproductive ability of invertebrates. Bacteria mobilized by stormwater runoff can make water unsafe for drinking and swimming and close beaches for shellfish harvest.

To combat the negative effects of stormwater, cities across the region are utilizing low impact development (LID) techniques such as rain gardens, permeable pavements, and green roofs to treat stormwater runoff before it enters our lakes, rivers, and marine waters. LID techniques mimic nature by reducing flooding and filtering stormwater. LID has been demonstrated to effectively protect aquatic organisms, including coho salmon, from the negative effects of stormwater runoff.

As a community, we can start to tackle the issue of stormwater runoff by changing some of our everyday behaviors. Together, we can work towards controlling stormwater pollution in (*insert city name*)!

Here are 7 actions that you can do to reduce stormwater pollution:

1. **Clean up after your pet!** Scoop the poop, bag it, and put it in the trash. Dog waste can end up in stormwater and contribute high levels of disease-causing bacteria.
2. **Use fewer, if any, lawn and garden chemicals.** Pesticides are toxic to fish and can contaminate drinking water. Fertilizers, both chemical and organic, can cause excessive plant growth in water and reduce oxygen availability for fish.
3. **Take your car to a commercial car wash.** Commercial car washes treat their water before it enters a local waterway. If you choose to wash your car at home, wash your car on



the lawn or another permeable surface. Washing your car on your driveway contributes a large mixture of chemicals to stormwater.

4. **Identify and fix automobile leaks.** Oil leaking from cars is a major source of water pollution. Any oil that drips onto a road or driveway ends up in a nearby waterway. If the repair is not possible right away, put a drip tray under your car and recycle the collected oil.
5. **Maintain your septic system.** Failing systems can introduce disease-causing bacteria to local waterways, making shellfish unsafe to eat and waters unsafe for swimming.
6. **Plant more trees, shrubs, and mulched beds.** Pervious surfaces are the secret to preventing stormwater from entering waterways.
7. **Install a rain garden on your property.** Rain gardens are beautiful, low maintenance and inexpensive gardens designed to treat stormwater runoff.

To learn more on how stormwater affects Puget Sound watch the following video:

<http://www.washingtonnature.org/cities/solvingstormwater/>

For more tips on how to reduce stormwater pollution visit:

<http://www.ci.bremerton.wa.us/498/Stormwater-Pollution-Prevention>



2. Classroom Resources: Tackling Stormwater

2.1. Purpose

Stormwater runoff is considered the leading source of toxic pollution in Puget Sound. Every time it rains, stormwater transports little pieces of our everyday activities, including pet waste, fertilizers and car fluids, into the nearest body of water without any treatment or contaminant removal. Stormwater pollution, therefore, is a major threat to salmon and other aquatic life that depend on clean water.

As part of the effort by the Jefferson County Marine Resources Committee to encourage stormwater-related educational programs and activities, we created this educational resource for educators to utilize stormwater-related curriculum in their classrooms. Resources are available to anyone and provide all of the necessary information and tools to conduct a successful lesson around stormwater.

2.2. Overview

This package includes curriculum and resources to bring stormwater education into your classroom. [Puget Sound Starts Here](#) and [Nature Works Everywhere](#) developed the selected curriculum and websites.

Stormwater-related curriculum for 3rd – 12th grades is included. The curriculum provided here represents the many facets of stormwater runoff and a wide-range of techniques to bring the message into your classroom. Grade appropriate lessons and activities explore water cycles, watersheds, stormwater pollution and engineering solutions that combat stormwater concerns. Students will have the opportunity to engage in meaningful activities to understand the value of clean water and how to creatively redesign our cities and towns with stormwater in mind.

Lessons are designed to meet Next Generation Science and Common Core ELA Standards. Students will develop written, verbal, and problem-solving skills that will prepare them to solve one of the greatest environmental challenges their generation faces right here in the Salish Sea.

2.3. How to Use This Resource

The table below outlines a range of stormwater curriculum for all grade levels. Educators can pick and choose between lessons depending on time constraints, feasibility, and interest. The table includes a brief overview of each curriculum package, target grades, number of sessions included, unit length, and a link to materials.

Target Grades	Name	Developer	# of lessons	Unit Length (45 -60 min)	Unit Description	Link
3 - 5	Drain Rangers: Investigating Polluted Stormwater Runoff in Elementary Grades	Puget Sound Starts Here	11	2 - 14	In this unit, students will be introduced to a problem-solving model where they think like an engineer and explore ways to solve the problem of polluted stormwater runoff.	Drain Rangers
3 - 12	Water: Garden Lesson Plan	Nature Works Everywhere	3	1 - 6	The purpose of this activity guide is to help students understand their garden as a model watershed through the collection and analysis of rainwater filtration data.	Water
6 - 8	Engineering Solutions: Investigating Polluted Stormwater Runoff in Secondary Grades	Puget Sound Starts Here	10	2 - 14	Throughout this unit, students will grapple first hand with the problems we face with stormwater management and the important role of the engineer in problem solving issues and generating solutions.	Engineering Solutions
6 - 8	How Natural Areas Filter Water	Nature Works Everywhere	2	1 - 4	In this lesson, students learn the value of clean freshwater, the natural processes that ensure an adequate supply of usable freshwater and explore the various threats to the water supply.	Natural Areas
Grades	Name	Developer	Number of Lessons	Unit Length (in 45 - 60 min. sessions)	Unit Description	Link
9 - 12	Urban Runoff: Design a School Stormwater Management Plan	Nature Works Everywhere	2	1 - 4	This lesson introduces students to the problem of urban runoff and a variety of nature-based design ideas and solutions. Through a school mapping activity, students determine which solutions would be best suited to dealing with urban runoff on their school grounds.	Urban Runoff

9 - 12	Project-Based Learning: Design and Build a Rain Garden	Nature Works Everywhere	4	2 - 14	This lesson series leads students through the siting, design, and installation of a rain garden. Whether or not you are able to install a rain garden, this unit provides students with many opportunities for learning, enjoyment, and collaboration.	Rain Garden
9 - 12	Sustainable Cities: Nature-Based Solutions in Urban Design	Nature Works Everywhere	4	1 - 14+	The lesson guides students into taking an active role in their cities by using technology to map their communities and plan, design, and propose an urban design project that incorporates nature-based solutions.	Sustainable Cities



2.4. Full URLs

- Drain Rangers
 - <https://www.pugetsoundstartshere.org/Resources.aspx>
- Water
 - <https://www.natureworkseverywhere.org/resources/activity-guide-water/>
- Engineering Solutions
 - <https://www.pugetsoundstartshere.org/Resources.aspx>
- Natural Areas
 - <https://www.natureworkseverywhere.org/resources/how-natural-areas-filter-water/>
- Urban Runoff
 - <https://www.natureworkseverywhere.org/resources/urban-runoff/>
- Rain Garden
 - <https://www.natureworkseverywhere.org/resources/design-and-build-rain-garden/>
- Sustainable Cities
 - <https://www.natureworkseverywhere.org/resources/sustainable-cities/>



3. Rain Garden Presentation

3.1. Overview

The “What is a Rain Garden” presentation is a 5-7-minute presentation designed for non-experts interested in sharing stormwater-related information. The presentation provides an overview of stormwater, stormwater pollution, rain garden benefits, and rain garden function. The presentation includes PowerPoint slides and a guided script.

If the presenter is interested in extending the presentation, there is a link to a 6-minute video, called “Solving Stormwater” by the Nature Conservancy, at the end. The video highlights some of the negative impacts of stormwater runoff on Puget Sound Pacific salmon and how rain gardens can help.

The PowerPoint file including presentation slides and script is available on the Jefferson MRC website, on the Resources Page. If you need assistance, please contact them at jeff.co.mrc@gmail.com.



4. Social Media Templates

4.1. Overview

This section is currently under development. Social media links, photos and draft text for various topics will be provided in this section.

Northwest Straits Foundation:

Facebook: @NWStraitsFND

Twitter: @NWSFoundation

Instagram: @nwstraitsfnd

Northwest Straits Commission:

Facebook: @NWStraits

Twitter: @NWStraits

Instagram: @nwstraits



5. Links and Other Resources

5.1. Stormwater Videos and Infographics

- [Solving Stormwater](#) (video, Nature Conservancy)
<http://www.washingtonnature.org/cities/solvingstormwater>
- [Lost and Sound](#) (educational video, Seattle Public Utilities)
<http://www.seattlechannel.org/misc-video?videoid=x24436>
- [Building a Rain Garden in the Pacific Northwest](#) (video, WSU)
https://www.youtube.com/watch?feature=player_embedded&v=9Kti4HJ45BM
- [Dog Doogity](#) (video/song, Scooppoop.org)
<https://www.youtube.com/watch?v=jDh12w-jcfs>
- [What is green stormwater infrastructure?](#) (infographic, Nature Conservancy)
<http://www.washingtonnature.org/cities/stormwater/green-infrastructure-infographic>
- [Educator Support Video: Water Filtration](#) (Nature Works Everywhere)
<https://www.natureworkseverywhere.org/resources/water-filtration/>
- [Only Rain Down the Drain](#) (interactive video for kids)
<http://www.onlyraindownthedrain.com/interactive-model/>

5.2. Additional Educator Resources

- [Elementary Stormwater Runoff Education Resource Guide](#) (King County)
<https://www.pugetsoundstormgroup.org/eDownload.aspx?no=367&DocID=owYuXbH3dfQ%3d>
- [Sustainable Urban Design: Educator's Toolkit for Project-Based Learning](#) (Nature Works Everywhere)
<https://www.natureworkseverywhere.org/resources/sustainable-urban-design-toolkit/>
- [Low Impact Development Manual for Schools](#) (Sustainability Ambassadors)
<https://www.sustainabilityambassadors.org/lid-manual-for-schools>
- [City Habitats](#) (teacher resource, Nature Works Everywhere)
<https://www.natureworkseverywhere.org/resources/city-habitats/>

- [Rain Garden Tip Sheet](#) (teacher resource, Nature Works Everywhere)
<https://www.natureworkseverywhere.org/resources/rain-garden/>
- [Environment Education Guide: Protecting Washington's Waters from stormwater pollution](#) (report, Department of Ecology)
<https://fortress.wa.gov/ecy/publications/documents/0710058.pdf>

5.3. Stormwater-related Activities

- [Stormwater Quiz](#) (Department of Ecology)
<https://fortress.wa.gov/ecy/waterspledge/StormWater.aspx>
- [Stormwater Pledge](#) (Department of Ecology)
<https://fortress.wa.gov/ecy/waterspledge/WatersPledge.aspx>
- [The Poop Toss Game](#) (game, Snohomish County)
<https://www.snohomishcountywa.gov/DocumentCenter/View/17599/PoopTossGameInfo?bidId=>
- [Kid's Activities](#) (Only Rain Down the Drain)
<http://www.onlyraindownthedrain.com/kids>
- MRC Curriculum Guide (Jefferson County MRC): See Section 2 above.

5.4. Prevention Tips

- [Stormwater Pollution Prevention](#) (Bremerton)
<http://www.ci.bremerton.wa.us/498/Stormwater-Pollution-Prevention>
- [Preventing Pollution](#) (Snohomish County)
<https://snohomishcountywa.gov/779/Preventing-Pollution>
- [Puget Sound Keeper: Polluted Stormwater Runoff](#)
<https://pugetsoundkeeper.org/current-priorities/polluted-stormwater-runoff/>
- [Washington Waters--ours to protect](#)
<https://ecology.wa.gov/About-us/Get-involved/What-you-can-do/Washington-Waters-ours-to-protect>

5.5. Other Stormwater-related Websites and Articles

- [Puget Sound Starts Here](#)
<https://www.pugetsoundstartshere.org/Default.aspx>

- [12,000 Rain Gardens](http://www.12000raingardens.org/) <http://www.12000raingardens.org/>
- [WSU Rain Gardens](https://extension.wsu.edu/raingarden/) <https://extension.wsu.edu/raingarden/>
- [Stormwater Facts](https://www.eopugetsound.org/articles/stormwater-facts) (Encyclopedia of Puget Sound)
<https://www.eopugetsound.org/articles/stormwater-facts>
- [Puget Sound Fact Book](https://www.eopugetsound.org/sites/default/files/features/resources/PugetSoundFactbook_v3.1.pdf) (Encyclopedia of Puget Sound)
https://www.eopugetsound.org/sites/default/files/features/resources/PugetSoundFactbook_v3.1.pdf
- [Rain Garden Handbook for Western Washington](https://fortress.wa.gov/ecy/publications/documents/1310027.pdf) (guidebook, Department of Ecology) <https://fortress.wa.gov/ecy/publications/documents/1310027.pdf>
- [What is killing the coho?](https://www.eopugetsound.org/magazine/is/stormwater-mystery) (article, Encyclopedia of Puget Sound)
<https://www.eopugetsound.org/magazine/is/stormwater-mystery>
- [Stormwater mimics oil spill's effect on Pacific herring](https://www.eopugetsound.org/articles/stormwater-mimics-oil-spills-effect-pacific-herring) (article, Encyclopedia of Puget Sound) <https://www.eopugetsound.org/articles/stormwater-mimics-oil-spills-effect-pacific-herring>

5.6. Outreach Tools and Resources

- [EPA Nonpoint Source Outreach Toolbox](https://cfpub.epa.gov/npstbx/MediaCampaign.cfm)
<https://cfpub.epa.gov/npstbx/MediaCampaign.cfm>
- [Puget Sound Starts Here Outreach Toolkit](http://www.psp.wa.gov/econet_PSSH.php#5)
http://www.psp.wa.gov/econet_PSSH.php#5
- [Only Rain Down the Drain Campaign Materials](http://www.onlyraindownthedrain.com/toolkits/campaign-materials#billboards)
<http://www.onlyraindownthedrain.com/toolkits/campaign-materials#billboards>
- MRC Educational and Outreach Resources (This document)