

SULTAN PLANNING BOARD

AGENDA ITEM COVER SHEET

ITEM NO:

DATE: March 20, 2007

SUBJECT: Storm Water Utility Formation Report

CONTACT PERSON: PublicWorksDirector Dunn
City Administrator Knight

SUMMARY: The Storm Water Utility formation work group has meet twice before tonight, we have discussed:

Why does Sultan need to form a Utility?

History of Storm Water in Sultan

2002 Surface Water Management Plan

Utility Fee Phasing

Earlier tonight we discussed the budget to support a possible utility using Table 4.4 from the 2002 Surface Water Management Plan.

Included with this cover sheet is a phone survey LeeAnn Acker, Shockey Brent, compiled for review. And the MRSC paper "The need for Storm and Surface Water Management: The Water Quality Issue".

Next Steps:

Develop an Annual Budget

Labor,

Equipment,

Supplies

Other Expenses

Develop Cost Accounting System

Implementation of a billing system

Develop Interim Rates

Land Classifications with provisional rate system.

FISCAL IMPACT: Creating a revenue stream within the City of Sultan budget to pay for operation & maintenance as well as capital projects.

RECOMMENDED
ACTION:

Discussion

PLANNING BOARD ACTION:

ATTACHMENTS:

Power Point Presentation

Frequently Asked Questions Paper

MSRC – The Need for Storm & Surface Water Management: The Water Quality Issue

City of Sultan Stormwater Utility

Phone Survey

Selection Criteria

- 1. 155 cities and counties were identified in Western Washington using the Municipal Research Service Center (<http://www.mrsc.org/>)**
- 2. Each City was assigned a number**
- 3. A Random Number Generator was used to select the 33 municipalities contacted for this survey (<http://www.random.org/>)**

33 Jurisdictions Contacted (5 counties, 28 cities)

- Tumwater
- Chehalis
- Mountlake Terrace
- Kelso
- Snohomish
- Monroe
- Duvall
- Gold Bar
- Index
- Carnation
- Lake Stevens
- Marysville
- Woodinville
- North Bend
- Mill Creek
- Edmonds
- Everett
- Seattle
- Bellevue
- Renton
- Kent
- Enumclaw
- Tacoma
- Auburn
- Federal Way
- Puyallup
- Orting
- Newcastle
- Snohomish County
- King County
- Pierce County
- Thurston County
- Kitsap County

20 Jurisdictions had formed stormwater utilities and/or responded to our inquiry (3 counties, 17 cities)

- Bellevue
- Chehalis
- Edmonds
- Everett
- Federal Way
- Kelso
- Kent
- Marysville
- Mill Creek
- Monroe
- Mountlake Terrace
- Orting
- Renton
- Snohomish
- Tacoma
- Tumwater
- Woodinville
- Kitsap County
- King County
- Thurston County

Results

- **Fee Development Strategies**
- **Billing and Implementation Strategies**
- **Commercial Fee Strategies**
- **ERUs and Residential Fees/ERU**
- **Strategies and Criteria for Development**
- **Helpful advice**

Rate Development Strategies

- 1. Kelso and King County** - flat fee for single family residences - non-residential customers have sliding scale depending on use intensity
- 2. Orting** - flat \$3.00 per parcel
- 3. Tumwater** –charges a flat fee of \$0.90 for every single family parcel plus an additional flat fee of \$5.10 provided the impervious surface of the parcel does not exceed 50%
- 4. Woodinville** - charges a flat stormwater fee per parcel

Equivalent Residential Unit (ERU)

- **15 out of 20 jurisdictions use it**
- **Residential Properties are charged for one ERU or have a sliding scale based on urban or UGA locations**

How Big are the ERUs?

Out of 14 jurisdictions that charged per ERU, the average size is 2945 square feet

Jurisdiction	ERU square ft.
Bellevue	2,000
Chehalis	3,000
Edmonds	3,000
Everett	1,000
Kitsap County	4,200
Marysville	3,200
Mill Creek	3,500
Monroe	2,500
Mountlake Terrace	2,282
Renton	2,800
Snohomish	2,500
Tacoma	7,000
Thurston County	1,000
Turnwater	3,250
Average ERU	<u>2945</u>

Billing and Implementation Strategies

- 7 jurisdictions send a bill generated by the stormwater utility
- 5 jurisdictions bill through Assessor's office
 - Bi-annually
 - Annually
- 8 jurisdictions combine their stormwater utility fee with other city utility fees on the same bill
- **Federal Way** was the only jurisdiction that phased in the stormwater utility fee. They claimed that phasing allowed for some initial funding to analyze needs and establish Capital Program Objectives prior to implementing the full program

Commercial Fee Strategies

- 11 jurisdictions use their ERUs and the total square feet (sf) of impervious surface on the property only (total pervious square feet / ERU = Number of ERUs to charge for)
- A wide variety of strategies are used by the other nine:

- **Edmonds** uses the normal ERU system, except for Duplex properties, which are charged for 1.76 ERUs no matter what
- **Everett** sets fees based on the financial needs of the program and bills either as a flat fee or as a function of water consumption
- **Federal Way** has multiple fees based on the category of the property use, then applies the fees to the ERU
- **Kelso** charges commercial properties based on the percent of impervious surface used, but does not have an ERU
- **Kent** uses a sliding scale for its fee based on land use

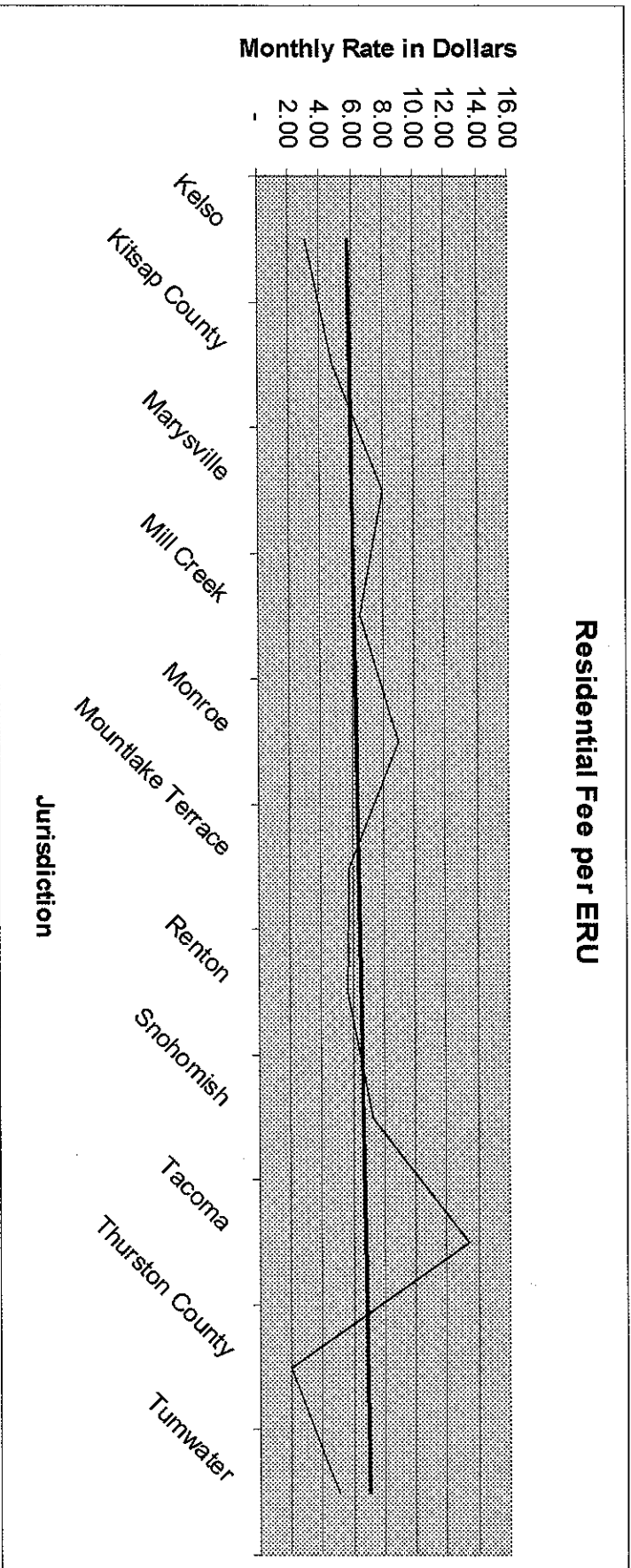
- **King County** charges one flat fee for residential and very light commercial with less than 10% impervious surface. Commercial parcels over 10% impervious surface are billed on a sliding scale per acre per year
- **Mountlake Terrace** calculates the standard ERU fee, then multiplies the fee by a factor of 0.5 if the site has 1-20% impervious surface, 1.0 for sites that are from 21-40 percent impervious and 1.5 for sites that are from 41-70% impervious
- **Orting** charges a flat fee for every utility account within the city limits
- **Renton** calculates fees based on the size of the property and the intensity of the development
- **Tumwater** charges a flat fee of \$0.90 for every developed parcel within the city limits plus \$5.10 per square foot of impervious surface divided by 3,250 for all properties with over 50% impervious surface

Residential Monthly Fees per ERU

Jurisdiction	Monthly Fee/ERU
Bellevue	3.13
Chehalis	5.95
Edmonds	7.78
Everett	10.50
Federal Way	6.58
Kelso	3.10
Kitsap County	4.77
Marysville	8.00
Mill Creek	6.50
Monroe	9.00
MLT	5.83
Renton	5.72
Snohomish	7.25
Tacoma	13.41
Thurston County	1.92
Tumwater	5.10

Another Look

The calculated mean for the fees is \$6.54. The trend-line shows that the average residential fee per ERU ranges from \$6.00 to \$7.50. Actual fees range from \$2.50 to \$13.50.



How Does NPDES Stormwater Permits Affect Rates?

- There is no correlation between stormwater rates and NPDES permits

Jurisdiction	Monthly Fee/ERU	NPDES
Belleue	3.13	Yes
Chehalis	5.95	No
Edmonds	7.78	Yes
Everett	10.50	Yes
Federal Way	6.58	Yes
Kelso	3.10	Yes
Kitsap County	4.77	Yes
Marysville	8.00	Yes
Mill Creek	6.50	Yes
Monroe	9.00	Yes
MLT	5.83	Yes
Renton	5.72	Yes
Snohomish	7.25	Yes
Tacoma	13.41	Yes
Thurston County	1.92	Yes

Monthly Stormwater Fees (in dollars) per ERU Then and Now

	2000	2006	increase
Tumwater	4.95	5.10	0.15
Renton	4.93	5.72	0.79
Chehalis	4.30	5.95	1.63
Edmonds	3.70	7.78	4.08
Kitsap County	3.75	4.77	1.02
Everett	2.85	10.50	7.65
Orting	3.00	3.00	(flat fee)
Mountlake Terrace	5.00	5.83	0.83

Criteria for Fee Strategies

- Fees should be cost based and set at a level such that they meet the full revenue requirements of the utility
- Fees should be easy to understand and administer
- Fees and the process of allocating costs should conform to "generally accepted" fee setting techniques
- Fees should be stable, in their ability to provide adequate revenues to meet the utility's financial, operation and regulatory requirements
- Fee levels should be stable from year to year from the customer's perception
- Fees should be fair and equitable to the customer
- Fees should be legally defensible

Four Alternatives

- **ERU Calculation**
- **Water Consumption**
- **Flat Fee**
- **No Fee**

Alternative	Meets Revenue Requirements	Easy to Understand and Administer	Conform to Accepted Techniques	Provide Adequate Revenue	Stable from Year to Year	Fair and Equitable	Legally Defensible
ERU	X	X	X	X	X	X	X
Water Usage	X			X	X		X
Flat Rate	X	X	X	X	X		X
No Rate		X			X		X

Helpful Advice From Your

Neighbors

- **Kitsap County** – We recommend billing with other utilities if possible. The stormwater fee is much less than sewer, water or garbage and therefore does not cause as much controversy as having it on the tax statement (David Tucker – SWU)
- **Federal Way** – Billing twice a year on the property tax bill through King County reduces customer complaints (Paul Bucich, City)
- **Orting** – Our rates are too low to sustain management of the fund and we are conducting a study to establish new rates. We also require that storm ponds built in new residential developments remain under the ownership and maintenance of the Homeowner's Association (Roxanne Walczak, City)

- **Chehalis** – We also assess a capital facilities charge of \$489/ERU for new construction (Russ Cox, City)
- **Mountlake Terrace** – The City adopted a rate adjustment procedure that gives a discount of 25% to developers if the stormwater infrastructure adjacent to their development complies with existing code for detention and water quality treatment at the time of development. If, after development the site meets the current code then the rate adjustment factor is 50% (Mike Shaw, City)
- **Mill Creek** – We charge a \$10.00 late fee for all residential bills if payment is not received by the cut-off date. The account can be referred to collections and the delinquency can be recorded as a lien on the property.

The Next Step

- **Determine the total funds needed to effectively manage stormwater**
- **Identify the number of billing units for each parcel or identify the gross area of impervious surface on each parcel**
- **Multiply the number of billing units by the rate**
- **Add fixed charges or subtract credits**
- **Develop bill distribution system**

Looking Ahead

Managing a stormwater utility requires consideration of the following issues:

- **Organization**
- **Staffing**
- **Activities that will be funded**
- **Alternative sources of revenue**

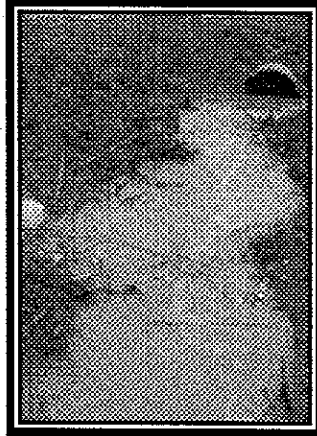
Looking Ahead

Other essential areas to consider in the development of a stormwater utility:

- **Legal Issues**
- **Community Outreach and Public Involvement**
- **Management**
- **Assessment and Rate Setting**

City of Sultan Municipal Stormwater Utility (2007)

Frequently Asked Questions



Under normal circumstances stormwater flow impounds in wetlands, depressions, ponds and puddles and soaks into the water table slowly. This process allows toxins and pollutants in the water to filter out in the soil, lessening the impact of the stormwater on our aquatic resources and our private well systems. This process also slows the volume of water that goes into our streams during a rain event, reducing flooding.

Increased development and impervious (paved) surfaces in populated areas causes stormwater to flow rapidly from the impervious surfaces into streams, lakes and marine waterways. The stormwater carries pollutants and causes long-term damage to our salmon and other aquatic life. Rapid stormwater flows increases the water volume in streams to the point of flooding.

As the population of Sultan grows, so do its impervious surfaces and the need for stormwater system improvements to handle the additional run-off.

1. What is stormwater and why do we need to manage it?

The City of Sultan has decided to reevaluate the way it manages the water that runs off impervious surfaces such as concrete, asphalt, or rooftops. Stormwater runoff carries pollutants directly to our streams and rivers and creates drainage and flooding problems throughout the city.

2. Why is stormwater a problem in Washington?

Human Health: In general, untreated stormwater is unsafe. It can contain toxic metals, organic compounds, bacteria, and viruses. Untreated stormwater is not safe for people to drink and is not recommended for swimming. Polluted stormwater can lead to beach closures for swimming and shellfish harvesting. It can also trigger toxic algal blooms.

Drinking Water: In some areas of Washington, notably Spokane County, and parts of Pierce and Clark counties, gravelly soils allow rapid infiltration of stormwater. Untreated stormwater discharging to the ground could contaminate aquifers that are used for drinking water.

Degraded Water Quality: Virtually all of our urban creeks, streams, and rivers are harmed by stormwater pollution. Stormwater is the leading contributor to water quality pollution of urban waterways in Washington.

Increased Flooding and Erosion: Urban development increases the amount of impervious surfaces such as pavement and rooftops. This increases water flow runoff and flooding frequency and intensity. Stormwater flow also erodes stream channels. A typical city block generates 5 times more runoff than a woodland area of the same size.

Impaired Habitat: In Washington, urban stormwater harms and pollutes streams that provide habitat for fish and wildlife. Alterations to the watershed, such as building homes and other structures and clearing away trees and shrubs, are the leading causes for stormwater pollution. Federal agencies identified habitat loss from stormwater runoff as one of the primary obstacles to salmon recovery.

3. What is a stormwater utility?

A stormwater utility is a separate fund that collects revenues from each parcel of developed land for stormwater operations and capital improvements within Sultan. The formation of a stormwater utility will allow the City of Sultan to charge a stormwater utility fee and use that

money exclusively for stormwater management, including maintenance and improvements.

4. What is a stormwater utility fee?

A stormwater utility fee is used to finance stormwater utility operations, maintenance and capital improvements. It is a fee customers pay to convey stormwater from their properties. It is very much like a water or sewer fee. The utility uses the amount of impervious surface on a property as the primary basis for the fee. The user fee system is a way to raise revenue for the program by charging those who directly contribute to stormwater. This method presents our community with an alternative to an across-the-board tax hike.

5. Why do we have a stormwater utility fee?

The utility fee raises the revenues needed to fund Sultan's stormwater management program. This program brings us into compliance with federal regulations and safeguards our community through improved drainage and protection of local waters. A stormwater utility fee charges properties in Sultan based on that property's contribution to the need for stormwater management.

6. How is the stormwater utility fee different from a tax? (What is a user-fee?)

The stormwater utility is a user-fee, much like the fee that you pay for your water utility or sanitation service. Users of these services are charged based on the demand they place on the system. The stormwater that flows off your property places demand on a vast system of infrastructure which is costly to operate and maintain. Stormwater must be channeled through a system of pipes and other devices before it can be safely discharged into local rivers, lakes, and streams.

7. Who pays the fee?

All property owners in the City of Sultan pay the stormwater utility fee. This includes residential homeowners, property owned by churches or non-profit organizations, and commercial property. Because undeveloped land does not have any impervious surfaces, it is not charged a stormwater fee.

8. How is a stormwater fee different from a tax?

Stormwater programs that draw on the general tax fund or use property taxes for revenue charge everybody regardless of impervious surfaces or development intensity on their property. A use based stormwater fee insures that the people who benefit from the stormwater system are the only ones who pay.

9. Is there anything I can do to reduce my stormwater bill?

The Council is considering adopting a credit system for qualified, properly designed, installed and maintained water quality Best Management Practices (BMPs). This credit is only available to non-residential properties. Residential properties are not eligible for fee reductions. Because they typically have a small amount of impervious surface, they pay only a small fee when compared to non-residential properties.

10. What sorts of things are funded by money collected from the stormwater utility fee?

The stormwater utility fee pays for the operations and maintenance costs of the stormwater program. Some of the services tied to the stormwater program include:

- Flood protection through capital improvement projects
- Improved water quality
- Stormdrain cleaning and repair
- Street sweeping
- Shoulder and ditch maintenance within the publicly owned right-of-way
- Pipe cleaning
- Public education and outreach
- Construction inspection
- Project design and management
- Federal regulatory compliance

11. Do other cities have stormwater user-fees?

There are more than 400 municipalities across the country that have developed utilities to fund their stormwater management programs. The number of stormwater utilities is expected to grow as towns face the increased costs that come with developing stormwater programs to meet new federal requirements.

12. What are the benefits of proper stormwater management?

Managing stormwater properly reduces flooding on your property, reduces water pollution and reduces road erosion due to improper drainage.

13. My property never floods. Will I still have to pay a stormwater fee?

All developed property in Sultan will pay a stormwater utility fee regardless if a drainage concern exists on that specific piece of property or not. Even if your property has never flooded, the stormwater that flows off your property must be managed so that it does not contribute to flooding in areas downstream.

14. If I live in an area that does not have any drainage problems, or live on the edge of the City and water drains onto my property away from streets and the public drainage structure, or live at the bottom of a hill and my property is not the cause of increased flooding from uphill, why would I have to pay for stormwater services?

Impervious surface on your parcel places a certain demand on the stormwater system. Runoff generated by any property must be controlled and conveyed once it leaves so that it does not create problems for others. While certain projects funded by the program would address drainage problems on private properties, all property owners would receive indirect benefits from a properly maintained and city operated stormwater system.

Stormwater management activities have broad benefits including keeping the public streets drained and cleared, making necessary infrastructure upgrades, reducing erosion and pollutants that enter streams and lakes, protecting and restoring streams and other aquatic habitat areas and conveying stormwater safely through all parts of the City. A portion of the fee also provides for compliance with:

- a) Federal, state, and local regulations for water quality improvements;
- b) Administration of the City's land use ordinances through development review; public involvement and educational programs; and
- c) Responding to public health and safety issues that benefit all property owners.

15. Why should I pay the Stormwater Service Charge if flooding still occurs in my neighborhood?

Unfortunately, it is not feasible to fix all of the problems with the public drainage system at once. It may be necessary to complete downstream drainage system improvements before it is feasible to address upstream concerns. Spreading out the cost of system improvements in particular areas to all users in the city keeps the cost as low as possible.

Even if a project doesn't provide direct benefits to your neighborhood, you will likely derive indirect benefits from the project, including improved water quality, improved salmon habitat and better road conditions.

16. What is an impervious surface and what does it have to do with stormwater?

An impervious surface is any area that water will not soak in to. Parking lots, roof tops, roads, and sidewalks are all typically made of impervious materials such as asphalt or concrete.

Because rainwater can not be absorbed by these surfaces, the water must be managed through some sort of stormwater system to prevent flooding. Stormwater runoff from impervious surfaces is often polluted with automotive fluids, metals, sediment, or litter. This polluted stormwater runoff eventually ends up in our streams and rivers. The rate used to calculate your stormwater fee is based on the amount of impervious surfaces on your property. Impervious surface is a good gauge of how much your property is contributing to the overall need for stormwater management in Sultan.

17. How does the volume of stormwater runoff affect the streams?

It is not only the quality of stormwater runoff that can degrade streams but also the amount of water. In an undeveloped watershed with entirely natural vegetative cover, most rainfall and snowmelt can soak into the soil before entering the streams. The increase in flow is much more gradual than in a watershed with impervious surfaces such as roofs, roads and pavement. The increased runoff discharges into streams increasing water volume and velocity. High stream velocities lead to stream bank erosion and the potential for flooding.

18. What about if I live on a large piece of land; doesn't the water just filter into the ground?

The answer depends on many things. It depends on what has been done to the land, how your lawn and buildings are situated on the land, and where the runoff from those developed areas goes.

Lawn allows very little rainwater to infiltrate, compared to the natural landscape. If most of your land is grass, there is more water running off those areas. Recently logged areas (less than 10 years) produce more runoff. Impervious surfaces result in major increases in runoff. If water from these areas can be directed through natural areas such as forested land, meadows, or rain gardens, much of it will likely soak into the ground before reaching a stream and causing problems. Even then, during large storm events, any reduction in infiltration anywhere within the watershed can cause potentially harmful increases in runoff to your local stream.

19. How much is the Stormwater fee?

We don't know yet. The fee will be cost-based and fair. Other jurisdictions base their fee on the average impervious square footage of residential property. This unit is called an Equivalent Residential Unit (ERU). Residential properties are charged for one ERU. Commercial properties are charged depending upon how many ERUs will fit on their property.

Glossary of Stormwater Terms

Best management practices (BMP)

Activities or structural improvements that help reduce the quantity and improve the quality of stormwater runoff. BMPs include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Catch basin

An entryway to the storm drain system, usually located at a street corner

Code of Federal Regulations (CFR)

The compilation of federal regulations. Each area of regulation is contained in a separate volume (e.g., environmental regulations are compiled in volume 40, or 40 CFR). Each volume contains up to several hundred parts.

Conveyance

The process of water moving from one place to another

Culvert

A short, closed (covered) conduit that passes stormwater runoff under an embankment, usually a roadway. A rectangular or square concrete culvert is referred to as a box culvert.

Detention

A stormwater system that delays the downstream progress of stormwater runoff in a controlled manner, typically by using temporary storage areas and a metered outlet device

Erosion

Removal of soil particles by wind and water. Often the eroded debris (silt or sediment) becomes a pollutant via stormwater runoff. Erosion occurs naturally but can be intensified by human activities such as farming, development, road-building, and timber harvesting.

Flood

A temporary rise in flow or stage of any watercourse or stormwater conveyance system that results in stormwater runoff exceeding its normal flow boundaries and inundating adjacent, normally dry areas

Holding pond

A pond or reservoir, usually made of earth, built to store polluted runoff for a limited time

Impermeable material

A soil or material whose properties prevent movement of water through the material

Impervious surface

Hard ground cover that prevents or retards the entry of water into the soil and increases runoff, such as asphalt, concrete, rooftops

Infiltration

The portion of rainfall or surface runoff that moves downward into the subsurface rock and soil

Maximum extent practicable (MEP)

A standard for water quality that applies to all MS4 operators regulated under the NPDES program. Since no precise definition of MEP exists, it allows for maximum flexibility on the part of MS4 operators as they develop and implement their programs.

National Pollutant Discharge Elimination System

Two-phased surface water quality program authorized by Congress as part of the 1987 Clean Water Act

Pollutant loading

The total quantity of pollutants in stormwater runoff

Runoff

Drainage or flood discharge that leaves an area as surface flow or as pipeline flow

Sediment

Soil, sand, and minerals washed from land into water, usually after rain. Sediment can destroy fish-nesting areas, clog animal habitats, and cloud waters so that sunlight does not reach aquatic plants.

Sheet flow

The portion of precipitation that moves initially as overland flow in very shallow depths before eventually reaching a stream channel

Site runoff

Any drainage or flood discharge that is released from a specified area

Storm drain

An opening leading to an underground pipe or open ditch for carrying surface runoff, separate from the sanitary sewer or wastewater system

Stormwater

Precipitation that accumulates in natural and/or constructed storage and stormwater systems during and immediately following a storm event

Stormwater management

Functions associated with planning, designing, constructing, maintaining, financing, and regulating the facilities (both constructed and natural) that collect, store, control, and/or convey stormwater

Stormwater utility

Special assessment district set up to generate a stable source of funding for stormwater management within a region, usually through user fees

Surface runoff

The portion of rainfall that moves over the ground toward a lower elevation and does not infiltrate the soil

Surface water

Water that remains on the surface of the ground, including rivers, lakes, reservoirs, streams, wetlands, impoundments, seas, and estuaries

Watershed

Geographical area that drains to a specified point on a water course, usually a confluence of streams or rivers. Also known as drainage area, catchment, or river basin. (In the UK the term "watershed" refers to what in the US is called the drainage divide, and the term "catchment" refers to what in the US is called a watershed.)

— Stormwater Utility Info
Please share w/ Lee Ann for FRQ



Municipal Research and Services Center of Washington
Working Together for Excellence in Local Government

Sheet 5
open house
materials

— Thanks,
Deborah

Updated 12/06

The Need for Storm and Surface Water Management: The Water Quality Issue

Contents

- [The Need for Stormwater Management](#)
- [Runoff and Nonpoint Source Pollution Control](#)
- [Storm Water and ESA](#)

Need for Stormwater Management

Early water pollution efforts focused on reducing pollutants in industrial wastewater and discharges from municipal sewage treatment plants. Studies have shown, however, that more diffuse sources of water pollution are significant causes of water quality impairment - specifically, storm water runoff that drains large surface areas, such as agricultural and urban land.

- [NPDES Stormwater Program](#) - EPA
- [About Stormwater](#)
- [Why is Urban Stormwater A Problem in Washington?](#) - DOE
- [Washington Stormwater Management Study, Interim Report to the Washington State Legislature, Report and Recommendations from the Stormwater Policy Advisory Committee, January 2001](#)

Runoff and Nonpoint Source Pollution Control

There is a well-documented relationship between land development and the degradation of water quality. Controlling storm water runoff is needed to mitigate the adverse environmental impacts caused by runoff. The listing of salmon under the Environmental Species Act requires that streams and wetlands be protected. Both the state and federal government have set out strategies related to storm water management to protect streams and wetlands. The state's storm water strategy outlined in [Managing Urban Storm Water to Protect Streams](#) (47 KB) includes:

- Adoption of adequate riparian buffers using best available science,
 - Retention of the natural soils and vegetation cover, primarily forest, in the tributary watershed,
 - Control of peak flows and flow duration of streams through storm water management,
 - Improved construction-site erosion control measures, and
 - Application of water quality treatment best management practices (BMP)
-
- [Economic Benefit of Runoff Controls](#) - United States Environmental Protection Agency Office of Wetlands, Oceans and Watersheds

- [Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters](#), EPA-840-B-93-001c January 1993
- [NonPoint Source Pointers \(Factsheets\)](#), Nonpoint Source Solutions - EPA Office of Water
- [Managing Urban Runoff](#), EPA Pointer No. 7, EPA841-F-96-004G
- [Reduce the Harm from Stormwater Runoff](#) (1.02 MB), Priority 3 of Puget Sound Action Team 2005-2007 Puget Sound Conservation and Recovery Plan
- [Washington's Water Quality Management Plan to Control Nonpoint Source Pollution - Final](#), Department of Ecology, Publication Number 99-26, Revised April 2004.

Stormwater and the Endangered Species Act

The National Marine Fisheries Service (NMFS) has included in its 4(d) rule provisions on which it will evaluate whether development ordinances or plans adequately conserve listed fish. The provisions, or limits, are introduced and explained in [A Citizen's Guide to the 4\(d\) Rule for Threatened Salmon and Steelhead on the West Coast. Limit No. 12](#) (68 KB) - Municipal, Residential, Commercial, and Industrial Development and Redevelopment (MRCI) contains the following items related to storm water:

Limit 12 (2). An MRCI development ordinance or plan adequately prevents stormwater discharge impacts on water quality and quantity and stream flow patterns in the watershed--including peak and base flows in perennial streams. Stormwater management programs must require development activities to avoid impairing water quality and quantity. These activities must preserve or enhance stream flow patterns so they are as close as possible to the historic peak flows, base flows, durations, volumes, and velocities. This can be accomplished by reducing impervious surfaces and maintaining forest cover and natural soils. These conditions will, in turn, maintain essential habitat processes such as natural water infiltration rates, transpiration rates, stormwater run-off rates, sediment filtering, and provide hydrographic conditions that maintain and sustain aquatic life.

Limit 12 (9). An MRCI development ordinance or plan contains provisions to prevent erosion and sediment run-off during (and after) construction and thus prevent sediment and pollutant discharge to streams, wetlands and other water bodies that support listed fish. These provisions, at a minimum, should include detaining flows, stabilizing soils, protecting slopes, stabilizing channels and outlets, protecting drain inlets, maintaining best management practices (BMPs), and controlling pollutants. These goals can be accomplished by applying seasonal work limits, phasing land clearing activities, maintaining undisturbed native top soil and vegetation, etc. These stipulations will help maintain natural runoff rates and protect water quality.

The State's [Salmon Recovery Plan](#), Extinction is Not an Option, contains plan for for managing stormwater.

- [Managing Urban Storm Water to Protect Streams](#), (47 KB) Section 3.B.4, Vol. II, Extinction is Not an Option: Statewide Strategy to Recover Salmon