

WHATCOM COUNTY
PLAN FOR REDUCING STORMWATER IMPACTS
FROM ROAD MAINTENANCE ACTIVITIES

Prepared for
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WHATCOM COUNTY PLAN FOR REDUCING STORMWATER IMPACTS FROM ROAD MAINTENANCE ACTIVITIES

1. Plan Purpose

The Whatcom County Plan for Reducing Impacts from Road Maintenance Activities is intended to achieve the following objectives:

- Protect the health, safety, and welfare of the community
- Protect water resources and help meet the requirements of the Western Washington Phase II Municipal Stormwater Permit, Section S5.C5.f
- Provide efficient, cost-effective maintenance of the County's streets, parking lots, and other roadways, including practices to reduce stormwater impacts associated with maintenance activities and runoff from those surfaces

Portions of this plan were adapted from Section 4 of the Stormwater Pollution Prevention Operations and Maintenance Plan template, which was developed by Otak, Inc. The template was developed for the Wenatchee Valley Stormwater Technical Advisory Committee, with funding from the Washington State Department of Ecology (Ecology).

2. Overview

Pollutants accumulate on roadway surfaces and parking lots from pavement and vehicle wear, atmospheric deposition, and littering. Hydrocarbons, copper, and other heavy metals are deposited on roads from clutch and brake wear, vehicle exhaust, and leaking motor fluids. Degrading road surfaces, litter, and trash also add pollutants to stormwater runoff. Anti-icing chemicals that include acetate can deplete dissolved oxygen, increase conductivity, and increase pH of receiving waters. Sand used for winter traction and other soil material can accumulate in the stormwater collection and conveyance system, carrying pollutants into receiving waters. If not properly managed, regular municipal street maintenance activities can negatively impact the health of local aquatic resources.

The Maintenance and Operations Division is responsible for implementing this plan during maintenance of the County's roads and highways, and during maintenance of municipal parking lots.

Stormwater pollution prevention during roadway and parking lot maintenance focuses on collecting sediment, debris, and pollutants before they can enter the stormwater collection and conveyance system. This plan also covers proper vegetation management and application and storage of materials used for snow and ice control.

3. Standards and BMP Selection

The Phase II Permit directs the County to prevent the discharge of pollutants to the stormwater system and protect water quality to the maximum extent practicable. To meet that goal, the County has identified BMPs related to each of the following activities:

- Pipes, culverts, and ditches
- Street sweeping
- Street repair and maintenance

- Street improvement and utility projects
- Dust control
- Winter activities
- Roadside vegetation management
- Record-keeping

These category areas include all of the specific activities noted in Permit Section S5.C5.f.

In general, the focus on selecting road, highway, and parking lot BMPs is to reduce the amount of sediment and debris that is washed from the roadways into the stormwater collection and conveyance system. Implementing these BMPs will help prevent the discharge of pollutants into receiving waters and help reduce the cost of maintaining the stormwater collection and conveyance system.

4. Pipes, Culverts, and Ditches

The County periodically performs pipe and culvert cleaning, including removal of accumulated pollutants. The County also maintains many miles of roadside ditches, performing maintenance activities including removal of accumulated sediments and other pollutants, and roadside vegetation management (see also Section 10).

Removal of sediments and other pollutants restores the conveyance capacity of drainage systems and reduces the discharge of pollutants to downstream receiving waters.

4.1 Pipe Cleaning BMPs

The County has adopted the following pipe cleaning BMPs:

- Inspect the pipe/enclosed drainage system to determine if removal of accumulated solids is necessary
- Clean pipes as needed based on the determination of the field inspector
- Remove/hydro-excavate accumulated sediment to prevent discharge to the receiving water
- Block the down-gradient end of the pipe to prevent flushing of pollutants, if necessary
- Minimize water usage
- Remove liquids and solids from pipe
- Dispose of removed materials properly:
 - Decant liquids to sanitary sewer. Do not discharge liquids to the drainage system or to the ground.
 - Dispose of solids. Solids generated from field activities are disposed of at a waste facility shared with WSDOT and the City of Bellingham. The City tests accumulated waste materials prior to having waste hauled for proper disposal.
- Keep spill kits in the vehicle to clean up spills. Reference the County Spill, Prevention, Control, and Countermeasure Plan as needed.

4.2 Culvert Cleaning BMPs

The County has adopted the following culvert cleaning BMPs:

- Inspect culverts annually to determine if removal of accumulated solids is necessary to restore the conveyance capacity of drainage systems and reduce the discharge of pollutants to downstream receiving waters.

- Clean pipes as needed based on the determination of the field inspector
- Protect the down-gradient ditch from erosion. Install erosion control measures in the ditch to prevent flushing of the culvert from causing erosion. Refer the WSDOT Highway Runoff Manual for procedures and BMPs.
- Install a system to collect the water and sediment flushed from the culvert to be collected.
- Remove the solids and liquids using a hydro-excavation truck or other method.
- Dispose of removed materials properly:
 - Decant liquids to sanitary sewer. Do not discharge liquids to the drainage system or to the ground.
 - Dispose of solids. Solids generated from field activities are disposed of at a waste facility shared with WSDOT and the City of Bellingham.
 - Keep spill kits in the vehicle to clean up spills. Reference the County Spill, Prevention, Control, and Countermeasure Plan as needed.

4.3 Ditch Maintenance BMPs

The County has adopted the following ditch maintenance BMPs:

- Inspect the ditch system to determine if removal of accumulated solids is necessary to restore the conveyance capacity of drainage systems and reduce the discharge of pollutants to downstream receiving waters.
- Remove sediment if needed based on the determination of the field inspector.
- Remove in a manner that limits exposing un-stabilized soil. If soil is exposed, then provide stabilization of soil. Refer the WSDOT Highway Runoff Manual for procedures and BMPs.
- If necessary, install barriers to prevent the flushing of pollutants and sediment down-gradient.
- Stabilize exposed soil to prevent erosion. Vegetate, armor, or apply other erosion control methods. Refer to the Stormwater Management Manual for Western Washington, Chapter 2 for recommended sediment and erosion control practices and standards.
- Manage vegetated ditches in accordance with the County's Integrated Roadside Vegetation Management Plan.
- Dispose of removed materials properly:
 - Decant liquids to sanitary sewer. Do not discharge liquids to the drainage system or to the ground.
 - Dispose of solids. Solids generated from field activities are disposed of at a waste facility shared with WSDOT and the City of Bellingham.
 - Keep spill kits in the vehicle to clean up spills. Reference the County Spill, Prevention, Control, and Countermeasure Plan as needed.

5. Street Sweeping

The County conducts street sweeping for safety, public health, and aesthetic reasons. Effective sweeping removes pollutants before they can be carried into the stormwater collection and conveyance system and may reduce the frequency of catch basin cleaning.

5.1 Street Sweeping Schedule

The County’s street sweeping schedule was developed to produce the most cost-effective reduction of pollutants, taking into account pollutant loads and weather patterns (additional sweeping during selected seasonal periods). Areas subject to winter sanding are swept on a spot basis after snow events. Sweeping is prioritized for areas in the Lake Whatcom watershed. Table 1 shows the County street sweeping schedule within the watershed. In general, the County aims to sweep most streets within the watershed at least monthly.

Table 1. Street Sweeping Schedule	
Activities in Lake Whatcom and Lake Samish Watersheds	Sweeping Frequency
Year-round	Monthly
Enhanced seasonal sweeping	
Spring (one month)	Twice monthly
Fall (two months)	Twice monthly
Spot sweeping (after snow events)	As required

Areas outside the Lake Whatcom and Lake Samish watersheds are not swept on a fixed basis, but “as needed”.

5.2 Street Sweeping BMPs

The County has adopted the following street sweeping BMPs:

- Use capture or side-cast power brooms
- Maintain sweeping equipment in good working condition
- Store swept material in a covered and contained site until it can be disposed of properly
- Coordinate street sweeping schedules to coincide with important pollution prevention events such as the end of curbside leaf collection or winter sanding operations
- Whenever practicable, coordinate street sweeping to occur just prior to catch basin cleaning
- Schedule additional street sweeping following special events that generate abnormally high pollutant loadings (i.e., sand application for snow events)
- Train operator on factors that influence pollutant removal, including sweeper speed, brush adjustment, rotation rate, sweeping pattern, and maneuvering around parked vehicles
- Avoid wet cleaning or flushing and utilize dry methods whenever practicable
- If wet cleaning or flushing is absolutely necessary, sweep and remove debris prior to flushing; plug storm drain inlets and direct wash water to sanitary sewer when available (with prior approval from the local sewer agency)

5.3 Waste Disposal

Street waste is generally not considered a dangerous waste. However, high traffic loads or spills can lead to waste that requires special handling and disposal. Waste generated from street sweeping is disposed of at a facility shared with WSDOT and the City of Bellingham. The City tests accumulated waste materials before hauling materials for proper disposal.

6. Street Repair and Maintenance

Street repair and maintenance activities include road surfacing (repairing potholes, sealing cracks, overlaying roads, and paving shoulders), pavement marking, signage and signal repairs, and small construction projects. The BMPs related to these activities are described below.

6.1 Street Repair and Maintenance BMPs

The County has adopted the following street repair and maintenance BMPs:

- When practicable, avoid work in wet weather.
- Carry a spill kit during maintenance activities.
- Take care to minimize paving materials, paint, pavement markings, and wastes entering the storm drainage system.
- When placing chip seals or conducting shoulder repair, limit spreading aggregate to the sealed surface and sweep up excess aggregate once cured and subsequent days if needed.
- Collect any loose sand, gravel, asphalt, or other material as soon as practicable after repair activities.
- Sweep or vacuum dust and debris before using water to clean up work sites.
- Avoid striping operations when the pavement is wet or if rain is likely.
- When striping, use water-based paints rather than solvent-based materials.
- When practicable, use portable drip trays under equipment to catch spills.
- When using dry saw cutting techniques, provide proper dust control and sweep or vacuum up residue. If wet cutting techniques are required, use as little cooling water as practicable and switch the water off when the saw is not in use. Use downstream inlet protection to minimize cutting waste discharge to stormwater collection and conveyance system.
- Properly contain and dispose of unused paint, cleaning materials, and debris following repair activities.

7. Street Improvement and Utility Projects

Street improvement and projects include road re-paving projects, utility installation and repair projects, and other medium to large construction projects. The BMPs related to these activities are described below.

7.1 Street Construction BMPs

The following BMPs apply when making roadway repairs that include grading, soil transfer, or vegetation removal, or when completing street improvement or utility installation projects:

- Minimize land disturbance and exposed slope length.
- Whenever practicable, avoid land disturbance during the wet season.

- Implement erosion control techniques or devices to stabilize disturbed areas. Use mulch or other erosion control measures when soils are exposed for more than a week.
- Install storm drain inlet protection on all inlets within 500 feet downstream or down-gradient of the project site to prevent coarse sediment from entering the drainage system. Inlet protection methods include block and gravel inlet protection, gravel and wire inlet protection, and catch basin inserts. Inspect inlet protections frequently during construction.
- Remove excess soil from the site as soon as practicable after backfilling to eliminate sediment loss from surplus fill.
- Contain and collect the slurry from concrete pouring. Do not wash or allow the discharge of concrete slurry to the storm drainage system.
- Rinse all concrete equipment in designated wash areas.
- Apply dust control methods and collect any dusts or saw-cutting liquids.
- Use good housekeeping practices within the construction area to keep pollutant materials from entering the storm drainage system
- Obtain a General NPDES Permit for Stormwater Discharges Associated with Construction Activities from Ecology for any project that disturbs one or more acres and has the potential to discharge to a water of the state.

For construction projects that create new impervious surfaces or have the potential to disturb large areas of soil, the County's construction permitting requirements and any applicable state permitting requirements should be followed.

8. Dust Control

Dust can cause air and water pollution problems, particularly in areas of exposed soil, including construction sites and unpaved roads. Appropriate dust control activities can help to minimize dust generation while limiting impacts on air or water quality. The BMPs related to these activities are described below.

8.1 Dust Control BMPs

The County has adopted the following dust control BMPs:

- Stabilize or cover areas of exposed or disturbed soil necessary to reduce soil erosion. Refer to Stormwater Management Manual for Western Washington, Chapter 2 for recommended sediment and erosion control practices and standards.
- Consider using approved dust suppressants such as those listed in the Ecology publication Techniques for Dust Prevention and Suppression (96-433). Note that not all dust suppressants are appropriate for use near storm drainage systems or surface waters.
- Consider paving municipal operation areas that generate dust or mud.
- Sweep paved areas as needed where dust accumulates.
- Regularly clean equipment and vehicles subject to dust accumulation from operations.
- Prevent mud/dust tracking by stabilizing soils and using wheel wash facilities when necessary.
- Never wash down equipment or vehicles to the storm drainage system. If washing is necessary, contain and collect wash water for proper disposal. If no other pollutants are present, sediment- or dust-laden wash water can be infiltrated in a grassy area.

9. Winter Activities

The County conducts winter activities such as anti-icing, deicing, sanding, and snow plowing to enhance public safety during inclement winter weather. Proper selection and application of deicing chemicals is important to prevent negative environmental impacts to water quality and plants.

9.1 Anti-icing, Deicing, and Sanding BMPs

The County has adopted the following anti-icing, deicing, and sanding BMPs:

- Select anti-icers and deicers that cause the least adverse environmental impact while still providing adequate public safety. The following materials are preferred:
 - Sand/salt mixture
 - De-icing solution (purchased from WSDOT)Other materials should generally not be used.
- Follow manufacturer's recommendations when applying deicer.
- Calibrate equipment to optimum levels according to manufacturer instructions.
- Apply sand and deicers at the lowest rate necessary to provide for vehicle traction; avoid excessive application.
- Sweep priority streets after snow events to collect accumulated sand. Refer to the County's Snow Removal Priority map for priority snow removal roads.

9.2 Snow Plowing BMPs

The County has adopted the following snow plowing BMPs:

- Whenever practicable, avoid covering inlets of the stormwater collection and conveyance system during plowing, so snowmelt can drain.

9.3 Material Storage BMPs

Uncovered material storage stockpiles are a major source of pollutants as sand or other road maintenance materials can be carried into the stormwater system during rain or snowmelt events. Vehicle, equipment, and material storage areas should be maintained according to County's Stormwater Pollution Prevention Plans (SWPPPs) for relevant facilities. The following operational BMPs should be implemented to limit the transport of materials into the stormwater collection and conveyance system:

- Limit deicer and sand purchases to the amount that is expected to be needed for the upcoming season.
- Whenever practicable, store material stockpiles in a building or within a paved and bermed covered area.
- Store chemical anti-icing and deicing materials following manufacturer recommendations.
- Sweep parking lots, material storage areas, and driveways regularly to collect dirt, waste, debris, and loose stockpile materials. Do not hose down the areas toward a storm drain inlet or ditch.
- Whenever practicable, collect and recycle stored materials back into the stockpile.
- Protect stockpiles and other materials storage from stormwater run-on and the storm drainage system from runoff from materials storage areas.
- Place temporary plastic sheeting over uncovered stockpiles.

10. Roadside Vegetation Management

Vegetation management includes maintaining landscaping for roadway rights-of-way and medians and controlling noxious weeds, pests, and unwanted vegetation growth. Disturbed soil, removed vegetation, and chemicals can all negatively impact receiving waters.

County roadside vegetation management practices are documented in the Integrated Roadside Vegetation Management Plan, most recently updated in early 2012. Refer to this plan or subsequent updated versions for BMPs and practices related to roadside vegetation management.

11. Record-keeping

Record-keeping is a condition of the Phase II Permit. The record-keeping required by the Phase II Permit is limited to documenting any liquid or material spills that could carry pollutants into the stormwater collection and conveyance system. Spills should be responded to in accordance with the County Spill, Prevention, Control, and Countermeasure Plan. Spill incidents should be reported to the Maintenance and Operations Division shop, which will notify appropriate parties, including the Whatcom County Stormwater Division. All paperwork related to the spill and cleanup activities should be maintained by the Maintenance and Operations Division and copies sent to the Stormwater Division.

12. References and Further Information

In general, the Stormwater Management Manual for Western Washington, Volume IV, Source Control BMPs is a good source for information on pollution reducing measures for municipal operations.

This Plan for Reducing Stormwater Impacts from Road Maintenance Activities document was developed relying on information from the following sources:

Stormwater Pollution Prevention Operations and Maintenance Plan Template for Eastern Washington NPDES Phase II Communities, Completed for the Wenatchee Valley Stormwater Technical Advisory Committee by Otak, Inc., October 2010

Integrated Pest Management and Nutrient Control Plan for Parks and Open Spaces, Whatcom County, October 2011

2011/2012 Integrated Roadside Vegetation Management Plan, Whatcom County Public Works Department, Maintenance and Operations Division

Regional Road Maintenance Endangered Species Act Program Guidelines, Regional Road Maintenance Technical Working Group

Washington State Department of Ecology, Stormwater Management Manual for Western Washington, Volume IV, Source Control BMPs

Western Washington Phase II Municipal Stormwater Permit, Section S5.C5.f