SKAGIT COUNTY
INTEGRATED PEST MANAGEMENT PLAN FOR ROADS, PARKS AND OPEN SPACE

Prepared for
Skagit County, Washington
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SKAGIT COUNTY
INTEGRATED PEST MANAGEMENT PLAN FOR ROADS, PARKS AND OPEN SPACE

1. Plan Purpose

The Skagit County Integrated Pest Management Plan (IPM) 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.C.5.g.
- Provide efficient, cost-effective maintenance of the County's parks, rights of way, facilities, and other resources through the use of an IPM strategy
- Protect, environmentally valuable areas such as wetlands, riparian areas, and aquatic and terrestrial wildlife habitat
- Design new and renovate existing landscape areas that suit site conditions while encouraging sustainable maintenance practices
- Limit chemical application as much as practicable.

Sediment and Erosion control standards and methods are not part of this plan. The County follows the standards and methods listed in Volume IV of the *Stormwater Management Manual for Western Washington* (Ecology Manual).

2. Integrated Pest Management Principles

IPM is a series of pest management evaluations, decisions, and controls rather than a single pest control method. In practicing IPM, County staff that are aware of and responsible for managing the potential for pest infestation follow a six-tiered approach, which is summarized below:

2.1 Identify Pests

Correctly identify problem pests and understand their life cycles.

2.2 Set Action Thresholds

Before taking any pest control action, IPM first sets an action threshold, a point at which pest populations or environmental conditions indicate that pest control action must be taken. Sighting a single pest does not always mean that control is needed. The level at which pests will threaten public health, safety, resources, or facilities is critical in guiding pest control decisions.

2.3 Monitor and Identify Pests

IPM programs monitor for pests and identify them accurately so that appropriate control decisions can be made in conjunction with established action thresholds. Not all insects, weeds, and other organisms require control. Many organisms are innocuous, some are beneficial, and some populations are not significant enough to pose a potential threat. Monitoring and identification reduces the possibility that pesticides will be used when not needed or that the wrong kind of pesticide will be used.

2.4 Prevent Pest Habitat and Pest Introduction

IPM programs work to manage roadways, parks, open space, facilities, and other resources so as to minimize the potential for pests posing a threat. This management approach may mean selecting pest-resistant plant varieties and planting pest-free rootstock. These control methods can be very effective and cost-efficient while presenting little to no risk to people or the environment.

2.5 Control Pests

Pest monitoring and identification efforts together with established action thresholds may indicate that pest control is required, particularly where preventive methods are no longer effective or available. IPM programs then evaluate the available proper control method both for effectiveness and risk. Effective, less risky pest controls are preferred. Highly targeted or pest-specific chemicals (such as pheromones to disrupt mating) or mechanical controls (such as trapping, weeding, or screening) are preferred to more general pesticide applications. If further monitoring, identifications, and action thresholds indicate that less risky controls are not working or are not a viable option, then additional pest control methods would be employed (such as targeted spraying of pesticides). Broadcast spraying of non-specific pesticides is a last resort.

2.6. Evaluate and Record Control Effectiveness

Evaluate and record the effectiveness of the employed control and modify maintenance practices to support landscape recovery and prevent recurrence of pests beyond action thresholds.

3. Pest Controls

The IPM decision-making process is to determine if, where, when, and how pest problems will be managed. The IPM program includes all potential pest control strategies, but *focuses on non-chemical controls whenever possible*, in order to support a sustainable environment. Sound horticultural practices should be used to control pests. It is important to also apply sound principles to chemical fertilizer application decisions and to other chemical applications—use minimum quantities, follow product directions, and comply with all regulatory requirements. Attachment 1 to this plan contains a list of herbicides and pesticides that the County uses along with active ingredients and uses for the chemicals.

The following four pest control methods, in order of preference, may be employed with the IPM program:

3.1 Cultural Control

Cultural control involves using sound horticultural practices to optimize plant health and to suppress insects, disease, and weed growth. Other cultural controls include site-appropriate design and the use of disease or drought-resistant plants.

3.2 Mechanical Control

Mechanical control involves using a variety of pest removal techniques, tools, and equipment for eliminating pests.

3.3 Biological Control

Biological control involves using agents that act as predators or parasites of pest species and using other beneficial organisms that improve plant health by enhancing soil quality.

3.4 Chemical Control

Chemical control involves applying various products such as herbicides, insecticides, fungicides, fertilizers, or other chemical compounds to a target pest as a means of control. Whenever pesticides or fertilizers are used, they must be applied according to the directions on the pesticide container label. Due to constantly changing labels, laws, and regulations, it is important to verify that the products used are appropriate for the intended application. Attachment 1 is a list of chemicals that the County uses, but is not limited to due to the changing nature of chemicals on the market. Applicators can determine the least toxic chemical by referring to the signal word on the EPA approved label. Material Safety Data Sheets (MSDS) for pesticides should be available at all times.

The Washington State Department of Agriculture sets the overall policy for pesticide use in the state of Washington. The approved chemical list can be viewed on the department's Web site at www.agr.wa.gov. All pesticide use procedures shall conform to the requirements of Chapter 17.21 RCW and Chapter 16-228 WAC (Appendix IV-D R.7). Attachment 1 contains a list of all the chemicals used within Skagit County.

The Washington Department of Ecology requires a special permit for all aquatic herbicide applications. This permit allows herbicide control for all listed noxious weeds within an aquatic environment and monitors impact levels on non-target plants. The following link contains more information: http://www.ecy.wa.gov/Programs/wq/pesticides/final_pesticide_permits/noxious/noxious_index.html

In addition, the County has four Integrated Lake Management Plans addressing aquatic vegetation management for Lake McMurray, Big Lake, Lake Erie, Lake Campbell, Clear Lake, and Beaver Lake.

The Washington State Stormwater Manual states that a pesticide-use plan include at a minimum:

- A list of selected pesticides and their specific uses
- Brands, formulations, application methods and quantities to be used
- Equipment use and maintenance procedures
- Safety, storage, and disposal methods
- Monitoring, record keeping, and public notice procedures

The State Stormwater Manual also states that pesticide applicators should:

- Mix the pesticides and clean the application equipment in an area where accidental spills will not enter surface or ground waters, and will not contaminate the soil.
- Store pesticides in enclosed areas or in covered impervious containment with appropriate product labels on containers.
- Ensure that pesticide contaminated stormwater or spills/leaks of pesticides are not discharged to storm drains.
- Ensure that pesticide contaminated paved areas are not hosed down to a storm drain or conveyance ditch.
- Store and maintain appropriate spill cleanup materials in a location known to all near the storage area.
- Clean up any spilled pesticides and ensure that the pesticide contaminated waste materials are kept in designated covered and contained areas.
- Ensure that the pesticide application equipment be capable of immediate shutoff in the event of an emergency.
- Not spray pesticides within 100 feet of open waters including wetlands, ponds, and streams, sloughs and any drainage ditch or channel (containing standing water) that leads to open water except when

approved by Ecology or the local jurisdiction. See Volume IV Section 2.2 of Ecology Surface Water Manual.

- Flag all sensitive areas including wells, creeks and wetlands prior to spraying.
- Complete public posting of the area to be sprayed prior to the application as required by RCW 17.21.410. Markers shall be a minimum of four inches by five inches and include the words "THIS LANDSCAPE HAS BEEN TREATED BY" and "FOR MORE INFOMRATION PLEASE CALL." Markers shall remain in place for 24 hours post application unless longer time is specified by the pesticide label.
- Spray applications only during weather conditions as specified in the label directions.
- Have all MSDS for pesticides being applied on hand and readily available.
- Not apply during rain or immediately before expected rain.
- Not dispose of collected vegetation into waterways or storm drainage systems.
- Conduct mulch-mowing whenever practicable.
- Dispose of grass clippings, leaves, sticks, or other collected vegetation by composting, if feasible.

4. IPM for Natural Areas, Forested Areas, Right of Way and Stormwater Facilities

Generally, the use of chemical products within 100 feet of a watercourse should be prohibited in favor of an alternative control method whenever possible. Exceptions may include applications for noxious weed control, riparian restoration activities, permitted Lake Management District activities, and public safety. All known and mapped sensitive areas including wells, creeks and wetlands must be flagged prior to spraying. Weather conditions must be monitored carefully to avoid applying a chemical near a watercourse immediately before forecasted heavy rains. Soil conditions and site topography must be studied to determine whether a chemical application is appropriate and to determine the appropriate timing of any chemical application.

4.1 Pest Tolerance Thresholds

For all natural and sensitive areas, the following guidelines should be observed:

- Invasive plants are generally not acceptable. Invasive plants should be controlled in conjunction with natural resource enhancement efforts in these environments as resources permit and where control can be practically achieved.
- Noxious weeds should be controlled, when found, according to state of Washington requirements. The following links contain information for noxious weed boards in Washington State:
  - http://apps.leg.wa.gov/Rcw/default.aspx?Cite=17.10
  - http://www.nwcb.wa.gov/weed_list/regions/region2.htm
  - http://www.skagitcounty.net/Common/asp/default.asp?d=Noxiousweeds&c=General&P=main.htm
- Insect pests that pose a risk to the public (such as hornets) or to the resource (such as gypsy moths) should be controlled.
- Plant diseases will generally be tolerated unless control is necessary to ensure the health of particularly valuable assets or if they pose an unacceptable risk to the public.
- Attachment 1 lists chemical and surfactant controls approved and recommended by the Skagit County Noxious Weed Control Board

4.2 Controls

Herbicide use in any natural environment must be carefully considered. Herbicides should be used for weed control in natural areas only when necessary and other control measures have been unsuccessful. For wetlands or water environments, only approved wetland herbicides should be used.

When necessary, herbicide use practices are as follows:

- Cut-and-stem treatment (daubing or painting) is the preferred choice for natural area management.
- If possible, remove existing growth manually or mechanically. Wait for new growth to become established, and then treat with the appropriate herbicide.

4.3 Controls within County Right of Way

Vegetation management within County Right of Way will follow management objectives defined in the Skagit County Roadside Vegetation Management Objectives (Attachment 2) and the BMP Activity Guides (Attachment 3). Skagit County has made a commitment to develop and implement an integrated roadside vegetation management program. One that uses a variety of vegetation control measures in an attempt to minimize chemical solutions wherever possible.

Vegetation must be continually managed to protect the structural integrity of the traveled way and contribute to its safe use, improve the esthetics of the roadside, minimize necessary manpower expenditures, and reduce costs. Vegetation management limits the spread of undesirable weeds while providing valuable wildlife habitat for animals and birds as well as creating a visual experience for the public.

Goals for roadside vegetation management include:

1. Prevent root systems and vegetation from deteriorating edges off roadway and drivable surface.
2. Prevent sod buildup that hinders proper roadway drainage.
3. Assure that traffic control devices such as signage and guardrails are visible to achieve safe travel conditions.

The Road Right-of-Way Spraying Agreement provides property owners the option of selecting from three no-spray options.

5. IPM for Turf Areas

Skagit County maintains a variety of turf types including park lawn area, athletic fields, and other turf types. Different pest issues may affect each turf type and pest management practices may vary accordingly.

5.1 Pest Tolerance Thresholds

The following summarizes the pest tolerance thresholds for various turf areas:

- Some levels of weed, insect, and disease pests are tolerated in general park lawn areas.
- Pests in highly maintained turf such as athletic fields are generally controlled through good turf cultural practices.

5.2 Controls

The following summarizes controls for broadleaf, insects, disease, and grass for various turf areas:

5.2.1 Broadleaf Weed Control

Weeds in turf are generally tolerated to some extent. When control is necessary, the primary method is through the following cultural practices:

- Careful monitoring of watering practices
- Fertilization
- Aeration
- Top-dressing
- Over-seeding.

Through the above cultural practices, park turf is made healthier and better able to compete with various broadleaf weeds. Chemical weed control should be used only as a last resort for controlling particularly difficult weeds in high-visibility turf areas. In controlling broadleaf weeds, the following guidelines should be observed:

- The least toxic, least residual pesticide should be used for spot treatments (selection based on referring to EPA approved label).
- General broadcast treatments should be avoided and only used when other control methods fail.
- Timing of such applications should be made to avoid contact with the public to the maximum extent possible.
- The site that has been treated should be posted.

5.2.2 Insect Control

Chemical control is to be used only in limited circumstances in high-visibility/high-use park turf areas and according to the following guidelines:

- Chemical applications should be spot treatments directed specifically at the turf areas containing the pest.
- The preferred initial choice for application in high-use areas is the safest, least toxic product available.

5.2.3 Disease Control

Disease in general park turf is typically tolerated and not actively controlled; the following guidelines should be observed:

- In high-use/high-visibility park turf areas, disease should be controlled by performing sound turf cultural practices.
- Pesticides may be used as a last resort to control disease in park turf areas.

5.2.4 Grass Trimming Control

The control of grass growing along fence lines and around trees, bollards, posts, and other landscape features may be necessary. Careful employment of grass control techniques is especially important around trees where impacts from mower line trimmers and other damage can lead to tree loss. The following are acceptable grass trimming management practices:

- Grass is carefully trimmed using gas-powered string trimmers or push-type lawn mowers.
- Herbicide applications are performed periodically to provide pre-emergent control of weed and grass seed not yet germinated.
- Herbicide applications to control existing weeds and grass should only be used minimally.

- Concrete mow strips are sometimes a good alternative to herbicide application or grass trimming.

6. IPM for Trails

Skagit County maintains a number of trails that may be affected by different pest issues and pest management practices may vary accordingly.

6.1 Pest Tolerance Thresholds

The following summarizes the pest tolerance thresholds for trails:

- Invasive plants should be controlled in conjunction with ecosystem restoration efforts on any park trail as resources permit.
- Noxious weeds should be controlled, when found, according to state of Washington requirements.
- Weeds are generally found on trails and require control only when beginning to compromise trail function.
- Insect pests that pose a risk to the public (e.g., hornets) should be controlled.

6.2 Pest Management Strategies

The following summarizes pest management strategies for trails:

6.2.1 Weed Control

Weeds on trails are generally tolerated until they begin to interfere with trail function. When control is necessary, the primary method is increasing mulch on, or re-surfacing, the trail surface. Chemical weed control is often not necessary on trail surfaces, but should be used only as a last resort for controlling particularly difficult weeds. In the cases where chemical weed control is indicated, the following guidelines should be observed:

- The least toxic, least residual herbicide should be used for spot treatments.
- General broadcast treatments should be avoided.
- Timing of such applications should be made to avoid contact with the public to the maximum extent possible.
- The site that has been treated should be posted.

6.2.2 Insect Control

Only insects that can cause a health risk (such as wasps and hornets) are controlled on trails. When insect control on trails is necessary, chemical control with an approved insecticide is acceptable and only the individual nests should be treated.

7. IPM for Trees

Park trees are aesthetically pleasing, contribute to wildlife habitat, provide shade and shelter from the weather, and help clean the air of pollutants. Because trees are often very large and tall, accessing and managing pets and disease may present unique challenges.

7.1 Pest Tolerance Thresholds

The following summarizes the pest tolerance thresholds for areas with trees:

- Some insect and disease pests in trees are to be expected.
- Insect or disease pests in selected, high-value specimen trees may require control measures.

7.2 Physical Tree Damage Control

Tree loss damage most often occurs when construction equipment, mowing equipment, or string trimmers repeatedly strike trees. Damaged bark may result in tree loss. Damage may be controlled by observing the following guidelines:

- Removing turf from around the tree base to create tree mulch rings 3 to 4 feet in diameter can substantially reduce damage caused by mowers and trimmers.
- With tree mulch rings, pruning should be conducted for tree health reasons and for hazard reduction in conformance with the International Society of Arboriculture standards.

7.3 Insect Control

Conditions may make it less desirable to attempt controlling insect pests in large trees. Aerial spray equipment often involves a high probability of the applied pesticide leaving the area due to wind drift. When insect pests are to be controlled in trees, the following measures should be used:

- Trees highly susceptible to specific insect pests may be removed from the landscape and replaced with resistant species.
- The portion of the tree affected by the insect (such as tent caterpillars) can be physically removed, eliminating the pest.
- An insecticide may be applied to control a specific insect pest only in certain situations. Such situations include pests on specimen-quality trees, in high-visibility locations, or where the presence of the pest threatens the life of the tree. When pesticide applications are made, product drift should be controlled.
- Injection technology may allow for systemic control of certain insect pests with minimal or no impact to human or environmental health.

7.4 Disease Control

Tree diseases may lead to a tree becoming a hazard to the public or the surrounding environment. The following control measures may be appropriate under certain conditions:

- Trees susceptible to particular diseases may be removed from the landscape and replaced with disease-resistant varieties.
- When possible, parts of trees affected by disease should be pruned out and properly disposed of to stop the spread of disease within the tree and to adjacent trees.
- An appropriate fungicide may be applied to control a specific disease pathogen only in certain cases. These cases include specimen-quality trees in high-visibility park locations where the presence of the disease compromises public safety or threatens the life of the tree. Pesticide applications should not be made unless the potential for product drift can be controlled.
- Injection technology may allow for systemic control of certain disease in trees pests with minimal or no impact to human or environmental health.

8. IPM for Plant Beds

Plant beds are defined as non-turf planted areas that include woody plant material such as shrubs, trees, and ground covers. This category also includes floral color displays containing herbaceous plants such as perennials, annuals, and bulbs.

The most serious pest management issue in plant beds is weed control. If not controlled, weeds not only make a plant bed look unkempt but, more importantly, can out-compete desirable landscape plants resulting in a loss of assets.

8.1 Pest Tolerance Thresholds

The following summarizes the pest tolerance thresholds for plant beds:

- In general, weeds are not tolerated in park plant beds.
- Insect pests are tolerated unless they pose a threat to humans or threaten the health of the desirable plant.
- Diseased plants are not tolerated and are usually removed.

8.2 Weed Control

The following summarizes weed control guidelines for plant beds:

- Weeds are controlled by hand pulling, or by mechanical methods in larger plant beds.
- Plant beds may be mulched after planting to suppress new weed growth.
- Use of landscape fabric can be used.
- Herbicides can be sprayed, if necessary.

8.3 Disease Control

The following summarizes the disease control guidelines for plant beds:

- Diseased plants should be hand-pulled from plant bed and discarded appropriately.
- Disease-resistant plants should be planted in all park plant beds, whenever possible.

9. IPM for Certain Specific Pests

Certain specific pests require special management consideration. These pests include blackberries, English ivy, horsetail, knotweed, mice and rats, nuisance wildlife, Scotch broom, slugs, vector-borne disease, yellow jackets, hornets, and wasps.

9.1 Blackberries

Effective mechanical control of blackberries may be difficult by itself. Combined with chemical control measures and replanting of the site, effective control can be maintained. Chemical applications should be limited to the area of infestation. Chemical applications should be suspended during berry production season until berries have fallen to protect against accidental chemical ingestion. Control measures should include re-vegetating the site with desirable plant species.

9.2 English Ivy

Ivy is difficult to control or eradicate. Manual or mechanical control is somewhat effective though time-consuming. A combination of mechanical and chemical control may be more effective and spread can be kept to a minimum, with continuous control measures. Chemical applications should be kept to the area of infestation.

9.3 Horsetail

Horsetail may be almost impossible to control manually or mechanically. Horsetail can be controlled with herbicides. Horsetail is an indication of high water content in soil, so any use of herbicides should be well thought out and carefully timed to avoid contamination beyond the application area. Chemical application should be contained to the area of infestation.

9.4 Japanese Knotweed

Knotweeds are a habitat-degrading problem along riparian corridors in western Washington and are very difficult to control because they have an extensive rhizome system and the ability to re-sprout. It is generally not considered possible to eradicate knotweed species from Washington, but it may be possible to eliminate them from high quality riparian areas. Control methods in order of preference include prevention, cultural, and chemical controls. Mechanical controls are no longer considered effective as they tend to spread the plant. A combination of mechanical and chemical control may be more effective. Chemical applications (Habitat/Polaris) should be kept to the area of infestation.

9.5 Mice and Rats

Rats and mice may pose a human health risk when present and should be controlled in given situations. Mice and rat control is not currently a major pest control issue in parks facilities, but increased control measures may be indicated in the future. The common method of control is baiting with an approved rat or mouse bait/trap. Extreme caution must be taken to place bait/traps in locations where people and domestic animals cannot access them. Potential effects of bait on predators or other wildlife should be considered.

9.6 Nuisance Wildlife Control

Beavers, coyotes, moles, mountain beavers, opossums, raccoons, waterfowl, and other species can be destructive to park lands and natural areas when their activities are excessive. Generally, interference with wildlife is undesirable. If control of wildlife is deemed necessary, the County will work with the state (Department of Wildlife) agency to formulate a control solution.

9.7 Scotch Broom

Scotch Broom can thrive on disturbed sites. It may be difficult to control, and spreads rapidly. The seeds and flowers are toxic, making it a high priority for eradication. Manual control can have some effect, but must be done at the proper time of year. Chemical control can also be effective, but requires follow-up management techniques until full eradication occurs. Chemical applications should be kept to the area of infestation.

9.8 Slugs

Slugs can have a significant impact on park floral beds and other vegetation. Approved control strategies include manual control and careful use of chemical control products. One non-toxic chemical that is found to work is iron phosphate, which is biodegradable and, in appropriate concentrations, healthy for garden soil.

9.9 Poison Hemlock

The entire plant is toxic to animals and humans; it contains the poisonous alkaloid coniine and other alkaloids. It can infest large areas of pasture as well as open waste areas quickly. Poison hemlock is a very tall biennial plant that can reach up to 12 feet in height and prefers rich, moist soil, but is highly adaptable to other conditions. Manual control can have some effect, but must be done at the proper time of year. Chemical control can also be effective, but requires follow-up management techniques until full eradication occurs. Chemical applications should be kept to the area of infestation.

9.10 Vector-Borne Disease

Vector-borne diseases are rarely an issue in the Pacific Northwest. The most significant such disease at this time is the mosquito-borne disease, West Nile Virus. Complete control of mosquito infestations is nearly impossible, but cultural controls can have some effect, such as removing any standing or stagnant water. Larvicides may also be used to control mosquito infestations if it is determined that public health concerns warrant their use. West Nile Virus control efforts should be coordinated with public health authorities.

9.11 Yellow Jackets, Hornets, Mosquitoes, and Wasps

Control is typically through use of an approved insecticide or larvacide. Only individual nests or defined mosquito areas are treated and only if the nest or mosquitoes pose an imminent risk to humans using park facilities.

10. Definitions

BMP: Best management practices are the schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices approved by the Department that, when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State.

MSDS: Material Safety Data Sheets or MSDS are prepared by manufacturers of chemical products to relay the necessary safety and protective information to users about the said chemical compounds.

Pesticide: Any material including agricultural chemicals, herbicides, insecticides and fungicides, or biological agents applied to a target pest as a control measure.

Pest: The word "pest" has been broadly defined in this document to include "injurious" insect species, plant pathogens, noxious or invasive vegetation, vertebrate animals such as rodents, structural pests, or any other factor that creates an unhealthy environment for landscapes and structures.

Plant beds: Non-turf planted areas that include woody plant material such as shrubs, trees, and ground covers and may also include floral color displays containing herbaceous plants such as perennials, annuals, and bulbs.

Threshold: The term "threshold" refers to the point at which pest injury can no longer be tolerated without compromising human health, the health or aesthetic value of a plant, ecosystem, or other assets of value. Once a threshold is being approached, some control measure may be necessary to suppress pest activity to acceptable levels.

11. 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 Integrated Pest Management Plan was developed relying on information from the following sources:

United States Environmental Protection Agency, Integrated Pest Management Principles http://www.epa.gov/opp00001/factsheets/ipm.htm

Washington State University Extension, Hortsense: Home gardener fact sheets for managing plant problems with IPM or Integrated Pest Management. http://pep.wsu.edu/hortsense/

Shaw, Andy; Skagit County Department of Public Works Maintenance and Operations Division: Roadside Vegetation Management Objectives

Snohomish County, NPDES Integrated Pest Management Plan for Sites with Drainage Facilities Owned or Operated by the County's Surface Water Management Division

City of Bellevue Parks and Community Services, Integrated Pest Management Plan

Washington State Department of Agriculture, IPM Plant Profile, Japanese Knotweed, July 9, 2004, Updated August 2008, November 2007.

http://www.nwcb.wa.gov/documents/Microsoft%20Word%20-%20Profile-knotweed%20%208-08.pdf

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

Skagit County Roads BMP Activity Guides

ATTACHMENT 1

Skagit County Chemical List

Brown AND Caldwell

Skagit County Pest Management Chemicals

The chemicals used by the County for pest management include, but are not limited to, the following chemicals. Applicators can determine the least toxic chemical by referring to the signal word on the EPA approved label.

Skagit County Pest Management Chemical Controls		
Name	Uses	Active Ingredients
Parks		
Roundup Pro	Broad leaf and grasses (parking lots, fence lines, spot spraying flowerbeds)	Glyphosate
Garlon 3A	Blackberries. Poison Hemlock.	Triclopyr butoxyethylester
Quick fire	Moss killer.	Ammonium Salt of Fatty Acids
Speed Zone	Selective herbicide, used in turf to control unwanted broadleaf.	Carefen Trazone-ethyl, Ethylhexyl Ester, 2, 4-D, Mecoprop-P Acid
Casoron 4G	Pre-emergence weed control in flowerbeds.	Dichlobenil
Skagit County Noxious Weed Control Board		
Aquaneat/Aquamaster/Rodeo	For controlling broad leaves and grasses. Mainly used for Spartina and Knotweed control. Aquatic.	Glyphosate
Weedar64	Broad leaved plants. Aquatic.	2,4-D
2,4-D Amine 4	Broad leaved plants.	2, 4-D
Weedmaster	Broad leaved plants. Pasture approval rating.	2, 4-D
Crossbow	Broad leaved plants.	2, 4-D
Round up Pro	Broad leaf and grasses.	Glyphosate
Habitat	Broad leaf and grasses. Used in our Spartina and Knotweed programs.	Imazapyr
Polaris	Broad leaf and grasses. Used in our Spartina and Knotweed programs.	Imazapyr
Stinger	Scotch broom.	Clopyralid
Milestone	Broadleaved weeds. Hawkweeds.	Pyridine
Skagit County Noxious Weed Control Board Surfactants		
Competitor	Spartina and Knotweed programs.	Modified Vegetable Oil.
Syltac	Terrestrial application or near water	Modified Vegetable Oil and Silicone Surfactant.
R-11	Terrestrial application or near water	N,N-Bis-2-(omega-Hydroxypolyoxyethylene/polyoxypropylene) ethyl alkylamine
Roads		
Oust Extra	Eliminates vegetation on road shoulders to maintain &clear shoulders.	Sulfometuron methyl, Metsufuron methyl
Round Up Pro	Broad leaf and grasses.	Glyphosate
Telar	Eliminate and maintain horsetail.	Chlosulfuron

Skagit County Pest Management Chemical Controls		
Name	Uses	Active Ingredients
Land Mark	3 oz Oust and 11/5 oz Telar	Sulfometuron methyl, Chlorsulfuron
Pay Load	Maintain clear shoulders	Flumioxazin
Milestone	Eliminate vegetation and maintain clear shoulders.	Pyridine
Razor Pro	Broadleaf and grasses.	Glyphosate
Clean Amine	Broadleaved plants.	2, 4-D
Spreader 90	Non ionic surfactant.	Alkyl polyethoxy ethers & ethoxylated derivatives
Liberate	Linseed base – surfactant – drift control	Lecithin, methyl esters of fatty acids, alcohol ethoxylate
Escort	Slow kill of brush (alders, blackberries, and maple trees).	Metsulfuron methyl
Poloris	Broad leaf and grasses. Used in our Spartina and Knotweed control..	Imazapyr

ATTACHMENT 2

Skagit County Roadside Vegetation Management Objectives

Brown AND Caldwell

SKAGIT COUNTY
DEPARTMENT OF PUBLIC WORKS
MAINTENANCE & OPERATIONS
DIVISION

ROADSIDE VEGETATION MANAGEMENT OBJECTIVES

To effectively control vegetation through mechanical,
manual, and chemical means.

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AS/jrr

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I. ROADSIDE MANAGEMENT OBJECTIVES

There are three parts of the roadway that are of concern, Shoulders, Ditches, and the Back slope area.

A. Roadway Shoulders – Zones I, II and III

The shoulder is considered the area between the edge of the road surface and the beginning of the ditch. The shoulder may be anywhere from 0 to approximately eight feet wide. The county has identified the general needs of shoulder maintenance by zones.

Zone I – Pavement drainage Zone. Mandatory 12 inches strip beginning at the edge of the pavement along all County roads, resulting in no vegetation.

Zone II – Vegetation Free Zone. Section up to approximately eight feet from pavement edge of road to ditch line/shoulder edge on drivable shoulders where no vegetation should grow,

Zone III –Operation Zone. Section where low growing vegetation is maintained. This section varies greatly in width and is dependent upon shoulder make-up. (non-drivable shoulders)

The following explains the importance for ensuring no vegetation growth along the road shoulder within Zone I and Zone II:

1. Prevent sod buildup that hinders proper roadway drainage.
2. Prevent root systems ad vegetation from deteriorating edges off roadway and drivable surface.

The following explains the importance for ensuring no vegetation growth or low growing vegetation maintenance along shoulder within Zone I, Zone II and Zone III:

1. Eliminate fire hazards.
2. Road right-of-way should present no visual hazards.
3. Maintain shoulder area that can be used for joggers, bicyclists and provide off-road emergency parking.

Most important is the prevention of sod buildup. Vegetation growing in the shoulder area causes a buildup of sod and if left unchecked will rise two to six inches above the edge of the pavement. When this occurs, water draining from the roadway to the ditch is impeded, allowing it to soak into the shoulder surface and under the pavement. In the winter when the sub-grade is continually wet and traffic is using the road, the asphalt surface breaks up causing extreme road pavement damage at the time of a freeze.

Another problem with sod build up is the ridge it forms along the pavement edge. This ridge is a danger to traffic in the same manner as a

rut along the pavement edge. The roots developed by the sod tend to grow under the pavement edge that ravels and breaks out into small chunks under traffic.

B. Ditches – Zone IV

The main function of roadway ditches is to gather the roadway surface drainage and move it away from the roadway and into a natural drainage course. It is important that ditches are maintained to inhibit erosion of ditch banks and that they be kept free of obstructions, allowing water to flow freely.

The following need to be controlled along ditch lines and within the ditch itself: cattails, reeds canary grass, alder, and blackberries.

Controlling the vegetation along ditch lines and within the ditch promotes:

1. Improved drainage by removing cattails and reeds canary grass that clog ditches.
2. Improved sight distances to sign posts, curves, and intersections.
3. Improved drainage by the removal of material accumulating in ditches.

For vegetation management classification purposes, ditches require Zone IV maintenance.

C. Back slopes – Zones III and V

The back slope is that portion of the right-of-way from the back edge of the ditch to the right-of-way line. The area may average between 2 to 10 feet in width. The needs in this area are:

1. Safety – Keeping a sight line clear from vegetation to prevent potential safety hazards from vegetation growing over the roadway. (trees and/or their branches hanging overt the roadway, etc.)
2. Removing poisonous or noxious weeds such as tansy ragwort and knapweed.
3. Keeping undesirable vegetation growing on the right-of-way from spreading to private properties and visa versa.
4. Removing dangerous trees from road right-of way.
5. Clearing vegetation from fence lines.
6. To remove brush and trees from back slopes to allow sun to dry road, promoting longer road life and decrease the potential of traffic accidents during the winter months when ice accumulates in shaded areas of roadways.
7. To provide self-sustaining vegetation that will control erosion.
8. To reduce the amount of manual and mechanical brush cutting.

For vegetation management classification purposes, back slopes require Zone III and/or V maintenance.

II. VEGETATION MANAGEMENT TECHNIQUES

A. Shoulders – Zone I, II and III

There are many variables that effect vegetation growth on shoulders. The prime examples being traffic volumes soil conditions, weather conditions, roadway surface type, and size/slope of shoulders and degree of urbanization.

One or more of the following methods will be used to maintain roadway shoulders.

1. Mechanical Mowing

To control the growth of planted or wild weeds and grasses or other types of vegetation. To clean edge of the roadway by machine mowing. This contributes to the safety, convenience and pleasure of the public and the preservation of the roadway itself.

Mowing shoulders is a proven method of vegetation control in some areas and is presently used on shoulders that will not be chemically sprayed. When shoulders are mowed, only the surface layer of vegetation is removed, which leaves a problem of root systems deteriorating the roadway and sod buildup sometimes causing drainage problems.

At the present time there are six (6) maintenance Tech II's who operate the county's mechanical mowers approximately six months out of the year.

As a general rule, county roads will be mowed twice (2) a year. The number of mowing will vary depending on the growth rate of the locality and the vegetation make-up. The mowing season is from April through September.

2. Shoulder Maintenance – Mechanical

Maintenance on the portion of the roadway between the traveled way (actual road pavement) and the roadside ditch. Specific activities include: shoulder grading, sod removal allows a smooth transition to shoulder from traveled way and to promote drainage.

Approximately 100 miles of county roadway will have sod removal done annually. Sod removal is presently on a seven- (7) year cycle

The roads Skagit County anticipates sod removal on are basically the same as the oiling schedule.

3. Chemical Control – Sterilant

To maintain vegetation free area promoting pavement drainage and prevent the breaking-up of road edge. To maintain low vegetation on roadside shoulders.

Approximately 815 miles of roads are scheduled for treatment annually.

The Spray Program is scheduled to begin in March.

A minimum of 12 inches and a maximum of approximately 4 feet will be sprayed, depending on shoulder makeup. Exceptions will be those areas restricted from herbicide application as described in section III.

B. Back slopes – Zone III and V

To control the growth of brush, blackberries and small trees on back slopes of ditches and intersections. Emphasis is given to safety, preservation of the roadway, signs, guardrails (etc.) and ditch lines.

Natural growth and vegetation which does not cause a visual hazard or potential roadway damage will not be disturbed.

1. Manual and Mechanical Vegetation Control

To control the growth of brush, blackberries and small trees on back slopes of ditches and intersections. Manual methods use chainsaws or brush saws. Mechanical methods use a rotary mowing head.

There are six (6) maintenance tech II's who operate the mechanical brush cutters approximately six (6) months of the year.

The manual brush crew consists of six maintenance techs that work approximately 10 months of the year with chain saws, the basket truck and chipper truck.

2. Noxious Weed Control/Brush

To control the growth of noxious weeds within the County right-of-way, such as tansy ragwort, knapweed or other weeds designated by the Washington State Noxious Weed Board or the Skagit County Noxious 'Weed Board.

To remove brush along fence lines, guardrails, bridge approaches, sign posts and any other areas where mechanical mowers cannot reach. To restrict the growth of brush, blackberries and alders. Approximately 800 miles of roadway are scheduled to be dormant

spot-brush sprayed. Ideally the dormant spray program should begin in early Spring (Match-April) and/or Fall.

Basal treatments (use of herbicide on fresh cut trees) will be applied to restrict and/or eliminate new growth of alders and other unwanted trees. This treatment is done immediately (from 0 to no more than four hours following the cutting of the trees.

All noxious weed/brush maintenance activity will be documented on Daily Herbicide Application Forms.

C. Ditches – Zone IV

Ditches will be maintained so they are free of obstructions and allow water to flow freely.
Ditches will be maintained by mechanical, manual and chemical means.

1. Mechanical Ditching

Mechanical ditching is done to remove material that is silting. One problem with mechanical ditching is that when the excavator removes an extra two to four inches of material, eventually the ditches become deeper than driveway cross culverts. Culverts then need to be reset.

2. Manual Ditching

Hand ditching, pulling and weeding of vegetation found in county ditches will be done when there is no other means of effectively controlling the problem vegetation.

III. SPRAY PROGRAM

It is the policy of Skagit County to minimize the use of herbicides for vegetation control when possible.

A. Laws and Regulations

Skagit County Public Works will adhere to all Federal, State and County laws, Regulations, Ordinances, Resolutions and Executive Orders.

B. Citizen Options

Citizens (landowners) residing in Skagit County who do not want herbicides applied to the road right-of-way abutting their property may yearly sign an "Spraying Agreement" and post the frontage of there property as no spray areas.

Skagit County will refrain from spraying herbicides until such time the vegetation becomes overgrown. Skagit County retains the right to mow and or apply herbicide if the growth of vegetation impairs the visibility and/or intrudes into the roadway, blocks drainage pathways, or causes a visual impairment to the motoring public. Skagit County may chemically treat a 12-inch portion of shoulder/roadway to prevent any vegetation intrusion in the roadway itself upon permission by the property owner.

Refer to:

1. Appendix I Maintenance Agreement Roadside Spray Program Options
2. Appendix II No Spray Sign Posting Instructions
3. Appendix III Right of Way "Spraying Agreement"

C. No Spray Areas

The following areas have been identified as "chemical Usage Restriction" areas. The county will not be applying herbicides to these areas.

1. List of pesticide sensitive individuals Department of Agriculture
2. Areas where owners sign a "Spraying Agreement"
3. Department of Fisheries Exemptions
4. Department of Ecology Exemptions
5. Well head areas

IV SUMMARY

Skagit County has made a commitment to develop and implement an integrated roadside vegetation management program. One that used a variety of vegetation control measures in an attempt to minimize chemical solutions wherever possible.

A successful integrated Roadside Vegetation Management Program is not developed overnight. It takes scientific research, testing, money, staff and creativity.

Vegetation must be continually managed to protect the structural integrity of the traveled way and contribute to its safe use, improve the esthetics of the roadside, minimize necessary manpower expenditures, and reduce costs. Vegetation management limits the spread of undesirable weeds while providing valuable wildlife habitat for animals and birds as well as creating a visual experience for the public.

The key to a successful integrated vegetation management program is personnel. It is essential that all individuals responsible for herbicide mechanical equipment and manual means of vegetation management are competent, capable and knowledgeable in this subject to keep the program safe and effective for themselves and the public.

APPENDIX I

SPRAYING AGREEMENT
ROADSIDE SPRAY PROGRAM OPTIONS

The Road Right-of-Way Spraying Agreement gives you three (3) no spray options. These options are:

1. Do not spray the road shoulder and back slope (pavement to property line adjacent to my property.

   If this option is selected, Skagit County will apply NO chemicals to the right-of-way abutting your property from the road shoulder to your property line.

2. I will allow a 12" strip from the pavement edge to be sprayed to minimize road pavement damage and allow adequate drainage.

   If this option is selected, Skagit County may apply herbicides not to exceed 12 inches from the pavement edge on the road shoulder.

3. Do not spray the road back slope (front of ditch or end of road shoulder to property line) adjacent to my property.

   If this option is selected, Skagit County will apply chemicals to the road shoulder but will apply NO chemicals from the edge of the shoulder to your property line.

   Spraying from 12 inches (minimum) up to approximately 8 feet (on drivable shoulders) on the road shoulder is invaluable in preventing sod buildup that hinders necessary roadway drainage and prevents root systems from deteriorating edges of roadway.

APPENDIX II

SKAGIT COUNTY
PUBLIC WORKS DEPARTMENT
MAINTENANCE & OPERATIONS DIVISION

Spraying Agreement Sign
Posting Instructions

Post the boundaries of your property with the signs provided by Skagit County.

Signs should be securely fastened to a small post which is firmly driven into the ground at a location that is as far away from the edge of the pavement as is reasonably possible while still remaining easily visible for an approaching vehicle.

Should you have any questions about Skagit County's Roadside Vegetation Management Program, please feel free to call 755-9531. You may also write to Skagit County Road Department, 201 East Avon Avenue, Burlington, WA 98233.

Permits and posting of signs are good for one calendar year only. They will have to be renewed on an annual basis. Anyone who has an existing "Spraying Agreement" with the county will be contacted the following year at approximately the same time.

APPENDIX III

SKAGIT COUNTY
SPRAYING AGREEMENT

This agreement (herein "agreement") between _____ and _____ (check box that applies), as

[ ] a single person,
[ ] husband and wife,
[ ] as the _____ (print title/position)
of _____
(print name of partnership, trust, company, LLC, etc.),
a _____
(print the kind of legal entity & state of legal formation),

(herein individually and/or collectively referred to as the "OWNER"), and Skagit County, a political subdivision of the State of Washington (herein the "COUNTY"). OWNER and COUNTY may be individually referred to herein as a "party", and may be collectively referred to herein as the "parties." The parties mutually agree as follows:

1. OWNER will install signs on the property line(s) of OWNER'S property (more particularly identified per Section 8., below) that are clearly visible from the road. OWNER shall assure that such signs have continued visibility. COUNTY will supply signs at the OWNER'S request. Only signs provided by the COUNTY may be used by the OWNER per this agreement, and use of any other signs by OWNER (homemade or otherwise), may void this agreement.

2. OWNER will select from the following options and initial OWNER'S choice on the line provided:

   _____Do not spray the road shoulder and back slope (pavement to property line) abutting my property.

   _____A twelve inch (12") strip from the edge of the pavement may be sprayed, as determined by the COUNTY.

   _____Do not spray the road back slope (front of ditch or end of shoulder to property line) abutting my property.

3. OWNER agrees to remove and destroy any noxious weed (i.e. Tansy Ragwort) identified on abutting COUNTY right-of-way.

4. Subject to the terms of this agreement, the COUNTY will not use chemical herbicides in the sign-posted areas including shoulders, ditches and right-of-way behind the ditches, as designated in Section 2, above.

5. COUNTY will mow and/or apply herbicide whenever the COUNTY otherwise reasonably determines (at the COUNTY'S discretion) that it is necessary to do so, in the event that vegetation and/or weeds within the COUNTY right-of-way abutting the OWNER's property have become overgrown and/or are otherwise in need of maintenance (as may be determined by the COUNTY).

6. The term of this agreement is one (1) year from the date of signature and must be renewed annually by the OWNER. Either the OWNER or the COUNTY may terminate this agreement by providing the other party with written notice of termination at any time during the term of this agreement.

7. The OWNER hereby agrees to indemnify, defend and hold harmless the COUNTY (including its officers, elected officials, agents, contractors, employees and volunteers) from any loss, damage, claim, demand, and/or judgments directly attributable to this agreement. The COUNTY assumes no liability whatsoever pursuant to the terms of this agreement.

8. The OWNER represents that he/she/they is/are the legal owner(s) of the property commonly identified as Skagit County Assessor Tax Parcel Number(s):_____ . If the property is owned by a partnership, corporation, trust, limited liability company, or other legal entity, the undersigned represents that he/she/they is/are duly authorized to execute this agreement on behalf of the partnership, corporation, trust, limited liability company, or other legal entity.

9. This agreement may be executed in any number of counterparts. Faxed signatures shall be considered to be original signatures. This agreement is made and entered into under the laws of the State of Washington. Venue for this agreement is Skagit County, Washington. If any term of provision of this agreement is held to be invalid or unenforceable by a court of competent jurisdiction, such invalidity shall attach only to such term or provision, and shall not this agreement shall only be deemed modified by said court to minimum extent required by law.

_____
Date

_____
Phone

_____
Signature (OWNER)

Print Full Name and Mailing Address

_____

_____

_____

Skagit County Assessor Tax Parcel Number(s):
_____

Recommended by:

_____
Public Works Department Special Operations Mgr.
If you have any questions please call (360) 755-9531.

Approved as to Content:

Public Works Director

Please return this agreement to:
Skagit County Road Department
201 East Avon Avenue
Burlington WA 98233

Approved as to Indemnification:

_____
Risk Manager

Approved as to form:

_____
Deputy Prosecuting Attorney

ATTACHMENT 3

Skagit County Roads Maintenance Activity Guides and BMPs

Brown AND Caldwell

Best Management Practices (BMPs) for Road Operation Division Activities

(To be included in appropriate activity guides)

Pipe Cleaning	
This applies to the cleaning of pipes in enclosed drainage systems. Pollutants accumulate in pipes and the enclosed drainage systems. Removal of these pollutants restores the drainage capacity as well as removing pollutants before they are discharged to the receiving water	
Inspect / Maintain	• Inspect the pipe/ enclosed drainage system to determine if removal of accumulated solids is necessary • Clean pipes when accumulation of solids exceeds the maintenance standard.
Vactor	• Remove / Vactor accumulated sediment to prevent discharge to the receiving water • Block down gradient end of pipe to prevent flushing of pollutants, if necessary • Minimize water usage • Remove liquids and solids from pipe
Disposal	• Dispose of removed materials properly: o Decant liquids to sanitary sewer. Do not discharge liquids to the drainage system or to the ground o Dispose of solids. If the pipe contained hazardous materials, hazardous disposal of the solids may be necessary
Equipment	• Maintain equipment to prevent vehicle fluid leaks(oils. Lubricants) • Maintain gaskets, hoses, valves (etc.) to prevent leakage of vactored liquids • Keep cleanup materials in the vehicle to clean up spills

Cleaning of Culverts that convey stormwater in ditch systems	
This applies to the cleaning accumulated pollutants in culverts. Removal of these pollutants restores the drainage capacity as well as removing pollutants before they are discharged to the receiving water	
Inspect / Maintain	• Inspect the culvert to determine if removal of accumulated solids is necessary • Clean pipes when accumulation of solids exceeds the maintenance standard.
Down gradient protection / Vactor	• Protect the down gradient ditch from erosion. Place erosion control in ditch to prevent flushing of the culvert from causing erosion. • Install a system to collect the water and sediment flushed from the culvert to be collected. • Remove the solids and liquids using a vactor truck or other method
Disposal	• Dispose of removed materials properly: o Decant liquids to sanitary sewer. Do not discharge liquids to the

	drainage system or to the ground o Dispose of solids. If the pipe contained hazardous materials, hazardous disposal of the solids may be necessary
Equipment	• Maintain equipment to prevent vehicle fluid leaks (oils. Lubricants) • Maintain gaskets, hoses, valves (etc.) to prevent leakage of liquids • Keep cleanup materials in the vehicle to clean up spills

Ditch Maintenance	
This applies to the removal of accumulated sediment and pollutants in the drainage ditch as well as routine vegetation maintenance within the ditch.	
Inspect / Maintain	• Inspect the ditch system to determine if removal of accumulated solids is necessary • Maintain accumulation of solids exceeds the maintenance standard.
Sediment Removal	• Remove sediment if sediment accumulation exceeds standard • Remove in a manner that limits exposing un-stabilized soil. If soil is exposed, then provide stabilization of soil.
Down gradient protection	• If necessary, install barriers to prevent the flushing of pollutants and sediment down gradient.
Stabilize soil	• Stabilize exposed soil to prevent erosion. Vegetate, armor, or apply other erosion control methods. Refer to *Stormwater Management Manual for Western Washington; Chapter 2* – for recommended sediment and erosion control practices and standards.
Vegetation	• Manage vegetated ditches when needed to maintain conveyance capacity per Skagit County *Roadside Vegetation Management objectives.* • Control vegetation through mechanical and manual method. • If chemical means are necessary, use Integrated Pest Management (IPM) practices: o Limit chemical application as much as possible. o If chemicals are necessary, select herbicides with the lowest mobility and persistence o Apply only if weather forecasts are dry for a period of time to allow chemical degradation o Do not apply to ditches that contain water
Disposal	• Dispose of removed materials properly: o Decant liquids to sanitary sewer. Do not discharge liquids to the drainage system or to the ground o Dispose of solids. If the pipe contained hazardous materials, hazardous disposal of the solids may be necessary
Equipment	• Maintain equipment to prevent vehicle fluid leaks (oils. Lubricants)

	• Maintain gaskets, hoses, valves (etc.) to prevent leakage of liquids • Keep cleanup materials in the vehicle to clean up spills

Street Cleaning	
This applies to all street cleaning activities; including the removal of accumulated solids including sediment, vegetative debris, soil, dust, tire wear residues, and vehicle combustion products; and liquid and fluid spills.	
Sweeping	• Conduct efficient street sweeping where and appropriate to minimize the contamination of stormwater. o Choose a sweeper with maximum sweeper efficiency o Sweep at optimal frequencies consistent with sediment accumulation Maintain sweeping records to determine areas needing frequent sweeping o Sweep prior to rainstorms so pollutants are not washed o Sweep as soon as possible following application of deicers • Minimize dust production while sweeping • Store sweeping solids appropriately prior to disposal o Cover and Contain sweeping to prevent wash off of contaminants • Dispose of sweepings properly o If wet sweeping is performed, do not dispose of liquid to the storm drains; discharge liquids to the sanitary sewer o Dispose of sweeping solids at an approved disposal site o If needed, analyze sweeper wastes for hazardous waste content and dispose properly • Properly Maintain Sweepers o Maintain sweepers to prevent fluid leaks o Carry spill cleanup materials on sweeper for small spill cleanup (absorbent; shovel); Dispose of cleanup material properly
Street Surface Cleaning; Spill Cleanup	• Spot-clean areas if possible • Use absorbents for spill cleanup o Remove absorbent material and dispose of properly Sweep granular absorbents and remove absorbent pads • Mud/Sediment removal. o Sweep as much as possible o Wash with water if necessary • If water (hose or pressure washer) is necessary: o Contain area being cleaned o Collect wash water and dispose of to the sanitary sewer

Road Repair and Resurfacing Including pavement grinding	
This applies to the preparation and repair of road surfaces. Road maintenance activities can contribute sediments, pH from concrete, and oils from asphalt.	
Inlet protection / erosion control	• Provide storm drain covers, inlet protection, or similarly effective containment devises over all nearby drains. Leave in place until concrete or asphalt has cured. • Refer to *Stormwater Management Manual for Western Washington; Chapter 2* – for recommended sediment and erosion control practices and standards.
Concrete / Asphalt	• Collect all accumulated runoff, aggregate chunks, and other solids and dispose of properly. • 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.
Pavement grinding	• Apply dust control methods • Collect any dusts or saw-cutting liquids.
Equipment	• Maintain equipment to prevent vehicle fluid leaks (oils. Lubricants) • Maintain gaskets, hoses, valves (etc.) to prevent leakage of liquids • Keep cleanup materials in the vehicle to clean up spills

Snow and Ice Removal	
Snow and ice removal is necessary for public safety. This applies to snow and ice removal on roads and sidewalks, as well material handling and storage areas. The deicing and anti-icing compounds become pollutants when they are conveyed to storm drains or to surface water after application. Leaks and spills can also occur during their handing and storage.	
Selection / Operational	• Choose salt materials that are the most environmentally-friendly • Minimize use of salt by reducing salt-to-sand ratios
Storage / Mixing areas	• Cover and contain the sand and salt storage areas to prevent erosion, wash-off, and infiltration of salts. Locate in an area that will not directly discharge to the drainage system. • Mix in a manner that prevent sand and salts from falling on surface outside of contained area • After mixing, sweep up any spilled sand or salt
Application	• Minimize the application rates as much as possible. • Remove sand by sweeping as soon after application as possible to prevent discharge to the drainage system. Prioritize sand cleanup areas based on potential for mobilization and minimize impacts.

Utility Installation	
Utility installation requires soil disturbance and pouring of concrete. Sediment can be washed off and the pH of the water can be altered from the conctete.	
Protect inlets	• Provide storm drain covers, inlet protection, or similarly effective containment devises over all nearby drains. Leave in place until concrete or asphalt has cured.
Erosion control	• Implement sediment and erosion control measures. • Refer to *Stormwater Management Manual for Western Washington; Chapter 2* – for recommended sediment and erosion control practices and standards. • Sweep up sediment and mud residuals. Do not hose off sediment and mud into the drainage system. If washing is necessary, contain and collect (vactor) the wash water and dispose to the sanitary sewer
Concrete	• Collect all accumulated runoff, aggregate chunks, and other solids and dispose of properly. • 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.
Equipment	• Maintain equipment to prevent vehicle fluid leaks (oils. Lubricants) • Maintain gaskets, hoses, valves (etc.) to prevent leakage of paint • Keep cleanup materials in the vehicle to clean up spills • Wash painting equipment (striper, rollers, etc.) in a manner that wash water is discharged to the sanitary sewer

Pavement striping maintenance	
This applies to pavement striping using paint. Paint is a pollutant if washed into the drainage system prior to drying.	
Painting	• Do not apply paint in rain
Paint Storage / Transfer	• Store paint in a manner that will prevent spills. If stored outside, provide secondary containment. • Use drop cloths and drip pans to collect spills
Paint Spills	• Clean up paint spills. Small paint spills can dry in place. For larger paint spills, wipe up as much paint as possible and allow the remainder to dry. • Do not hose-off paint spills into the drainage system. If wash-up is necessary, contain and collect (vactor) the paint and wash water and dispose to the sanitary sewer
Equipment	• Maintain equipment to prevent vehicle fluid leaks (oils. Lubricants) • Maintain gaskets, hoses, valves (etc.) to prevent leakage of paint • Keep cleanup materials in the vehicle to clean up spills • Wash painting equipment (striper, rollers, etc.) in a manner that wash water is

	discharged to the sanitary sewer

Maintaining roadside areas

Including vegetation management

This applies to the road right-of-way, including the shoulder and vegetated roadside. The roadside area can accumulate pollutants from dumping, spills, vehicle accidents, and vegetation management.

Stabilize	• Stabilize areas of bare ground with gravel, crushed rock, vegetation, or other methods to prevent erosion • Stabilize temporarily exposed soil to prevent erosion. Refer to *Stormwater Management Manual for Western Washington; Chapter 2* – for recommended sediment and erosion control practices and standards.
Litter / Spills	• Remove litter and dumped materials • Clean up spills. Clean up spills with oil absorbents. Collect or sweep-up absorbents and dispose properly. • Do not hose-off spills into the drainage system. If wash-up is necessary, contain and collect (vactor) the wash water and dispose to the sanitary sewer

Vegetation	• Manage roadside areas consistent with Skagit County *Roadside Vegetation Management objectives.*
	• Control vegetation through mechanical and manual method.
	• If chemical means are necessary, use Integrated Pest Management (IPM) practices:
	  o Limit chemical application as much as possible.
	  o If chemicals are necessary, select herbicides with the lowest mobility and persistence
	  o Apply only if weather forecasts are dry for a period of time to allow chemical degradation

Equipment	• Maintain equipment to prevent vehicle fluid leaks (oils. Lubricants) • Maintain gaskets, hoses, valves (etc.) to prevent leakage of paint • Keep cleanup materials in the vehicle to clean up spills

Dust Control

This applies to all activities that may generate dust, sediment, and other particulate matter that may contaminate stormwater runoff if not properly controlled.

Stabilize Soil	• Stabilize or cover areas exposed or disturbed soil necessary to prevent 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 Department of 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
Dust Removal	• 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.