

Northwest Region, Area 2 Integrated Roadside Vegetation Management Plan

2014



**Washington State
Department of Transportation**
Maintenance Operations Division

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Summary

This plan explains the Washington State Department of Transportation's (WSDOT) policy and practice for maintenance of roadside vegetation for Maintenance Area 2 within the agency's Northwest Region. This area manages vegetation within approximately 311 miles of state highway corridor primarily in Island, Skagit and Snohomish Counties, although a section of SR 20 briefly extends into Whatcom County at the east end. The area maintains the Interstate 5 corridor between the junctions with SR 530 and SR 20, the entire SR 530 corridor, SR 9 between Marysville and the Whatcom County line, SR 20 across Whidbey Island and up through the North Cascades National Recreation Area, along with several other smaller connecting routes in the four counties. A map of the entire area is included as **Figure 1** on the following page.

The primary objectives in maintenance of roadside vegetation within the area are in relation to safety of the highway users, preservation of the highway infrastructure, and control of legally designated noxious weeds where they occur on the right of way. Other considerations include protection and preservation of natural environment, preserving and enhancing the natural scenic quality of the roadside, and being a good neighbor to the many adjoining property owners. In all cases, roadside vegetation maintenance activities are planned and conducted in a way that discourages or eliminates unwanted vegetation and promotes desirable vegetation. This is the basic premise of Integrated Vegetation Management (IVM) and the foundation of the program.

This document and associated information management tools serve as the primary reference for maintenance of roadside vegetation in the area. Included is detailed information on policies and locations for planned routine maintenance practices, reoccurring weed infestations, sensitive areas, and other areas with special management considerations. Also included are guidelines and prescriptions for best management practices in dealing with roadside vegetation problems and opportunities. In effect, this plan supports WSDOT's compliance with state law (RCW 17.15) by implementing the principles of Integrated Pest Management for the management of roadside vegetation. It also supports WSDOT's long-range goals for the management of roadsides to:

- Create naturally stable, sustainable plant communities
- Improve effectiveness and efficiency in the control of weeds and unwanted trees and brush
- Reduce maintenance cost and herbicide use over time

This plan is organized around the major categories of roadside vegetation maintenance work. The major categories include: Zone 1 (or pavement edge maintenance), Routine Mowing, Noxious Weed Control, Nuisance Weed Control, Tree and Brush Control (Control of Vegetative Obstructions), and Special Maintenance Areas.

The management of roadside vegetation is a dynamic process and it is intended that this plan be continuously adapted over time based on input from a variety of sources. An integral component of the process is a database for recording IVM treatments for specific vegetation controls and locations, and to record information on follow up evaluation on these treatments. Annual area meetings will be held to discuss what is learned each year and to refine the plan over time.

WSDOT is also requesting that local public and private entities with an interest in weed control and roadside vegetation management provide input on the plan and cooperate in efforts where appropriate. The plan is available online:

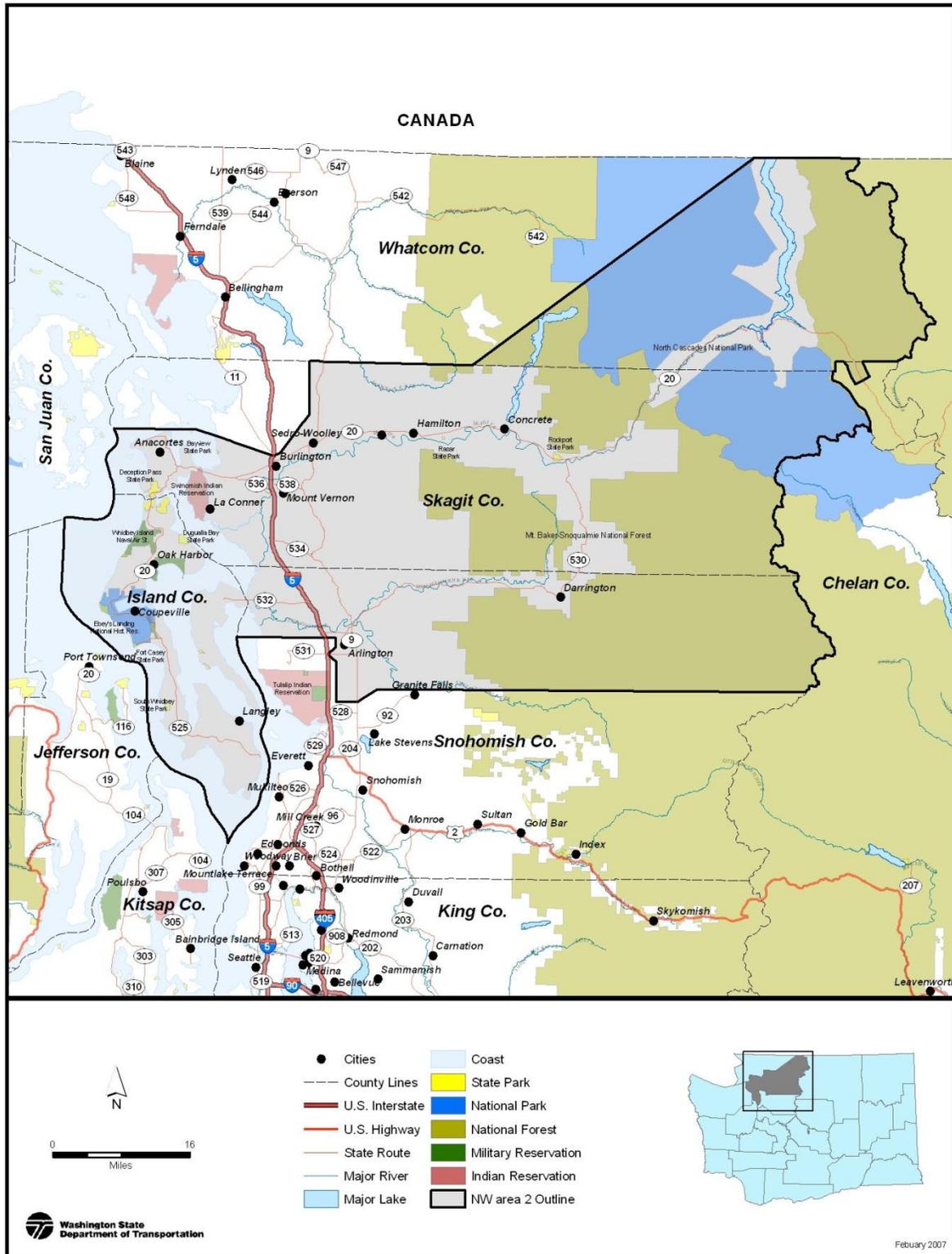
http://www.wsdot.wa.gov/Maintenance/Roadside/mgmt_plans.htm, hard copies can also be provided upon request. Please contact Gary Ward or Ray Willard for questions or comments:

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Northwest Region, Area 2 Map
Figure 1

Roadside Management Considerations

The primary objectives for maintenance of roadside vegetation are to provide for safe highway operation and to comply with legal regulations for control of noxious weeds and protection of the environment. Overall WSDOT maintenance policy and procedures for roadside vegetation are defined in Chapter 6 of the WSDOT Maintenance Manual (M51-01, August 2014) <http://www.wsdot.wa.gov/Publications/Manuals/M51-01.htm>

Visual Quality

It is also important to maintain appropriate visual standards in the appearance of the roadside. All maintenance activities should be conducted in a way that minimizes visual impacts such as wide spread “brown-out” from herbicides or shattered limbs from side trimming. Roadside should look as natural as possible throughout the year. Appropriate visual quality for roadsides throughout the state is defined in the WSDOT Roadside Classification Plan (November 2011) <http://www.wsdot.wa.gov/Publications/Manuals/fulltext/M25-31/RCP.pdf>

Operational Zones

WSDOT roadsides are divided into several zones for the purposes of assigning management objectives, maintenance needs, and thresholds for triggering vegetation maintenance actions. Noxious weed species designated for control by state and county law are controlled throughout all zones. Not all management zones occur along all state highways. In some cases the narrow width of the right-of-way or adjoining land-use, limits the operational zones to Zone 1 and/or a narrow Zone 2 only. Roadside vegetation management zones are illustrated in **Figure 2** below and defined as follows:

Zone 1 – The pavement edge zone is maintained in a manner and width necessary to address highway operational functions and safety, pavement preservation, guardrail maintenance, and stormwater management. Zone 1 may include a vegetation-free band adjacent to the pavement edge, particularly when guardrail is present, or may consist of desirable vegetation up to the pavement edge depending on site specific needs. Vegetation-free Zone 1 is maintained using non-selective soil residual herbicides. Routine annual mowing is required in most cases where vegetation is established up to the edge of pavement; periodic grading may also be required to prevent excess edge build up.

Zone 2 – The operational zone extends from Zone 1 to a width necessary to provide for safe errant vehicular recovery, site distance at corners, intersections and for regulatory signs, and to provide for other operational, safety, and environmental protection functions. Zone 2 is typically maintained through periodic mowing and trimming and through selective removal of undesirable trees and brush as needed.

Zone 3 – In areas with sufficient right-of-way width, a buffer or transition zone extends from Zone 2 to the right-of-way line to provide a buffer or transitional area between the highway facility and adjacent land uses. This area is maintained selectively, and to the greatest degree possible as a self-sustaining plant community, to minimize erosion as well as the growth of weeds and undesirable trees and brush.

Roadside Maintenance Activities

All roadside maintenance activities are to be planned and conducted in a way that discourages or eliminates unwanted vegetation and promotes desirable vegetation. This is the basic premise of Integrated Vegetation Management (IVM). In every case it is essential that the results of maintenance activities are evaluated and adjusted as necessary to maximize efficiency and effectiveness, and to establish desirable plant communities that are as self-sustaining as possible. However, in some cases maintenance activities are planned and conducted on a regularly scheduled repeating basis, such as maintenance of a vegetation-free Zone 1 and/or routine mowing cycles where appropriate.

Routine Maintenance Activities – When vegetation maintenance activities are required to keep the area of roadside being managed in an annually controlled condition, they are considered routine. This is more critical for areas of vegetated roadside near the travel lanes, edge of pavement, and around guardrails. This plan provides prescriptions and gives locations for routine maintenance activities including maintenance of Zone 1 and annual mowing.

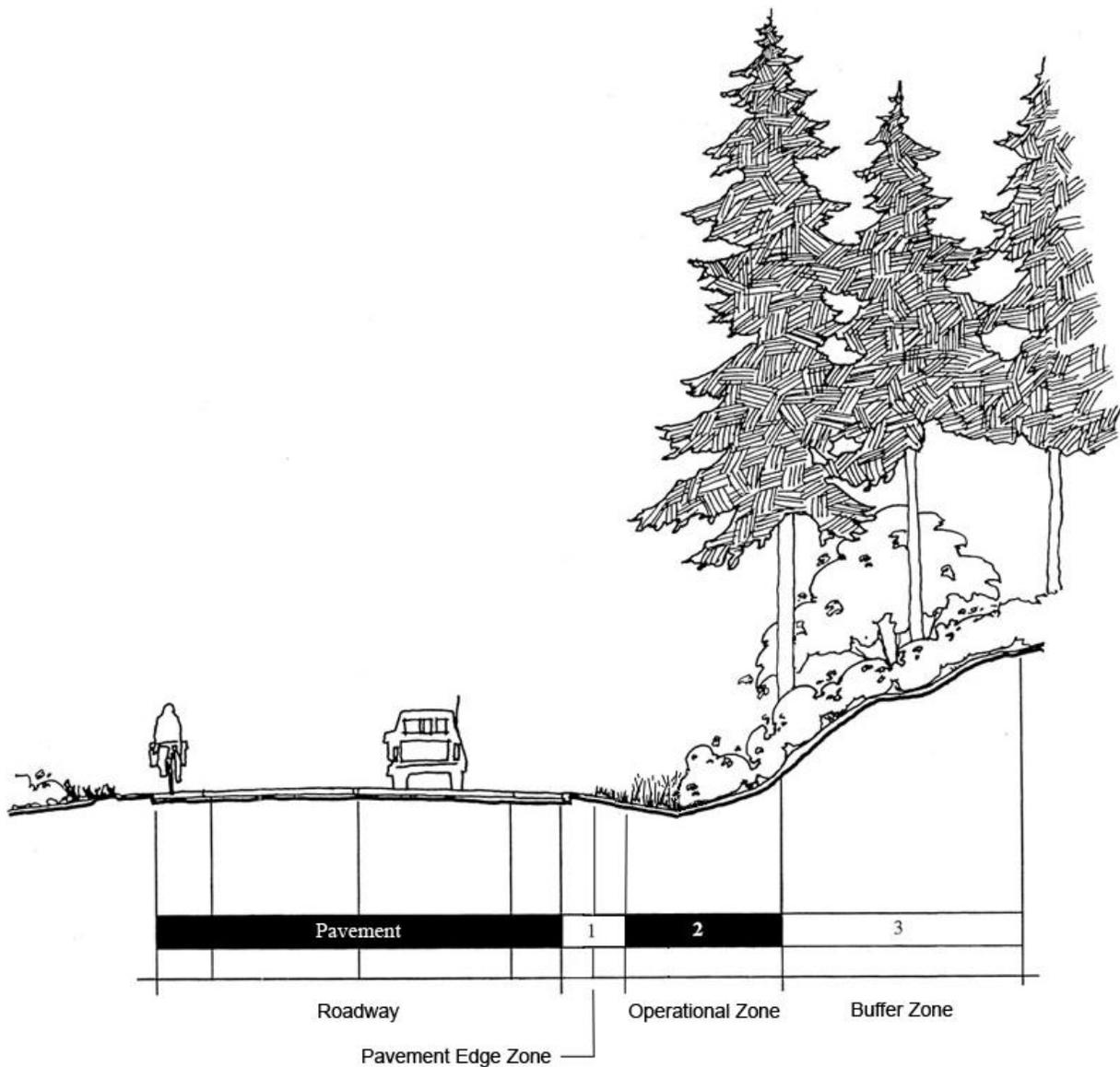
Integrated Vegetation Management Activities – Although all activities are to be planned and conducted in accordance with the principles of IVM, many vegetation maintenance activities are intended to target a specific type or types of unwanted plants. By carefully planning and carrying out these target specific activities it is possible over time to establish desirable vegetation, which will prevent the re-infestation of unwanted plants. The process for determining and carrying out IVM actions is illustrated in **Figure 3** below. This plan provides information, locations, and gives prescriptions for selective control of weeds and other unwanted vegetation and the promotion and establishment of desirable vegetation. Further information and guidance on the application of IVM is available in the document Integrated Vegetation Management for Roadside (WSDOT, July 1997). A copy of this document can be obtained by contacting the state roadside maintenance program manager.

Special Maintenance Areas – In some locations there are unique situations that require special consideration in determining appropriate vegetation maintenance actions. Examples of these are: environmentally sensitive areas, areas with special neighbor concerns, areas where a higher level of maintenance is expected such as gateway interchanges or formally landscaped areas, or along highways that cross tribal or federal lands. This plan provides information and guidance on the locations and unique requirements or restrictions on maintenance activities in all of these situations throughout the area.

Herbicide Use – When applying herbicides WSDOT takes precaution to avoid any impact on human and environmental health, and to ensure herbicides do not move off target. Applications are made only by trained and licensed employees following all state and federal regulations as well as all recommendations and restrictions given on the individual product labels as approved by the US Environmental Protection Agency. WSDOT has also conducted independent research on herbicide risk from toxicity and environmental fate, based specifically on agency application methods and use rates. Findings from this research have been used to establish an approved palette of herbicides and application limits for state highways. A complete summary of herbicides approved for use on WSDOT rights of way is included in **Appendix B**. Fact sheets on all WSDOT approved herbicides can be view and downloaded via the Internet at: http://www.wsdot.wa.gov/maintenance/roadside/herbicide_use.htm

For all planned herbicide applications made on US Forest Service land WSDOT will submit a Pesticide Use Proposal Form (see Appendix E) to the Forest Service R6 Pesticide Use Coordinator at the start of each season, or at least one week prior to any scheduled application. At the end of each season the WSDOT HQ Maintenance Office will submit a report outlining herbicide use performed for highway sections in each National Forest.

Public Notification of Herbicide Applications – WSDOT is required by law to notify chemically sensitive individuals on file with Washington State Department of Agriculture, where the residing property abuts the highway right of way and the residence is within ½ mile of the property line. Notification to chemically sensitive individuals is accomplished by letter and/or phone conversation prior to each application. Specific herbicide application schedules in NW Region, Area 2, can be obtained by calling (360) 848-7230.



Pavement Edge Zone

Low Growing or Routinely Mowed Vegetation and/or Vegetation-Free Strip
 Maintained using mechanical and/or chemical methods for sight distance, stormwater drainage and filtration, noxious weed control, pavement preservation and roadside hardware maintenance.

Operational Zone

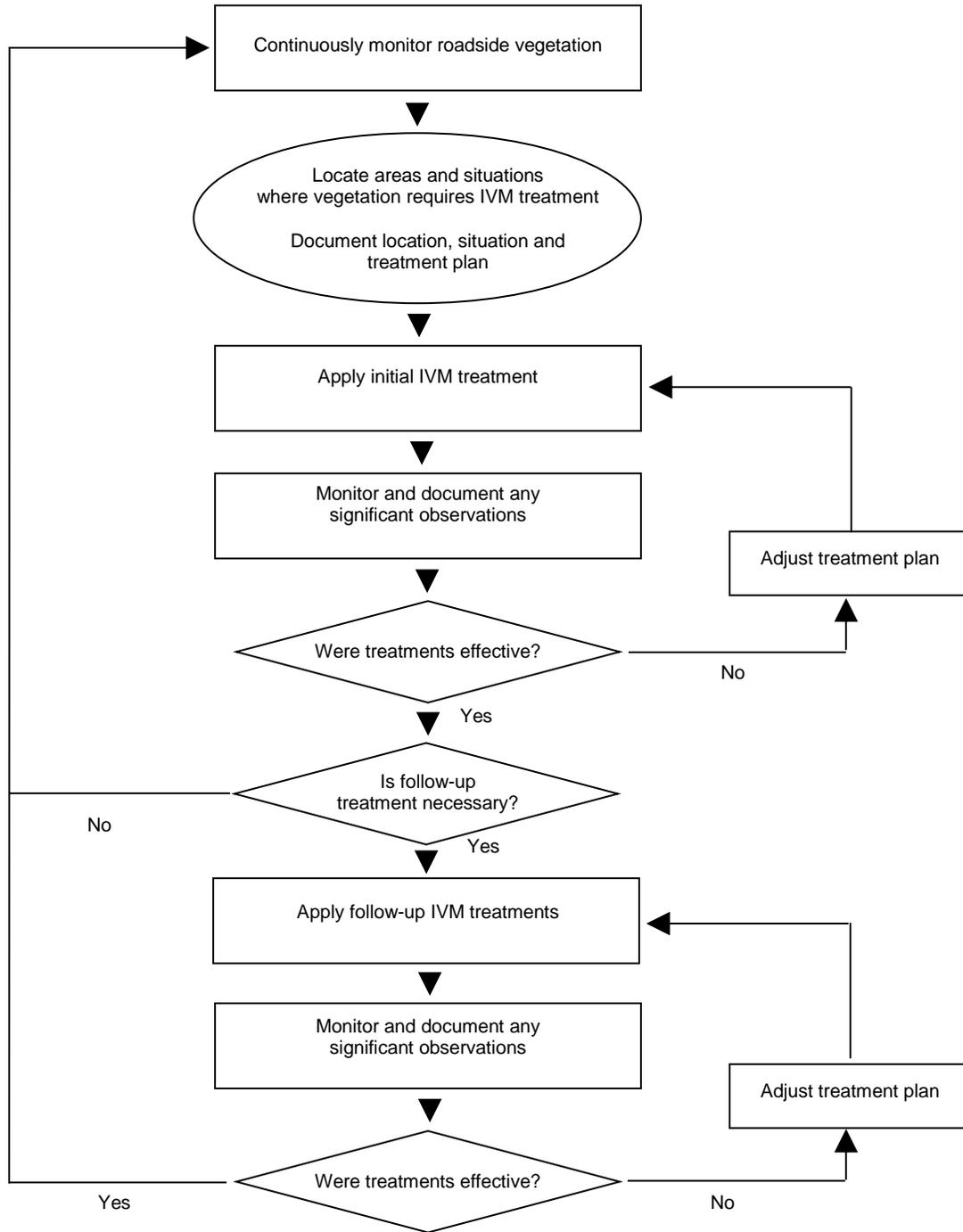
No Vegetation with Stem Diameter Greater than 4"
 Maintained using IVM techniques for sign visibility, sight distance, errant vehicle recovery and weed control.

Buffer Zone

Native or Naturally Occurring Vegetation
 Where adequate right of way exists, maintained using IVM techniques to encourage desirable, self-sustaining plant communities.

Typical Roadside Vegetation Management Zones

Figure 2



The IVM Decision-Making Process

Figure 3

2014 Work Plan

The purpose of this section is to identify the highest priority roadside vegetation management needs in Northwest Region, Area 2 and to describe in general the approach the area will take in addressing these needs in the coming years. Information here is presented in relation to the three major groups for roadside vegetation maintenance performance: Control of Vegetative Obstructions, Noxious Weed Control, and Nuisance Weed Control. This section is intended to supplement the information in the following section, **Northwest Region, Area 2 – Roadside Vegetation Management Plan** which details the guidelines and methods for accomplishing the work of roadside vegetation management along the highways within this maintenance area.

Northwest Region, Area 2 is divided into three geographic sections. Work items and locations in the work plan are grouped within these three sections. **Section 415210** is responsible for highways in the northwest portion of the area and includes Interstate 5 north of MP 226, SR 20 on the mainland west of MP 59, all of routes 536 and 538, and all state routes on Whidbey and Fidalgo Islands (20 and 525). **Section 415220** is responsible for the southwest portion of the area and includes Interstate 5 south of MP 226, SR9 south of MP 50, SR 530 south and west of MP 21, and all of routes 531, 532, and 534. **Section 415230** is responsible for all roads in the eastern portion of the areas including SR9 north of MP 50, SR 20 east of MP 59, and SR 530 north and east of MP 21.

Control of Vegetative Obstructions

The work of this group of maintenance activities relates to the safety and operation of the highway and these items are considered first priority in terms of the overall roadside maintenance needs. Vegetation management goals in this category fall into two groups – Pavement Edge Maintenance/Zone 1, and Tree and Brush Control/Zone 2.

Pavement Edge Maintenance/Zone 1

415210

- All shoulders in this section (with the exception of Whidbey Island) will be treated with residual and non-selective, post emergent herbicides with a goal of re-establishing a 2 ft. wide vegetation-free Zone 1.
- On Whidbey Island, Zone 1 will be vegetated up to the edge of pavement except under guardrail. Guardrail locations on the island will be treated with glyphosate only.
- Locations where weed mats are installed under guardrail on the island will be treated only as needed, if vegetation is growing through the material.

415220

- All shoulders in this section will be treated with residual and non-selective, post emergent herbicides with a goal of maintaining or re-establishing a 2 ft. wide vegetation-free Zone 1.
- Where cable rail exists adjacent to pavement edge in the median of I-5, treatment will be widened to establish a vegetation free Zone 1 between the pavement edge and the back face of the cable rail.

415230

- SR 9 from MP 49.8 to MP 54.1 and MP 58.24 to MP 66.88, SR 530 from MP 50 to MP 67.6 and SR 20 from MP 89 to MP 111 and MP 138.84 to MP 148.12 is maintained with an annual application of herbicides. Normally maintained at less than three feet, which may vary depending on the slope of the shoulder. Areas that fall within water buffer areas are normally only maintained by mowing or by

using herbicides that have been approved through EPA and WSDOT's risk assessment program. Areas controlled mechanically will be by tractor mounted flail and rotary mowers. Mechanical mowing will be accomplished once a year or more if necessary to maintain control of heavy vegetation growth.

- SR 9 from MP 54.1 to MP 58.24, SR 530 from MP 21.7 to MP 50 and SR 20 from MP 59.6 to MP 89, Zone 1 is maintained around the base of the guardrail with the use of herbicides. Areas not treated with herbicide will be controlled either by routine mowing or grade shoulders for sod build up for hydraulic flow of storm water off the roadway surface.

Tree and Brush Control/Zone 2

415210

- Wherever practical throughout the section trees and encroaching brush will be trimmed or cut to the ground with sickle bar or side arm mower. Cut stumps will be treated with herbicides when possible with backpack spray or dauber.
- Small trees (two years out of the ground or less) will be treated with late season herbicide applications of Krenite or Garlon.
- Whidbey Island – No tree or brush control with herbicide beyond 15 ft. from the edge of pavement. Exceptions: Sight distance issues, sediment ponds, and/or maintaining culvert ends for visibility.

415220

- Side arm mower and spray will be used as needed to control vegetation through the Mt Vernon south area.
- SR 532 side arm mower will be used to remove alders, cedars, and other brush growing in zone 2. Chemicals will be used to follow up as needed. Several areas on Hwy 532 culverts and ditches will be cleared of trees and brush.
- SR 534, 9 and 530 will be sprayed as needed this spring and fall if possible. The majority of the larger trees and brush was controlled last season with the sidearm. This year spray will be used to maintain any re-growth along with the side arm for any areas missed last year.
- Sight distance will be addressed throughout area.

415230

- Tree and Brush control for all highways within Area 2 will fall under the guidelines of section 2.4.1 in the Northwest region Area 2 IVM Plan.
- Canopy and Danger tree removal as time and budget allows in the following areas:
 - SR 530: MP 32.3 to 32.7, MP 42.6 to 52.3, and MP 60.3 to 67.7
 - SR 20: MP 109 to 110, MP 111 to 112, MP 114 to 115, MP 116 to 117, and MP 126 to 130
 - SR 9: MP60 to 60.7, and MP 64.5 to 66.8

Noxious Weed Control

Noxious weeds are those species legally designated by state and county regulations for required control by all property owners. Because laws are enforced with fines and/or control work and billing of property owners by county administration, work under this group is considered second priority after critical safety related locations have been addressed. Control of designated noxious weed species is typically carried out on all highways throughout the area on an as needed basis. However, some locations merit more focused attention and effort to apply multi-year IVM treatments or coordinate with adjacent landowners. The general area-wide approach and areas of focused attention for 2014 include:

415210

- Target noxious weeds with spot spraying using portable tanks starting in early May, if weather allows, and continue through the summer months into fall. Milestone, Escort, Telar DF, Razor Pro and other approved chemicals will be used to target Poison Hemlock, Canadian Thistle, Knapweeds, Tansy ragwort, Stinky Bob, Purple loosestrife and other noxious weeds that are on the county list.

414220

- Control thistles on I-5 between MP 208-225 with a Brown Brush mower when time and resources are available.
- SR 9 near MP 29.6 area we will be treating some Hawkweed on the fill slope.
- SR 532 between MP 2 and 3 we will be treating Poison Hemlock.
- SR 530 between MP18 and 20 we will be treating Thistle.

415230

- Target noxious weeds by spot spraying using portable tanks starting in early May if weather allows and continue through the summer into fall. We will target all Noxious weeds covered by County weed boards such as Poison Hemlock, Canadian Thistle, Knapweed, Tansy, Stinky Bob, and Purple Loosestrife to name a few. Chemicals we will use will be Milestone, Escort, Telar DF, Razor Pro, and other approved chemicals at a rate that is recommended on label for control of specified noxious weeds.

Nuisance Vegetation Control

Nuisance vegetation control includes control/management of weed species that are recommended but not mandated by state and/or county law. It also includes work such as mowing of grass and weeds beyond one pass in areas where a more neatly maintained appearance is desired such as in gateway interchanges or highways in urbanized areas. Because nuisance vegetation control is lower priority after safety related and legally mandated activities, the location and work actions listed below may be postponed depending on availability of resources. For 2014, the overall approach to control of nuisance vegetation and locations where focused efforts will be applied if time and resources allow include:

415210

- Nuisance vegetation will be controlled incidental to noxious weeds when mowing out sections of I-5 and SR 20 as noted for this section above.

415220

- Starting this year, we will be mowing I-5 beyond one pass beginning at 300th south to King Thompson Rd. at MP 207.8 and on the odd years (2015), we will mow one pass. From 300th north to MP 226 in the even years we will mow one pass and in the odd years we will mow beyond one pass. We will use the Brown Brush mower in each area (north and south) to spray and mow as much as time and man power allows.

415230

- Target infestations of Blackberry and Small Alder with Krenite. Scotch Broom, Bull thistle, and other nuisance vegetation will be treated with Milestone, Garlon 3A and or Razor Pro. Applications will be made between late summer to early fall.

Northwest Region, Area 2 – Roadside Vegetation Management Plan

1. ROUTINE MAINTENANCE ACTIVITIES

Roadside maintenance activities are considered routine when a regularly occurring cycle of treatment is required to keep vegetative growth from interfering with highway operational and maintenance objectives. Typical routine maintenance activities are maintenance of a vegetation-free band at the edge of pavement where required, and certain types of mowing and trimming operations.

1.1. Shoulder Maintenance (Zone 1)

Some type of routine maintenance is required in most cases for maintenance of vegetation at the edge of pavement. Annual herbicide applications are required where a vegetation-free condition is specified, and regular cycles of mowing and/or grading are required where grass is allowed to grow up to the edge of pavement. Determination on maintenance practices and cycles for vegetation at the edge of pavement varies by roadway section. Key factors in determining the best management approach include: Lowest life cycle cost, pavement edge design/construction, environmental precautions for herbicide use, and available area resources.

1.1.1. Guidelines

- Zone 1 is maintained with the annual application of herbicides to be free of vegetation under all guardrail installations except on SR 20 in the National Recreation Area, and on select test areas on Whidbey Island.
- Zone 1 is also maintained with the annual application of herbicides to be free of vegetation in select locations and on highway corridors, where highway configuration/traffic safety, or other factors preclude the ability to establish a grass stand and/or mow along the edge of pavement.
- Where maintained as vegetation-free, Zone 1 is 3' band width or less, except where cable rail is placed within 6' of the pavement edge in the median of I-5; in these instances a vegetation-free Zone 1 may be maintained up to the back face of the cable rail.

1.1.2 Methods

- NW Region, Area 2 maintains a vegetation-free Zone 1 through an annual application of the herbicides Razor Pro, Milestone VM and Landmark XP during the months of May and June depending on seasonal weather patterns and precipitation.
- On Whidbey Island a vegetation-free Zone 1s maintained under guardrail with the use of Razor Pro only.
- Pavement edges will be monitored for surface drainage problems resulting from sod build-up in areas where Zone 1 is not maintained and will be graded in select locations as necessary to allow for flow of storm water off the roadway surface.
- See **Appendix A, Routine Maintenance Prescriptions, Zone 1 Maintenance**

1.1.3 Locations

- Delineation for Zone 1 maintenance can be found using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

1.2. Mowing/Trimming (Zone 2)

Regular mowing cycles are required in locations where seasonal grass growth next to the pavement is tall enough to interfere with traffic operations and safety. In some locations, particularly on secondary highways with narrow rights of way, regular periodic side trimming is required to prevent growth of shrubs/brush or side branches on trees from interfering with traffic operations and safety.

1.2.1.Guidelines

- Routine annual mowing occurs on all corridors where a vegetation-free Zone 1 is not maintained, with at least one pass, once per year immediately adjacent to the edge of pavement.
- Additional annual mowing or trimming may also be conducted as needed for select locations on secondary highways to preserve sight distance at curves, intersections and any other highway entry points for all highways including areas where Zone 1 is maintained.
- In designated areas on Interstates 5 and SR 20 between I-5 and Anacortes, routine mowing widths may extend beyond one mower pass where specified to prevent weed seed production and spread to adjacent farmland and seed crops.
- In focus areas such as interchanges, urban landscaped areas, and areas adjacent to safety rest areas, mowing patterns and frequencies are adjusted to local situations as described in **Section 3**.
- In all other areas mowing is only used periodically if needed to conduct IVM treatments for weed and brush control as described below in **Section 2**.
- Other areas that may be routinely mowed include grass areas in park and ride lots, narrow grass strips along highway infrastructures, and fence-lines adjacent to neighboring properties as deemed necessary by the area superintendent.

1.2.2.Methods

- On I-5, SR 20 routine annual mowing areas are designated as either single pass or multiple pass.
- Single pass mowing consists of one pass up to the maximum width of mowing equipment (25' max.) but may be as narrow as 6' depending on mowing equipment and the presence of existing visual lines such as ditches.
- In areas designated as multiple pass mowing roadsides are mowed out from edge of pavement to the right of way line, the edge of shrub or tree lines, or across the entire median widths.
- Multiple pass in medians on divided highways indicate the median is mowed out across the entire width regardless of the number of passes required.
- See **Appendix A, Routine Maintenance Prescriptions, Zone 2 Maintenance**

1.2.3.Locations (not included at this time)

- Single pass routine mowing occurs on all roadsides in the area, except for inaccessible steep slopes behind Jersey barrier or guardrail. Delineation for areas receiving routine multiple pass mowing can be found using a web based map viewer application at: [IVM Map Viewer](#). Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.
- **Appendix C, NW Region, Area 2 Limited Access Mowing Plan** describes mowing priorities, timing and limits on the I-5, SR 20 corridors.

1.3. Hazard Tree Monitoring and Removal

In areas where there is adequate right of way width to accommodate Zone 3 the main objective is to establish vegetation that requires as little maintenance as possible. Whatever activities conducted are targeted selectively at removal of unwanted vegetation and establishment of desirable vegetation. However, large trees with health or structural problems can pose a significant threat to the highway, and/or neighboring property; therefore both monitoring for the presence of potential hazard trees and removal when necessary are considered routine and ongoing roadside maintenance activities.

1.3.1. Guidelines

- Hazard tree removal is considered a routine maintenance activity because maintenance is constantly on the look out for any trees that pose an imminent threat to the highway or traffic, and whenever hazard trees are identified they are routinely removed as soon as possible.
- Hazard trees may be dead, diseased, leaning, or structurally unsound. Best horticultural judgment will be used in evaluating trees that appear diseased or structurally unsound or are believed to pose a long-term threat to determine the best course of action.
- Another consideration in removal of trees is the contribution to shading in areas prone to frost and ice formation on the highway surface. When such areas are identified, the surrounding canopy may be thinned through selective removal of large trees on the right of way.

1.3.2. Methods

- Hazard trees are removed in such a manner to minimize damage and impact to the highway structure and other healthy trees and under-story vegetation.

2. INTEGRATED VEGETATION MANAGEMENT ACTIVITIES

All roadside vegetation maintenance activities technically fall under IVM. IVM is a coordinated decision making process that uses the most appropriate vegetation management methods and strategy, along with a monitoring and evaluation system, to achieve long-term roadside maintenance goals and objectives in an environmentally and economically sound manner. Even routine activities should be evaluated for effectiveness and refined whenever possible to reduce annual maintenance requirements. However, for the following activities the ultimate goal is to eliminate and prevent the future growth of unwanted plants, and to promote and enhance desirable vegetation. Activities are planned and carried out using the decision making process diagrammed in **Figure 3** on page 7. The goal in utilizing the IVM approach is the establishment of stable, low maintenance native or naturalized plant communities on the roadside that are compatible with:

- Highway maintenance and safety objectives
- Preservation of environmental quality
- Weed control requirements
- The concerns of WSDOT's customers and neighbors

Long term, the use of the IVM approach can reduce the intensity and cost of maintenance as well as minimizing the need to use herbicides.

2.1. Integrated Vegetation Management Planning and Tracking Database

2.1.1. Guidelines

- An Integrated Vegetation Management Records database is available for use. This database is accessed through the same WSDOT network application as the Pesticide Application Records database.
- Any activities focused on treatment of a specific location and species infestation, or focused on treatment of any types of unwanted vegetation throughout the area will be documented with an initial IVM record outlining the long-term treatment plan. These same records will be updated over time whenever planned treatments are carried out, or when observations are made as to the success or failure of past treatments.
- Treatment records may be printed out and inserted into **Appendix E**.

2.2. Noxious Weed Control

WSDOT defines noxious weeds as any species listed for mandatory control under state law (WAC 16-750) or by the local county codes. Other weed species that may be listed as noxious weeds on the state and county lists but not legally mandated for control are defined as nuisance weeds and managed as described under section 2.3 in this plan.

2.2.1. Guidelines

- Noxious weed control is a high priority for WSDOT because of state law requiring control of designated species. Transportation rights of way are high priority locations for control of noxious weed species within the state because they cross and link so many adjacent properties and land uses.
- Whenever possible treatment of designated noxious weed species and infestations locations will be documented and treated following plans as defined by IVM record forms in the database.
- Washington State Law classifies noxious weeds in three classes: A, B, and C. All Class A species are required control wherever they

occur statewide. The law allows for individual county weed boards to designate individual Class B and C weeds for control within the counties depending on how widespread and potentially harmful they are at the local level.

- For NW Region, Area 2 the following weeds designated for control are known to exist on state highway rights of way in Snohomish, Skagit, Island, and Whatcom Counties:

Class A

Class A noxious weeds are non-native species with a limited distribution in the state. No Class A weeds are known to exist on WSDOT rights of way in this area.

Class B

Class B weeds are more widespread than Class A, with control mandated by law only if infestations are generally limited and the species are designated within the individual counties by the County Noxious Weed Control Boards. The following designated Class B species are known to exist on WSDOT right of way in NW Region, Area 2:

Common Name/Botanical Name	Sno	Skg	Isl	Wht
Knotweed sp./Polygonum sp.	◆	◆	◆	◆
Ragwort tansy/Senecio jacobaea	◆	◆	◆	◆
Toadflax dalmation/Linarea dalmatica	◆	◆	◆	◆
Hawkweed sp./Heiracium sp.	◆	◆	◆	◆
Knapweed sp./Centaurea sp.	◆	◆	◆	◆
Broom, scotch/Cytisus scoparius		◆		

Class C

Class C noxious weeds are widely established throughout Washington or may impact the agricultural industry. The County Noxious Weed Control Boards also have the power to designate Class C species for control. The following Class C noxious weeds are known to exist on state right of way in NW Region, Area 2:

Common Name/Botanical Name	Sno	Skg	Isl	Wht
Thistle, Canada/Cirsium arvense	◆	◆	◆	◆
Thistle, bull/Cirsium vulgare	◆		◆	◆
Hemlock, poison/Conium macul.	◆	◆	◆	◆

2.2.2. Methods

- Because noxious weed species are often difficult to control, herbicides treatments are often the primary, initial means of control.
- If infestations are limited to a few plants, hand pulling is also effective when the entire root system is also removed. Maintenance employees are encouraged to be aware of and look for new noxious weed occurrences, and to stop and pull these plants whenever possible.
- In conjunction with weed control treatments, a variety of other measures may be taken to promote natural vegetative competition through seeding, planting, and soil enhancement. The IVM Record and database are essential to the execution and success of these control measures.

- For recommended treatments specific to noxious weed species, see **Appendix A, IVM Prescriptions, Noxious Weed Control**

2.2.3. Locations

- Priority locations for control of designated noxious weed species in NW Region, Area 2 can be found using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

2.3. Nuisance Weed Control

2.3.1. Guidelines

- For the purposes of this plan, nuisance weed species are defined as species listed as Class B and C weeds on the state noxious weed lists, but not required for control within individual counties.
- Nuisance weed control, while not required by state law, provides many positive benefits to the overall condition of the roadside, enhances ecological function by maintaining and enhancing native plant communities, reduces the potential for continuing spread of weed infestations, and enhances visual quality.
- Nuisance weed species will be controlled when time and budget allows.
- Priority will be given to locations with the highest chance for success including relatively new infestations and where there is potential for infestations to spread to un-infested areas of the right of way or to un-infested neighboring properties.
- Species designated as nuisance weeds in NW Region, Area 2 that are known to exist on the highway right of way include:

<i>Common Name/Botanical Name</i>
Himalayan blackberry/ <i>Rubus discolor</i>
Scotch broom/ <i>Cytisus scoparius</i> (designate in Skagit County)
Butterfly bush/ <i>Buddleia davidii</i>
Common tansy/ <i>Tanacetum vulgare</i>
St. Johnswort/ <i>Hypericum perforatum</i>
Yellow Toadflax/ <i>Linaria vulgaris</i>
Common Mullein/ <i>Verbascum thapsus</i>

2.3.2. Methods

- Control measures for nuisance weed are dependent on the type of plant.
- Woody species such as Scotch broom and Himalayan blackberry are most effectively treated with a combination of cutting, herbicide treatments and encouragement of native vegetation.
- Perennial species such as Canada thistle are most effectively controlled by succeeding years of properly timed herbicide applications.
- Annual or biennial species such as bull thistle and common tansy may also be effectively controlled with herbicide applications when

plants are in the rosette stage in spring, or by hand pulling prior to seed set.

- See **Appendix A, IVM Prescriptions, Nuisance Weed Control.**

2.4. Tree and Brush Control

2.4.1.Guidelines

- Trees and brush are controlled for safety reasons including preservation of sight distance at curves and intersections, and for visibility of signs, and preventing trees with large trunk diameter from growing too close to traffic lanes.
- Native large shrub and small tree species should be allowed to grow and mature in Zone 2 and selectively trimmed if they begin to encroach on site distance or other traffic operational requirements.
- Large coniferous or hardwood deciduous tree species such as Douglas fir, bigleaf maple, alder, or cottonwood left to grow in Zone 2 and in some cases parts of Zone 3, can reach substantial size over a relatively short period of time and should be removed when young.
- Any tree close to the road with a potential or existing trunk diameter of 4" or greater is considered a hazard for errant vehicles in Zone 2 and should be removed. This zone is also referred to as the Design Clear Zone and is typically maintained to a width of 30' from the traffic lane edge. Actual minimum widths are determined by roadway alignment, traffic speed and volume, and cross-section of the roadside, as specified in the WSDOT Design Manual, Chapter 700.04. <http://www.wsdot.wa.gov/Publications/Manuals/M22-01.htm>

2.4.2.Methods

- Removal of undesirable tree and brush species is typically accomplished by hand cutting, hand pulling, properly timed selective mowing, properly timed herbicide applications, or combinations thereof.
- In some locations it is most effective to mow back the majority of the existing vegetation and then selectively treat undesirable re-growth with herbicides in succeeding years, allowing desirable vegetation to grow up around and form a competitive cover.
- In some cases when tree and brush species are cut by hand, the debris can be fed through a chipper and placed back on the roadside in the form of mulch for soil enhancement and weed prevention.
- Timing of activities has a significant effect on how the vegetation grows back. Herbicide applications made by hand, directly to the cut surfaces of undesirable plants may be used to reduce or eliminate grow back.
- Chemical control methods will not be used on conifers greater than 2 feet in height and/or large dense patches of young trees, to avoid unnecessary negative visual impacts from "brown-out".
- Chemical control methods will not be used on deciduous plants until after the first of September, except for as stump treatments in conjunction with mechanical cutting to eliminate grow-back.
- When possible, safe and practical, seedling of desirable trees may be dug or pulled by hand and transplanted to areas where there growth will be beneficial and appropriate. Agreements may be

signed to allow private citizens to collect seedlings for use as transplants.

- See **Appendix A, IVM Prescriptions, Tree and Brush Control.**

3. SPECIAL MAINTENANCE AREAS

Special Maintenance Areas are any locations with unique maintenance requirements or special considerations for roadside management. These areas may include interchanges, community entrances or enhancement areas, areas maintained by cities, bicycle paths, storm water retention ponds, state park land, wellheads, environmentally sensitive areas, school zones and roadsides adjacent to individual properties with current or annual no-spray agreements.

3.1. Interchanges/Intersections

3.1.1.Guidelines

- Interchange areas are sometimes developed to a greater level than general roadside areas to include storm water management facilities, pedestrian areas, and permanent vegetation designed for screening, and visual enhancements for community entrances.

3.1.2.Locations

- Interchanges and intersections with unique maintenance considerations and/or interchanges that are considered urban gateways along with a description of special maintenance activities can be referenced using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.2. Bicycle/Pedestrian Paths

3.2.1.Guidelines

- In some cases agreements were made in the design and construction process, requiring WSDOT to maintain pathways and sidewalks.
- Paths and sidewalks may require special attention from maintenance to ensure the safety of users and to enhance the appearance of the local community.

3.2.2.Locations

- Locations where sidewalks or bicycle paths are maintained by WSDOT these locations can be referenced using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.3. City Maintenance Areas

3.3.1.Guidelines

- In most cases where non-limited access highways exist within city limits, the roadside (all area outside the highway pavement and drainage systems) are maintained by the local city government.

3.3.2.Locations

- Areas where roadsides are maintained by cities can be referenced using a web base map viewer application at: [IVM Map Viewer](#)

Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.4. Herbicide Sensitive Areas

3.4.1.Guidelines

- In some situations herbicide use is limited or restricted because of legal requirements, neighbor concerns, or WSDOT imposed environmental safety precautions.
- In these locations, vegetation must be managed without the use of herbicides or with only a limited palette of herbicide types.
- In some locations, individuals have registered with Washington State Department of Agriculture as being pesticide sensitive. If these individual reside within ½ mile of the highway, the law requires that WSDOT notify them prior to application of herbicides.

3.4.2.Locations

- The only areas in NW Region, Area 2 outside of Whidbey Island that require special considerations for herbicide use are in the North Cascades National Recreation Area.
- The list of pesticide sensitive individuals changes annually, supervisors and herbicide applicators should reference the most current list to see if any notifications are required prior to spraying in any location.

3.5. Adopt-a-Highway and Neighbor Maintained Agreements

3.5.1.Guidelines

- In some locations WSDOT has signed agreements with private citizens or neighboring businesses for maintenance of roadside vegetation.

3.5.2.Locations

- Areas with existing agreements for others to maintain a portion of the roadside, along with notes describing arrangements for each location can be referenced using a web base map viewer application at: [IVM Map Viewer](#)

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3.6. Storm Water Management Facilities

3.6.1.Guidelines

- Storm water management facilities include bio-filtration swales, retention ponds and infiltration ponds.
- Storm water management facilities are managed for noxious and nuisance weeds, and hazard trees following the same guidelines mentioned in previous sections. The primary objectives with regard vegetation management within these facilities are maintenance of the functionality in terms of the designed volume of retention and water flow, and the maintenance of the surrounding fence

- Trees and brush should be cleared along both sides of the perimeter fencing for a width of approximately 8 feet as needed.
- Inlets and outfalls should be kept clear of vegetation and debris.

3.6.2.Locations

- Stormwater management facilities, along with notes describing general maintenance requirements for each location can be referenced using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.7. Wetland Mitigation Sites

3.7.1.Guidelines

- Wetland mitigation sites are carefully monitored through WSDOT's Environmental Services Office for up to 10 years following their creation to ensure compliance with environmental regulation.
- In most cases vegetation in these sites is planted and established through the construction and long-term monitoring process so that once they are turned over to maintenance, actions are not required unless noxious weeds or hazardous trees become an issue.
- In cases where mitigation sites have fulfilled their original permit requirements and have been turned back to maintenance, sites should be inspected on an annual basis to determine if any repairs or weed control is necessary.

3.7.2.Locations

- All wetland mitigation sites within NW Region, Area 2 along with notes describing dates constructed and permit requirements for each location can be referenced using a web base map viewer application at: [IVM Map Viewer](#)
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3.8. Protected Terrestrial Species

3.8.1.Guidelines

- WSDOT is currently working with the Department of Fish and Wildlife to identify highway locations where known populations of federally listed threatened and endangered terrestrial species exist on or near the highway right-of-way. These locations are then being matched against maintenance activities with potential to have adverse impacts on the protected species so that necessary maintenance activities can be timed to avoid impacts wherever possible.
- Methods and timing of roadside maintenance activities to avoid impacts on protected terrestrial species are described in the Region Maintenance Environmental Compliance Guidance for Protected Terrestrial Species.

3.8.2.Locations

- Once locations and guidelines have been finalized in the region compliance guide, locations and descriptions of limitations on vegetation maintenance activities will be added to a web base map viewer application at: [IVM Map Viewer](#)

Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.9. IVM Treatment Sites

3.9.1.Guidelines

- As discussed in **Section 2.1**, selected sites are designated for planning, carrying out and monitoring multi-year IVM treatments for control of weeds or other unwanted vegetation.
- IVM treatment sites are documented with an initial record in the IVM Treatment Database, to identify the problem to be addressed, location(s), management goals, and integrated treatment plan.
- Records are updated each time a treatment is made, results observed, or when the treatment plan is modified based on observations.

3.9.2.Locations

- All designated IVM treatment sites within NW Region, Area 2 can be referenced through records in the Statewide Pesticide Tracking Database.

Zone 1 Maintenance - Bareground Treatment

	OPTION 1	OPTION 2	OPTION 3	OPTION 4
TREATMENT TYPE:	Pavement Edge	Pavement Edge	Pavement Edge	Pavement Edge
MANAGEMENT GOALS:	Vegetation free	Vegetation free	Vegetation free	Vegetation free
METHOD:	Annual herbicide application	Annual herbicide application	Annual herbicide application	Annual herbicide application
EQUIPMENT:	Spray truck w/ boom mounted nozzles	Spray truck w/ boom mounted nozzles	Spray truck w/ boom mounted nozzles	Spray truck w/ boom mounted nozzles
MATERIALS:	Frequency 4 ozl./acre + Sulfomet 3 ozd./acre + Ranger Pro 64 ozl./acre	Perspective 8 ozl./acre + Sulfomet 3 ozd./acre + Ranger Pro 64 ozl./acre	Payload 10 ozl./acre + Sulfomet 3 ozd./acre + Ranger Pro 64 ozl./acre	Ranger Pro 64 ozl./acre + Telar XP 2 ozd./acre + Milestone 6 ozl./acre
TIMING:	Spring	Spring	Spring	Spring
IVM FOLLOW-UP:	Evaluate control	Evaluate control	Evaluate control	Evaluate control
REMARKS:	Typically applied in a 2 to 3 ft. band.			

Zone 2 Maintenance - Tree and Brush

	OPTION 1	OPTION 2	OPTION 3	OPTION 4
TREATMENT TYPE:	Deciduous and Brush	Deciduous and Brush		
MANAGEMENT GOALS:	Control vegetation obstruction	Control vegetation obstruction		
METHOD:	Spot spray w/ herbicide	Stump treatment		
EQUIPMENT:	Handgun	PVC Dauber		
MATERIALS:	Krenite S 320ozl./acre	Element 3A non diluted or 1:1		
TIMING:	Mid to late summer	Anytime		
IVM FOLLOW-UP:	Evaluate control	Evaluate control		
REMARKS:	Avoid brown out by spraying late in the season and spray only to appropriate height.			

Noxious and Nuisance Weed Control - General

	OPTION 1	OPTION 2		
TREATMENT TYPE:	Chemical application	Stem injection		
ACTION THRESHOLD:	Where ever present (dependent on available resources)	Smaller infestations and or near water		
MANAGEMENT GOALS:	Eradication and control only if your county requires.	Eradication and control only if your county requires.		
METHOD:	Spot treatment w/ herbicide	Spot treatment w/ herbicide		
EQUIPMENT:	Handgun	Handgun		
MATERIALS:	Milestone 6ozl./acre + Landmark XP 6ozd./acre	Milestone 7ozl./acre		
TIMING:	During growing season	During growing season		
IVM FOLLOW-UP:	Reapply if necessary following year. Restore site w/ native vegetation.	Reapply if necessary following year. Restore site w/ native vegetation.		
REMARKS:	Option 1: Thistles, Poison Hemlock, Mullein, Common Tansy, Knotweed, Cow Parsnip --- Option 2: Tansy Ragwort, Thistles, Orange Hawkweed,			

Herbicides Approved for Use on WSDOT Rights of Way

When making herbicide applications:

1. Always read and follow product labels
2. Always use personal protective equipment when mixing, loading, and applying

Chemical Name	Product Names	Mode of Action (WSSA Class)	Where Used	How/Why Used	Notes/ Recommendations	WSDOT Restrictions	Cautions
2,4-D	Agri Star 2, 4-D LV4, Basecamp Amine 4, Clean Amine, Crossbow, Curtail, ES, Escalade, Low Vol 4 Ester, Platoon, Rangestar, Savage, Solution, Veteran 720, Weedar 64, WeedDestroy, Weedmaster, Weedone LV4	Growth regulator - phenoxy synthetic auxin (4)	Noxious and nuisance weed control, and tree and brush control, Zones 2 and 3	Selective broadleaf treatment	Ester and acid formulations of 2,4-D may provide a good alternative to amine formulations. A number of the 2,4-D products come premixed with other herbicides.	Amine formulations of 2,4-D are restricted for use within 60' of all water	Amine formulations cause irreversible eye damage and are highly toxic to rainbow trout. All 2,4-D products pose risks when applied near grapes and other sensitive crops.
Aminocyclopyrachlor	Perspective Plainview Streamline Viewpoint	Growth regulator - mimics plant hormones, synthetic auxin (4)	Nuisance and noxious weed control Zones 2 and 3, Plainview is a bare-ground mixture	Depending on which mixture, can be either selective broadleaf or non-selective pre-emergent control	Each product is premixed with other herbicide to achieve either selective or non-selective control	No WSDOT use restrictions beyond those specified on product labels	Refer to product label
Aminopyralid	Milestone Milestone VM Milestone VM Plus Capstone	Growth regulator - mimics plant hormones, synthetic auxin (4)	Nuisance and noxious weed control Zones 2 and 3	Selective broadleaf treatment	Effective on many perennial weed species due to some amount of soil residual activity on suppressing seed germination	No WSDOT use restrictions beyond those specified on product labels	Refer to product label
Bromacil	Krovar 1 DF Hyvar	Photosynthetic inhibitor photosystem II, site A (5)	Zone 1 bare-ground	Nonselective pre-emergent grass and weed control	Krovar is premixed with diuron	Westside - Restricted use Eastside - Krovar restricted for use within 60' of all water	Bromacil is potentially mobile in soil, use caution if rain is possible.
Bromoxynil	Buctril 2EC BroClean Brox 2E Maestro 2EC	Photosynthetic inhibitor photosystem II, site C (6)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment	Effective broadleaf weed control without grass seed suppression	Westside - Restricted use Eastside - Restricted for use within 60' of all water	Can cause irreversible eye damage, highly toxic to fresh water fish
Chlorsulfuron	Telar XP Landmark XP Throttle XP Perspective	Amino acid synthesis inhibitors - ALS inhibitor (2)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment	Product highly effective on difficult perennials such as Canadian thistle and horsetail. Landmark is premixed with Oust.	No WSDOT use restrictions beyond those specified on product labels	Refer to product labels
Clopyralid	Transline Curtail	Growth regulator - pyridinecarboxylic acid synthetic auxin (4)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment	Curtail is premixed with 2,4-D, Pathfinder is premixed with triclopyr	Curtail and Pathfinder are restricted for use within 60' of all water because of mixture with other restricted herbicides.	Curtail contains 2,4-D amine which causes irreversible eye damage and is highly toxic to rainbow trout

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Chemical Name	Product Names	Mode of Action (WSSA Class)	Where Used	How/Why Used	Notes/ Recommendations	WSDOT Restrictions	Cautions
Dicamba	Vanquish Veteran 720 Dicamba HD E2 Escalade Range Star Viewpoint	Growth regulator - benzoic acids/synthetic auxin (4)	Noxious and nuisance weed control, and tree and brush control, Zones 2 and 3	Selective broadleaf treatment	Vanquish is the dicamba formulation without 2,4-D	Veteran 720 is restricted for use within 60' of all water because of 2,4-D amine content	Veteran 720 contains 2-4-D amine which causes irreversible eye damage and is highly toxic to rainbow trout
Dichlobenil	Norosac 4G Casoron	Cell wall (cellulose) synthesis inhibitor (20)	Ornamental planting beds	Pre-emergent weed control in ground cover beds. Post emergent control of grasses.	Highly effective for pre-emergent control of unwanted weeds in ornamentals	Restricted for use within 60' of all water	Dichlobenil is highly toxic to aquatic insects
Diflufenzopyr	Overdrive	Auxin transport inhibitor (19)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment		No WSDOT use restrictions beyond those specified on labels	Refer to product label
Diuron	Karmex Diuron 4 L Diuron 80 DF Parrot Sahara DG	Photosynthetic inhibitor - photosystem II, site B (7)	Zone 1 bare-ground	Nonselective pre-emergent grass and weed control	Cost effective weed control for Zone 1 in Eastern Washington	<u>Westside</u> - Restricted use <u>Eastside</u> - Restricted for use within 60' of all water	Highly toxic to fish.
Flumioxazin	Payload	Cell membrane disrupter - PPO inhibitor (14)	Zone 1 bare-ground	Nonselective pre-emergent weed control	Requires constant agitation to keep in suspension	Restricted for use within 60' of all salt water	Highly toxic to estuarine invertebrates
Fluroxypyr	Vista E2 Escalade	Growth regulator - pyridinecarboxylic acid synthetic auxin (4)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment	Highly effective on Kochia	No WSDOT use restrictions beyond those specified on product labels	Highly toxic to Eastern Oyster, high surface runoff potential
Fosamine	Krenite S	Growth regulator - inhibits bud and leaf formation (27)	Tree and brush control in Zones 2 & 3	Selective broadleaf treatment	Effective broadleaf tree control without visual impacts	No WSDOT use restrictions beyond those specified on labels	Refer to product labels
Glyphosate	Roundup Pro Razor Pro Buccaneer Aquaneat Rodeo Aquamaster Mad Dog Plus Ranger Pro	Amino acid synthesis inhibitor - EPSP synthase inhibitor (9)	Zone 1, spot spray around shrub and tree plantings, aquatic weed control (Rodeo, Aquamaster)	Nonselective control of all vegetation	Rodeo, Aquamaster and Aquaneat are approved for use in or over water. Aquatic versions of glyphosate products are approved for use with NPDES permit.	No WSDOT use restrictions beyond those specified on product labels	Refer to product labels

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Chemical Name	Product Names	Mode of Action (WSSA Class)	Where Used	How/Why Used	Notes/ Recommendations	WSDOT Restrictions	Cautions
Imazapic	Plateau	Amino acid synthesis inhibitors - ALS inhibitor (2)	All zones	Pre-emergent control of undesirable grasses	WSDOT tests plots show a significant impact on desirable perennial grasses at rates above 6 oz per acre.	Westside - Restricted use Eastside - Restricted for use within 60' of all water	Moderate to high potential to leach into groundwater
Imazapyr	Arsenal Habitat Polaris Sahara DG Imazuron	Amino acid synthesis inhibitors - ALS inhibitor (2)	All zones	Pre and post-emergent non-selective control of all vegetation	Habitat is an aquatic version of Arsenal - good alternative to glyphosate in certain cases, approved for use with NPDES permit.	No WSDOT use restrictions beyond those specified on product labels	High surface runoff potential
Indaziflam	Esplanade	Cellulose-biosynthesis inhibitor (21)	Zone 1 bare-ground	Nonselective pre-emergent weed control	Effective control of annual weeds such as marestail, kochia, and crab grass	Restricted for use within 60' of all water	Toxic to fish and aquatic invertebrates
Isoxaben	Gallery 75DF	Cell wall (cellulose) synthesis inhibitor (20)	Turf & Ornamental	Pre-emergent weed control in ground cover beds	Works well by itself or with Ronstar	Restricted for use within 60' of all water	Moderate to high potential to leach into groundwater
Metsulfuron-methyl	Escort XP Metsulfuron Methyl 60 DF MetCel VMF Streamline	Amino acid synthesis inhibitors - ALS inhibitor (2)	Noxious and nuisance weed control, and tree and brush control, Zones 2 and 3	Selective broadleaf and conifer treatment	Good control on many difficult perennials.	No WSDOT use restrictions beyond those specified on product labels	Refer to product labels
Norflurazon	Predict	Bleaching - carotenoid biosynthesis inhibitor (12)	Zone 1 bare-ground	Pre-emergent weed control in Zone 1 and ground cover beds	Good Zone 1 product but may be difficult to keep in suspension	Restricted for use within 60' of all water	High surface runoff potential
Oryzalin	Oryzalin A.S. Surflan A.S	Seedling growth inhibitor - microtubule assembly inhibitor (3)	Zone 1 Ornamental planting beds	Pre-emergent weed control in Zone 1 and ground cover beds	Product requires additional rinsing to thoroughly remove residues from empty container	Restricted for use within 60' of all water	Highly toxic to fish
Oxadiazon	Ronstar G Ronstar WSP	Cell membrane disrupter - PPO inhibitor (14)	Turf & Ornamental	Pre-emergent weed control in ground cover beds	Works well by itself or with Gallery	Restricted for use within 60' of all water, gardens, plants bearing edible fruit	Highly toxic to fish
Pendimethalin	Pendulum 2G Pendulum Aqua	Seedling growth inhibitor - microtubule assembly inhibitor (3)	Zone 1 Turf & Ornamental	Nonselective/Selective depending on rate, Pre-emergent grass and weed control		Westside - Restricted use Eastside - Restricted for use within 60' of all water	Highly toxic to fish, high potential for loss on eroded soil
Picloram	Tordon	Growth regulator - pyridinecarboxylic acid synthetic auxin (4)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment	Highly effective for conifer and broadleaf weed control in Eastern Washington	Westside - Restricted use Eastside - Restricted for use within 60' of all water	Highly mobile in soil and readily adsorbed through roots of desirable trees
Pyraflufen	Edict Edict 2SC	Cell membrane disrupter - PPO inhibitor (14)	Noxious and nuisance weed control, Zones 2 and 3	2,-4-D substitute, effective on Kochia, Russian thistle	Effective with Roundup for Kochia control	Restricted for use within 60' of all water	Irreversible eye damage, highly toxic to Rainbow Trout

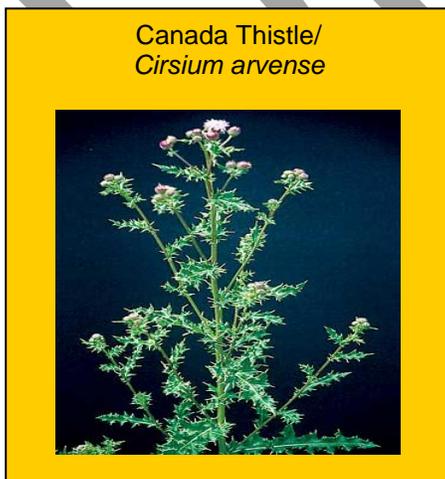
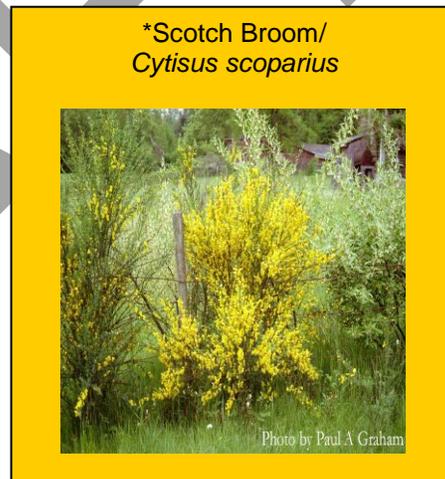
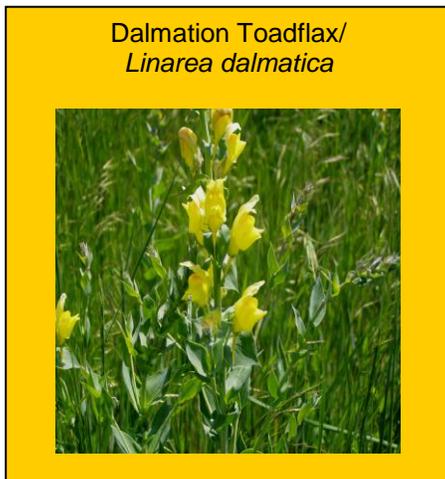
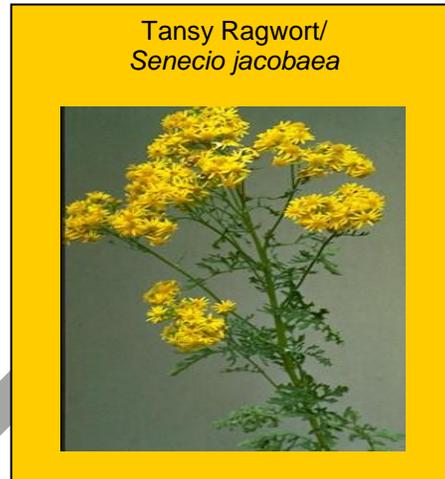
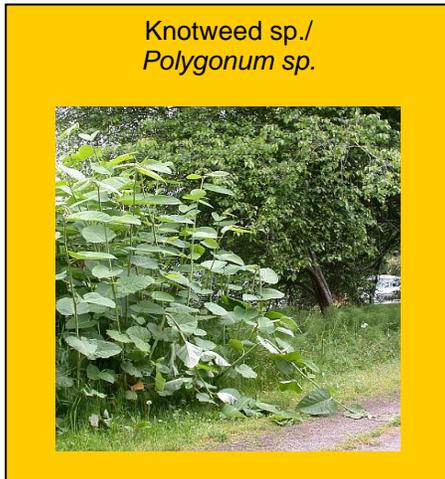
Herbicides Approved for Use on WSDOT Rights of Way

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Chemical Name	Product Names	Mode of Action (WSSA Class)	Where Used	How/Why Used	Notes/ Recommendations	WSDOT Restrictions	Cautions
Sulfentrazone	Portfolio Throttle XP	Cell membrane disrupter - PPO inhibitor (14)	Zone 1 bare-ground	Nonselective pre-emergent grass and weed control	Use caution in sandy soils	<u>Westside</u> - Restricted use <u>Eastside</u> - Restricted for use within 60' of all water	High surface runoff potential, potentially mobile in soil if rain is possible.
Sulfometuron-methyl	Oust Landmark XP Sulfomet Throttle XP	Amino acid synthesis inhibitors - ALS inhibitor (2)	Zone 1 bare-ground	Nonselective pre/post emergent grass and weed control	Landmark is a premix with Oust and Telar	Refer to product labels	Oust has been proven to move with wind if not watered in to the ground
Tebuthiuron	Spike 80DF	Photosynthetic inhibitor photosystem II, site B (7)	Zone 1 bare-ground	Nonselective pre-emergent grass and weed control		<u>Westside</u> - Restricted use <u>Eastside</u> - Restricted for use within 60' of all water	High surface runoff potential, potentially mobile in soil if rain is possible.
Topramezone	Frequency	Bleaching - carotenoid biosynthesis inhibitor (12)	Zone 1 bare-ground	Nonselective pre-emergent grass and weed control	Use in combination with another bare-ground chemical	Refer to product label	Refer to product label
Triclopyr Amine	Capstone, Element 3A, Garlon 3A, Milestone VM Plus	Growth regulator - pyridinecarboxylic acid synthetic auxin (4)	Noxious and nuisance weed control, and tree and brush control, Zones 2 and 3	Selective broadleaf treatment	Works well for scotch broom control	Refer to product label	Can cause irreversible eye damage
Triclopyr Ester	Crossbow, Crossbow L, Element 4, Garlon, Pathfinder	Growth regulator - pyridinecarboxylic acid synthetic auxin (4)	Noxious and nuisance weed control, and tree and brush control, Zones 2 and 3	Selective broadleaf treatment	Works well for cut-stump or basal treatments applications. Crossbow is premixed with 2,4-D, Pathfinder with clopyralid	Restricted for use within 60' of all water	Highly toxic to fish

Designated for control in NW area 2:
(Snohomish, Skagit, Island, and Whatcom County)



*Designate only in Skagit County

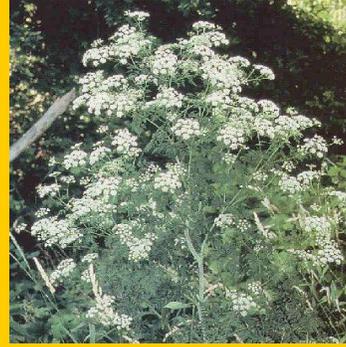
**Designate only in Snohomish, Island, and Whatcom County

Designated for control in NW area 2:
(Snohomish, Skagit, Island, and Whatcom County)

Hawkweed sp./
Heiracium sp.



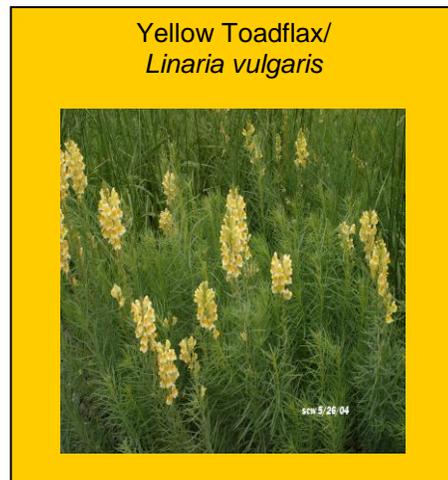
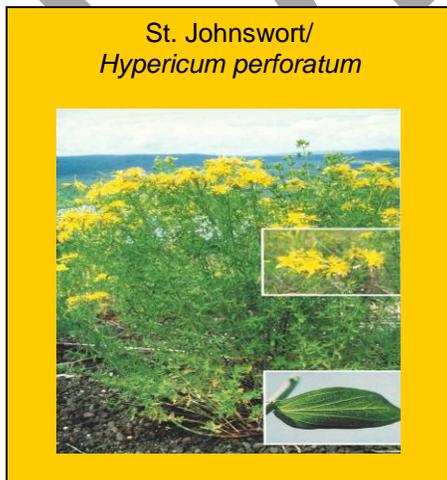
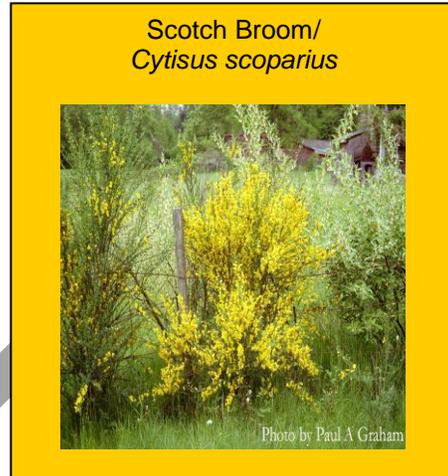
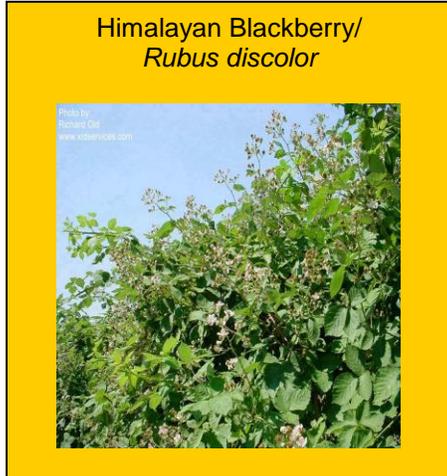
Poison Hemlock/
Conium maculatum



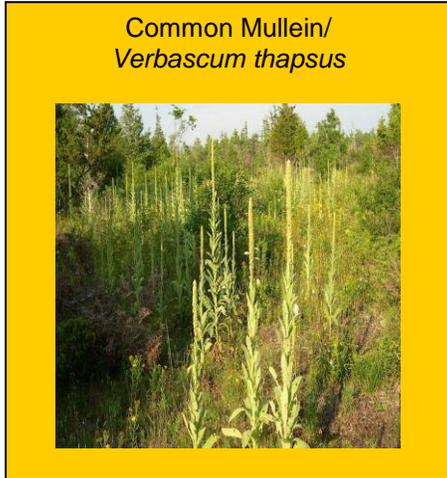
Knapweed sp./
Centaurea sp.



Nuisance weeds in NW area 2:
(Snohomish, Skagit, Island, and Whatcom County)



Nuisance weeds in NW area 2:
(Snohomish, Skagit, Island, and Whatcom County)



DRAFT



Integrated Vegetation Management Record

Org Code	County	Date 6/13/2007	Vegetation Management Zone(s) <input type="checkbox"/> Zone 1 <input type="checkbox"/> Zone 2 <input type="checkbox"/> Zone 3	
Area SR _____ MP _____ to MP _____		Location _____		
Class Appropriate Boxes:				
<input type="checkbox"/> NB	<input type="checkbox"/> EB	<input type="checkbox"/> Roadside	<input type="checkbox"/> Landscaped Area	<input type="checkbox"/> Interchange
<input type="checkbox"/> SE	<input type="checkbox"/> WB	<input type="checkbox"/> Shoulder	<input type="checkbox"/> Rest Area	<input type="checkbox"/> Bridge
		<input type="checkbox"/> Median	<input type="checkbox"/> Park-n-Ride	<input type="checkbox"/> Ramp
			<input type="checkbox"/> Mitigation Site	<input type="checkbox"/> Stormwater
			<input type="checkbox"/> Yard/Stockpile	<input type="checkbox"/> Third Party Damage <input type="checkbox"/> Yes
				<input type="checkbox"/> Sensitive Sites <input type="checkbox"/> Aquatic <input type="checkbox"/> Wetlands
Target		List Target/Species:		
<input type="checkbox"/> Noxious Weeds	<input type="checkbox"/> Brush/Trees	<input type="checkbox"/> Other	_____	
<input type="checkbox"/> Nuisance Weeds	<input type="checkbox"/> Hazard Tree	_____		
Reason for Action:				
<input type="checkbox"/> Noxious Weeds	<input type="checkbox"/> Nuisance Weeds	<input type="checkbox"/> Fire Prevention	<input type="checkbox"/> Restore Native Veg.	<input type="checkbox"/> Zone 1 Pilot
<input type="checkbox"/> Site Distance	<input type="checkbox"/> Hazard Vegetation	<input type="checkbox"/> Customer Request	<input type="checkbox"/> Enhance Vegetation	<input type="checkbox"/> Slope Stabilization
			<input type="checkbox"/> Aesthetic	<input type="checkbox"/> Other _____
Long term IVM plan (Describe goals/objectives and a step-by-step approach over time)				
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Approximate Acres to Accomplish _____				
Activities				
			Planned date of Treatment	Actual date of Treatment
Manual	<input type="checkbox"/> Digging	<input type="checkbox"/> Pulling	<input type="checkbox"/> Planting	
	<input type="checkbox"/> Logging	<input type="checkbox"/> Staking	<input type="checkbox"/> Other _____	
Mechanical	<input type="checkbox"/> Aerial Saw Work	<input type="checkbox"/> Tractor Brush Cutter	<input type="checkbox"/> Mower/Chop	
	<input type="checkbox"/> Manual Brush Cutting	<input type="checkbox"/> Tractor Mower	<input type="checkbox"/> Other _____	
Bio-Control	<input type="checkbox"/> Insect	<input type="checkbox"/> Pathogen	Type/Species _____	
	<input type="checkbox"/> Parasite			
Cultural	<input type="checkbox"/> Burning	<input type="checkbox"/> Grading	<input type="checkbox"/> Seeding	
	<input type="checkbox"/> Fertilizing	<input type="checkbox"/> Grazing	<input type="checkbox"/> Soil Amendment	<input type="checkbox"/> Other _____
Chemical	_____	Record Number	_____	_____
#1 Evaluation and Date				
<div style="border: 1px solid black; padding: 5px;"> <div style="float: right; text-align: right;"> ▲ ▼ </div> </div>				
#2 Evaluation and Date				
<div style="border: 1px solid black; padding: 5px;"> <div style="float: right; text-align: right;"> ▲ ▼ </div> </div>				
#3 Evaluation and Date				
<div style="border: 1px solid black; padding: 5px;"> <div style="float: right; text-align: right;"> ▲ ▼ </div> </div>				

	USDA, Forest Service	OMB 0396-0217 FS-1500-15
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Exhibit x

PESTICIDE - USE PROPOSAL (Reference FSM 2150)	DEPARTMENT/AGENCY		CONTACT/PHONE NO.
	REGION	FOREST	DATE SUBMITTED
1) OBJECTIVE a) Project No. b) Specific Target Pest c) Purpose	_____ _____ _____		
2) PESTICIDE a) Common Name b) Formulation c) % AI,AE,or lb / Gal. d) Registration No.	_____ _____ _____ _____		
3) a) Form Applied b) Use Strength (%) or Dilution Rate c) Diluent	_____ _____ _____		
4) lbs. AI Per Acre or Other Rate	_____		
5) APPLICATION a) Method b) Equipment	_____ _____		
6) a) Acres or Other Unit to be Treated b) Number of Applications c) Number of Sites d) Specific Description of Sites	_____ _____ _____ _____		
7) a) Month(s) of Year b) States	_____ _____		
8) SENSITIVE AREAS a) Areas to be Avoided b) Areas to be Treated with Caution	_____ _____		
9) REMARKS a) Precautions to be Taken b) Use of Trained / Certified Personnel c) State and Local Coordination d) Other Pesticides Being Applied to Same Site e) Monitoring f) Other	_____ _____ _____ _____ _____ _____		

Entity	Mailing Address	Contact Person	Title	Phone	E-Mail
City of Anacortes	City Hall 904 6th St. Anacortes, WA 98221	Fred Buckenmeyer	Public Works Director	(360) 293-1919	coa.publicworks@cityofanacortes.org
City of Burlington	833 South Spruce St. Burlington, WA 98233	Marv Pulst	Director of Public Works	(360) 755-9715 Fax (360) 755-0783	
City of Concrete	PO Box 39 Concrete, WA 98237	Alan Wilkins	Public Works Director	(360) 853-8550 Fax (360) 853-7351	alanw@concretewa.gov
City of Darrington	1005 Cascade St. Darrington, WA 98241			(360) 436-1131 Fax (360) 436-0221	darrcityhall@frontier.com
City of Hamilton	584 Maple St. Hamilton, WA 98255	Tom Selin	Maintenance Supervisor	(360) 826-3027	townofhamilton@fildago.net
City of Lyman	8334 S. Main Lyman, WA 98263	Mark Kitchen	Public Works Superintendent	(360) 826-3033 Fax (360) 826-6473	clerk_lyman@msn.com
City of Mount Vernon	1024 Cleveland Ave. Mount Vernon, WA	Esco Bell	Public Works Director	(360) 336-6204 Fax (360) 336-6299	mvengeering@ci.mount-vernion.wa.us
City of Sedro Woolley	325 Metcalf St. Sedro- Woolley, WA 98284	Mark Freiberger	Director of Public Works	(360) 855-0771	mfreiberger@ci.sedro-woolley.wa.us
City of Standwood	26729 98th Drive NW Standwood, WA 98292	Kevin Hushagen	Public Works Department	(360) 629-9781	kevin@ci.standwood.wa.us
Skagit County Noxious Weed Board	11768 Wester Lane, Suite A Burlington, Wa 98233	William Rogers	County Noxious Weed Coordinador	(360) 336-9430	williamr@co.skagit.wa.us
Snohomish County Noxious Weed Board	8915 Cathcart Way, Snohomish, WA 98296	Sonny Gohrman	County Noxious Weed Coordinator	(425) 388-7548	Sonny.gohrman@snoco.org
Snohomish County	3000 Rockefeller Everett, WA 98201	Steven Thomsen	Public Works Director	(425) 388-3488	public.works@co.snohomish.wa.us
Mt. Baker-Snoqualmie National Forest	1405 Emens Ave. Darrington, WA 98241	Erin Uloth	District Ranger	(360) 436-1155	
Ross lake National Recreation Area	810 State Route 20 Sedro-Woolley, WA 98284			(360) 854-7200 Fax (360) 856-7245	
Swinomish Tribe			Public Works	(360) 466-1209	
The Nature Conservancy	410 N. St. Mt. Vernon, WA 98273	Melissa Holman	Invasive Species Control Manager	(360)419-0556	mholman@tnc.org
City of Oak Harbor	1400 NE 16th Ave. Oak Harbor, WA 98277	Cathy Rosen	Public Works Director	(360) 279-4699 Ext. 4751	crosen@oakharbor.org
City of Coupeville	#4 NE Seventh St. Coupeville, WA 98239	Larry Smith	Public Works Superintendent	(360) 914-1155	maintenance@townofcoupeville.org