

# Northwest Region, Area 5 Integrated Roadside Vegetation Management Plan

2014



**Washington State  
Department of Transportation**  
Maintenance and Operations Divisions

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## **Summary**

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This plan explains the Washington State Department of Transportation's (WSDOT) policy and practice for maintenance of roadside vegetation for Maintenance Area 5 within the agency's Northwest Region. This area manages vegetation within approximately 220 miles of state highway corridor in King and southwest Snohomish Counties. Crews in this maintenance area contend with some of the highest traffic volumes in the state. Major corridors in the area include portions of Interstates 5, 90 and 405. Other limited access corridors include State Routes 520, and 599/99. Roadsides along secondary highways within incorporated city limits are typically maintained by the cities. A map of all highways in the area is included as **Figure 1** on the following page.

The primary objectives in maintenance of roadside vegetation are in relation to safety of the highway users 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, particularly when nuisance vegetation on the right-of-way grows over the fence. 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 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, 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 geographic database for coordinating locations of weed infestations and IVM treatments. Annual area meetings are held in the spring and fall to discuss what is learned each year, refine the plan over time and provide crew training.

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

[http://www.wsdot.wa.gov/Maintenance/Roadside/mgmt\\_plans.htm](http://www.wsdot.wa.gov/Maintenance/Roadside/mgmt_plans.htm), hard copies can also be provided upon request. Please contact Jim McBride or Ray Willard at the numbers listed below for questions or comments:

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## ***Roadside Management Considerations***

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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 are defined in Chapter 6 of the WSDOT Maintenance Manual (M51-01, October 2010) <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:

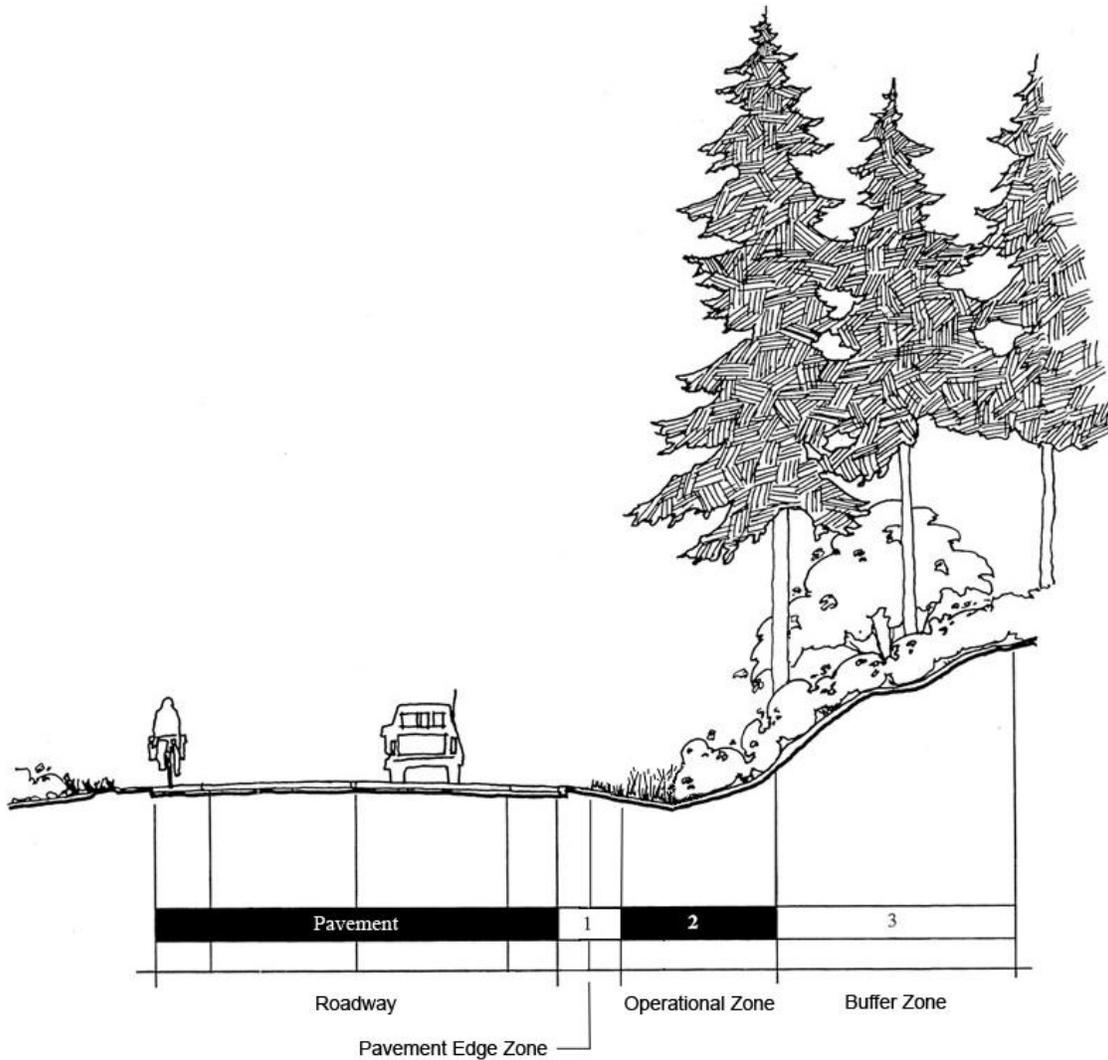
**Zone 1** – The Pavement Edge Zone is maintained in a manner and width necessary to address highway operational functions and safety, pavement preservation, guardrail maintenance, and stormwater management. Zone 1 may include a vegetation-free band adjacent to the pavement edge, particularly when guardrail 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. 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 with herbicides and/or routine mowing cycles where appropriate.



**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

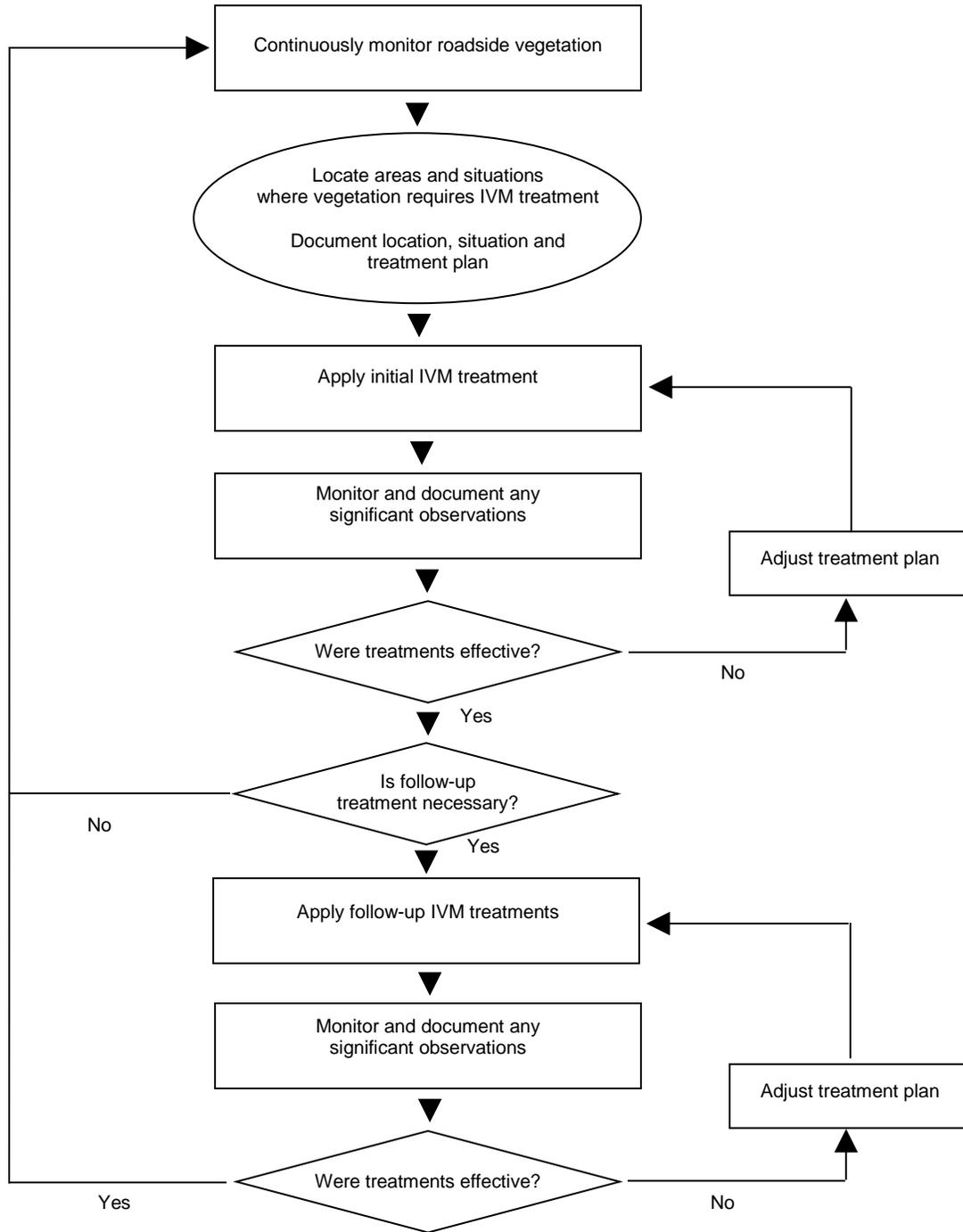
Figure 2

**Routine Maintenance Activities** – When vegetation maintenance activities are intended to keep the area of roadside being treated 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 Roadsides (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 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** – WSDOT has 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**.



**The IVM Decision-Making Process**

Figure 3

## 2014 Area IVM Goals

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The purpose of this section is to identify the highest priority roadside vegetation management needs in Northwest Region, Area 5 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 5 – 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.

### **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

- Herbicides applied annually for bareground under guardrail only on all interstate highways and secondary roads on the west side of the area. All roadsides in this area will be mowed one pass at least once per year.
- SR-202 and 203 on the east side of the area will be maintained with annual application of herbicides on all shoulders throughout the corridors due to narrow paved shoulders. Annual mowing is only done as necessary for site distance issues along these corridors.

#### Tree and Brush Control/Zone 2

- Wherever possible undesirable trees are controlled in Zone 2 and 3 within one to two years after germination using prescribed IVM treatments

#### North Section

- Remove obstructions blocking signs
- Remove Scotch broom median of I-5 at 220<sup>th</sup> to Swamp Creek

#### South Section

- Remove sight distance obstructions for Tukwila FD NB I-5 to SR 599
- Remove hazardous trees SB I-5 near Boeing Field
- Remove volunteer trees and ivy from walls NB I-5 in the vicinity of 80<sup>th</sup> and 85<sup>th</sup>

#### East Section

- Remove hazardous trees SR 520 median 124<sup>th</sup> to 148<sup>th</sup>

### **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:

- A complete map of locations, based on King County Noxious Weed Control Board inventory for the area is included in the map viewer application: [IVM Map Viewer](#)

### North Section

- SB I-5 MP 172.2, infestation of Purple Loosestrife near the fence line
- I-5 scattered infestations of spotted and Diffuse Knapweed
- I-405 SB MP 20.2 and at corner of SB on ramp MP 20, Meadow Knapweed (currently under construction)
- I-405 SB MP20.5 Phragmites in pond (currently under construction)
- I-405 NB MP23, Dalmation Toadflax (currently under construction)
- I-405 NB MP23.4, Yellow Hawkweed (currently under construction)
- SR 202 SB MP3.8, Tansy Ragwort and Spotted Knapweed
- SR 522 WB MP13.1 to 13.21 and in median 13.18 to 13.26, European Hawkweed
- SR 522 WB MP11.2 European Hawkweed, east of overpass and in median, more WB at MP12.9

### South Section

- I-5 MP169 under north end SCB, Spanish Broom (Facilities)
- SB I-5 at MP157.8 and 159.5, Spotted Knapweed
- SB I-5 MP162.2 check Phragmites for regrowth and treat if necessary
- SR 509 SB MP28.6, Tansy Ragwort
- SR 509 MP29.5 and 30 to 30.1, check for Phragmites and treat if necessary
- SR 509 MP29.5, Spotted Knapweed
- SR 599 MP0.3 to SR99 MP 23.6, bad stretch of Dalmation Toadflax on south side of highway
- SR 99 NB MP 23.65 to 24, Spotted and Diffuse Knapweed
- SR 99 at 1<sup>st</sup> So. Bridge mitigation site, bridge facility, MP25.2, and 14<sup>th</sup> Interchange, treat Phragmites

### East Section

- Concentrate on Knapweeds, Hawkweeds, and Rush Skeletonweed
- WB I-90 ramp MP30.3, Spotted Knapweed
- WB I-90 MP26.5 on the rocks, Diffuse Knapweed
- I-90 MP21.2 to MP22.9 and EB to MP30, Common Hawkweed both sides
- WB I-90 MP24.5 to 24.8, Yellow Hawkweed
- I-90 MP10 to MP12, Rush Skeletonweed
- I-90 MP19 to MP31 small patches, Sulfur Cinquefoil
- SR 18, Scattered Spotted Knapweed
- SR 18 MP23.7 to MP24.7, Yellow Hawkweed
- SR 18, Scattered Tansy Ragwort
- NB I-405 MP11.4, Dalmatian Toadflax
- SR 202 mostly WB MP19.74 to MP19.85, thick infestations of European Hawkweed
- SR 202, scattered Tansy Ragwort
- SR 203 MP2.4 to MP5.1, Tansy Ragwort
- SR 520 WB MP8.3 to MP8.4, Sulfur Cinquefoil

### **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 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:

- Locations for mowing beyond one pass, for aesthetics at interchanges and along freeways are identified and described in the NW Region, Area 5 Mowing Plan

#### North Section

- Control patches of Scotch broom and blackberry along I-5 between 92<sup>nd</sup> and 145<sup>th</sup>.

#### South Section

- Apply herbicides to regrowth northbound I-5 between East Roy and Bellevue Place East
- Remove undesirable vegetation from SB I-5 NE 50<sup>th</sup> ramps and replant
- Control Old Man's Beard growing into planted trees along I-5

#### East Section

- Continue IVM treatments in Northrup and Midlakes interchanges
- Control undesirable vegetation along SR 202 MP11-17

## ***NW Region, Area 5 – Roadside Vegetation Management Plan***

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### **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 regular occurring mowing and trimming operations.

#### **1.1. Bareground Shoulder Maintenance (Zone 1)**

In some locations/situations it is most efficient and effective to maintain a vegetation free band of shoulder rock along the edge of pavement, also referred to as bareground shoulder maintenance. Annual herbicide applications are required where a vegetation-free condition is specified.

##### **1.1.1. Guidelines**

- A vegetation-free Zone 1 is maintained with the annual application of herbicides under all guardrail locations and along designated secondary road locations throughout Area 5.
- A vegetation-free Zone 1 where maintained is 3' in width or less.
- All shoulders where a vegetation-free Zone 1 is not maintained will be mowed at least once a year, as described in Section 1.2 below, to control grass height as needed. Edge buildup in these areas will be addressed as needed in conjunction with winter maintenance operations (plowing) and/or shoulder sweeping operations.

##### **1.1.2 Methods**

- Vegetation-free Zone 1 is maintained through an annual application of soil residual pre-emergent and non-selective post-emergent herbicides in May/June.
- All shoulders will be monitored for channelization of stormwater and/or ponds forming at low spots. Some areas may require occasional supplemental grading and removal of excess material.
- See **Appendix A, Routine Maintenance Prescriptions, Zone 1 Maintenance – Bareground Treatment**

##### **1.1.3 Locations**

- Delineation for Zone 1 maintenance 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.

#### **1.2. Mowing/Trimming (Zones 1 and 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, periodic 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 only occurs in designated areas on limited access highways adjacent to edge of pavement in Zones 1 and 2, and only beyond Zone 2 in designated focus areas such as interchanges and urban landscapes as described in **Section 3**. In all other areas mowing

is only used occasionally as needed, as part of IVM treatments for weed and brush control as described below in **Section 2**.

- On secondary/non-limited access roads in Area 5, routine annual mowing s conducted on all shoulders where Zone 1 is not maintained.
- Side trimming of encroaching branches is routinely conducted as needed in any locations to preserve site distance at curves, intersections and other highway entry points.

### 1.2.2. Methods

- On limited access highways 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 but may be as narrow as 6' depending on the roadside configuration.
- 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 beds, or across the entire median widths depending on the location and the presence of desirable vegetation.
- See **Appendix A, Routine Maintenance Prescriptions, Zone 2 Maintenance**

### 1.2.3. Locations

- Single pass routine mowing occurs on all roadsides in the area except under guardrail and other locations where a vegetation-free Zone 1 is maintained. Inaccessible steep slopes behind Jersey barrier may also be left un-mowed. Delineation for areas receiving routine multiple pass mowing 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.

## 1.3. Hazard Tree Monitoring and Removal (Zone 3)

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, therefore both monitoring for the presence of potential hazard trees and removal when necessary are consider routine and ongoing roadside maintenance activities.

### 1.3.1. Guidelines

- Hazard tree removal is considered a routine maintenance activity because maintenance employees are constantly on the lookout 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 understory vegetation.

## 2. INTEGRATED VEGETATION MANAGEMENT ACTIVITIES

Even routine roadside vegetation maintenance activities described above should be evaluated for necessity and efficiency and therefore technically fall under the definition of 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 6. 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 may be documented with an initial IVM record outlining the long-term treatment plan. These same records are intended to 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** in the plan binder.

### 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 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 5 the following weeds are considered mandatory required control and are known to exist on state highway rights-of-way in King and Southwest Snohomish Counties.

**Class A**

Class A noxious weeds are non-native species with a limited distribution in the state. The only Class A species known to exist on WSDOT rights-of-way in this area are:

<b>Common Name/Botanical Name</b>	<b>King</b>	<b>Sno</b>
Giant hogweed/ <i>Heracleum mantegazzianum</i>	◆	
European Hawkweed/ <i>Hieracium sabaudum</i>	◆	
Spanish broom/ <i>Spartium junceum</i>	◆	

**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 Class B weeds are known to exist on state right-of-way and are designated for mandatory control in King and/or Snohomish Counties:

<b>Common Name/Botanical Name</b>	<b>King</b>	<b>Sno</b>
Ragwort tansy/ <i>Senecio jacobaea</i>	◆	◆
Knapweed sp./ <i>Centaurea sp.</i>	◆	◆
Purple loosestrife/ <i>Lythrum salicaria</i>	◆	◆
Wild chervil/ <i>Anthriscus sylvestris</i>	◆	◆
Sulfur cinquefoil/ <i>Potentilla recta</i>	◆	◆
Hawkweed sp./ <i>Hieracium sp.</i>	◆	◆
Poison hemlock/ <i>Conium maculatum</i>		◆
Common reed/ <i>Phragmites australis</i>	◆	◆
Dalmatian toadflax/ <i>Linaria dalmatica</i>	◆	◆

**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. However there are currently no Class C noxious weeds designated and present on the right-of-way in this area.

**2.2.2. Methods**

- Because noxious weed species are typically 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 5 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. At times control may be accomplished incidental to noxious weed control when species are present in the same area.
- 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 considered nuisance weeds in NW Region, Area 5 that are known to exist on the highway right-of-way:

<b>Common Name/Botanical Name</b>	<b>King</b>	<b>Sno</b>
Butterfly bush/ <i>Buddleja davidii</i>	◆	◆
Poison hemlock/ <i>Conium maculatum</i>	◆	Noxious
Knotweed sp./ <i>Polygonum sp.</i>	◆	Noxious
St. Johnswort/ <i>Hypericum perforatum</i>	◆	◆
Common tansy/ <i>Tanacetum vulgare</i>	◆	◆
Bull thistle/ <i>Cirsium vulgare</i>	◆	◆
Canada thistle/ <i>Cirsium arvense</i>	◆	◆
Scotch broom/ <i>Cytisus scoparius</i>	◆	◆
Common Mullein/ <i>Verbascum thapsus</i>	◆	◆
Himalayan blackberry/ <i>Rubus discolor</i>	◆	◆

### 2.3.2. Methods

- Control measures for nuisance weed are dependent on plant type.
- 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 side 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, big-leaf 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.

### 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.
- Timing of these 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.
- Whenever possible, safe and practical, seedling trees will be dug or pulled by hand and transplanted to areas where their 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, roadsides adjacent to 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 often 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. Formally Landscaped Sections**

##### **3.2.1. Guidelines**

- On some limited access highways in urban areas such as I-5, I-405 and I-90 in Seattle and Bellevue, the roadsides have been planted with ornamental landscaping. In general, roadsides on limited access highways in urban areas are maintained to a higher level when possible.
- Along I-90 in Seattle and Mercer Island agreements exist with cities requiring WSDOT to reimburse the city for maintenance of public access park areas on state right-of-way, but outside limited access walls.
- Vegetation management work in these areas is distinguished by charges to the 1500 series within the WSDOT Financial Information Recording System.

##### **3.2.2. Locations**

- Areas considered as formally landscaped can be referenced along with notes describing general practices for each location 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](#)  
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## **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.

### **3.4.2. Locations**

- Herbicide sensitive areas and reason/type of limitations on herbicide use can be referenced using a web base map viewer application at: [IVM Map Viewer](#)  
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## **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 following the same guidelines mentioned in previous sections. The primary objectives with regard vegetation management within these facilities are maintenance 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**

- Storm water 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](#)  
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## **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 process so the maintenance actions are not required unless noxious weeds or hazardous trees become an issue.

### **3.7.2. Locations**

- All wetland mitigation sites within NW Region, Area 5 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 NW Region Highway Maintenance Environmental Compliance Guide 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 the 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. Railroad Crossings**

#### **3.9.1. Guidelines**

- State law requires that all trees and brush be kept clear on highway rights-of-way within 100' of railroad crossings.
- To maximize safety at rail crossings, trees and brush should be cleared as far back as practical to maximize site distance.

#### **3.9.2. Locations**

- Locations of all railroad crossing in NW Region, Area 5 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.

### **3.10. Designated IVM Treatment Sites**

#### **3.10.1. 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.

#### **3.10.2. Locations**

- All designated IVM treatment sites within NW Region, Area 5 are referenced by individual records found in the IVM Treatment Database.

**Zone 1 Maintenance - Bareground Treatment**

	<b>OPTION 1</b>	<b>OPTION 2</b>	<b>OPTION 3</b>	<b>OPTION 4</b>
<b>TREATMENT TYPE:</b>	Pavement Edge	Pavement Edge	Broadcast chemicals at pavement edge	Broadcast chemicals at pavement edge
<b>MANAGEMENT GOALS:</b>	Vegetation free	Vegetation free	Vegetation free	Vegetation free
<b>METHOD:</b>	Annual herbicide application	Annual herbicide application	Annual herbicide application	Annual herbicide application
<b>EQUIPMENT:</b>	Handgun	Handgun	Spray truck w/ fixed width boom	Spray truck w/ fixed width boom
<b>MATERIALS:</b>	Ranger Pro 64ozl./acre	Ranger Pro 64ozl./acre + Payload 4ozd./acre + Landmark XP 2ozd./acre	Esplanade 5oz/acre + Perspective 8 oz/acre + Sulfomet 3 oz/acre + Ranger Pro 64 oz/acre + Insist 90 16 oz/acre	Perspective 8 oz/acre + Sulfomet 3 oz/acre + Ranger Pro 64 oz/acre + Insist 90 16 oz/acre
<b>TIMING:</b>	Spring	Spring	Early Spring or Fall	Early Spring
<b>IVM FOLLOW-UP:</b>	Evaluate control	Evaluate control	Evaluate control. For areas with horsetail add Telar 2 oz/acre or substitute Landmark 6 oz/acre for Sulfomet	Evaluate control. For areas with horsetail add Telar 2 oz/acre or substitute Landmark 6 oz/acre for Sulfomet
<b>REMARKS:</b>	Typically applied in a 2 to 3 ft. band.			

**Zone 2 Maintenance - Tree and Brush**

	<b>OPTION 1</b>	<b>OPTION 2</b>		
<b>TREATMENT TYPE:</b>	Deciduous tree and brush	Deciduous tree and brush		
<b>MANAGEMENT GOALS:</b>	Control vegetation obstruction	Control vegetation obstruction		
<b>METHOD:</b>	Herbicide treatment	Stump Treatment		
<b>EQUIPMENT:</b>	Backpack	Backpack		
<b>MATERIALS:</b>	Milestone 6ozl./acre + Metcel VMF 1ozl./acre	Element 3A non diluted		
<b>TIMING:</b>	During growing season	Anytime		
<b>IVM FOLLOW-UP:</b>	Evaluate control	Evaluate control		
<b>REMARKS:</b>	Avoid brown out by spraying late in the season and spray only to appropriate height.			

**Noxious and Nuisance Weed Control - General**

	<b>OPTION 1</b>	<b>OPTION 2</b>	<b>OPTION 3</b>	<b>OPTION 4</b>
<b>TREATMENT TYPE:</b>	Chemical application	Chemical application	Chemical application	Chemical application
<b>ACTION THRESHOLD:</b>	Where ever present (dependent on available resources)	Where ever present (dependent on available resources)	Where ever present (dependent on available resources)	Where ever present (dependent on available resources)
<b>MANAGEMENT GOALS:</b>	Eradication of noxious weed	Eradication of noxious weed	Eradication of noxious weed	Eradication of noxious weed
<b>METHOD:</b>	Spot treatment w/ herbicide	Spot treatment w/ herbicide	Spot treatment w/ herbicide	Spot treatment w/ herbicide
<b>EQUIPMENT:</b>	Handgun	Handgun	Handgun	Handgun
<b>MATERIALS:</b>	Element 3A 64ozl./acre + Metcel VMF 1ozd./acre	Transline 16ozl./acre + Metcel VMF 1ozd./acre	Milestone 6ozl./acre + Metcel VMF 1ozd./acre	Milestone 6ozl./acre + Landmark XP 1ozd./acre
<b>TIMING:</b>	Spring and Summer	Spring and Summer	Spring and Summer	Spring and Summer
<b>IVM FOLLOW-UP:</b>	Reapply if necessary	Reapply if necessary	Reapply if necessary	Reapply if necessary
<b>REMARKS:</b>	Option 1,2,3&4: Tansy Ragwort, Poison Hemlock, Dalmation Toadflax, Japanese Knotweed, Smooth Hawkweed, St. Johnswort, Thistles, Blackberry, Purple Loosestrife			

**Noxious and Nuisance Weed Control - General**

	<b>OPTION 5</b>	<b>OPTION 6</b>	<b>OPTION 7</b>	
<b>TREATMENT TYPE:</b>	Chemical application	Chemical application	Chemical application	
<b>ACTION THRESHOLD:</b>	As soon as plants appear.	Pre or post emergence (landscape)	Before plants appear	
<b>MANAGEMENT GOALS:</b>	Eradication and control if required by county.	Eradication and control if required by county.	Eradication and control if required by county.	
<b>METHOD:</b>	Spot treatment w/ herbicide	Blanket spray	Blanket spray	
<b>EQUIPMENT:</b>	Handgun	Hand spreader	Handgun	
<b>MATERIALS:</b>	Metcel VMF 2ozd./acre + Rangestar 32ozl./acre + Element 3A 32ozl./acre	Casoron 4G 100lb./acre	Ranger Pro 64ozl./acre + Surflan AS T&O 32ozl./acre	
<b>TIMING:</b>	Spring and Summer	Late winter, spring	Spring	
<b>IVM FOLLOW-UP:</b>	Reapply as necessary. Seed and fertilize to reduce weed competition.	Reapply as necessary. Seed and fertilize to reduce weed competition.	Reapply as necessary. Seed and fertilize to reduce weed competition.	
<b>REMARKS:</b>	Option 5: Tansy, Thistle, St. Johnswort, Poison Hemlock, Wild Carrot --- Option 6: Non selective --- Option 7: Ivy			

## 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
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 labels
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	<u>Westside</u> - Restricted use <u>Eastside</u> - 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	<u>Westside</u> - Restricted use <u>Eastside</u> - 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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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.	<u>Westside</u> - Restricted use <u>Eastside</u> - 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 marestalk, 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		<u>Westside</u> - Restricted use <u>Eastside</u> - 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	<u>Westside</u> - Restricted use <u>Eastside</u> - 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

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<b>Chemical Name</b>	<b>Product Names</b>	<b>Mode of Action (WSSA Class)</b>	<b>Where Used</b>	<b>How/Why Used</b>	<b>Notes/ Recommendations</b>	<b>WSDOT Restrictions</b>	<b>Cautions</b>
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 5:  
(King and Snohomish County)**

Giant Hogweed/  
*Heracleum mantegazzianum*



European Hawkweed/  
*Hieracium sabaudum*



Spanish broom/  
*Spartium junceum*



Wild Chervil/  
*Anthriscus sylvestris*



Knapweed sp./  
*Centaurea* sp.



Sulfur Cinquefoil/  
*Potentilla recta*



**Designated for control in NW area 5:  
(King and Snohomish County)**

Purple Loosestrife/  
*Lythrum salicaria*



Hawkweed sp./  
*Hieracium* sp.



Dalmation Toadflax/  
*Linaria Dalmatica*



\*Poison Hemlock/  
*Conium maculatum*



Common Reed/  
*Phragmites australis*

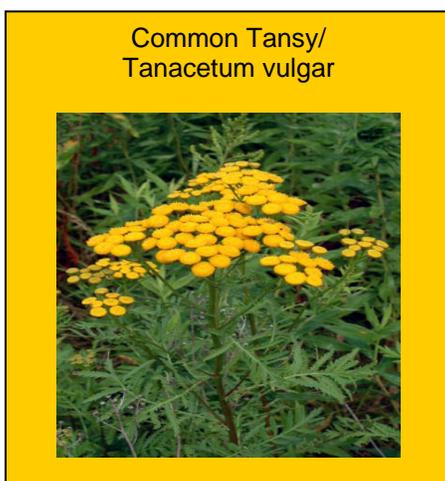
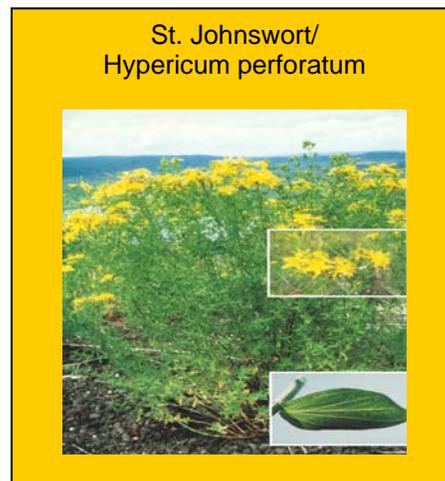
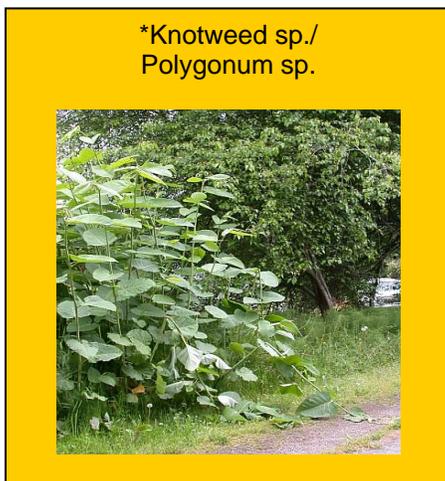
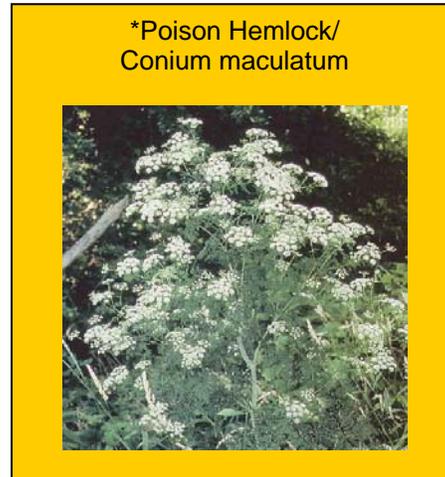
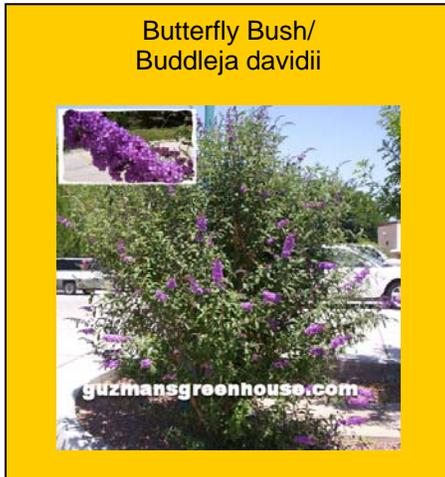


Tansy Ragwort/  
*Senecio jacobaea*



\*Designated for control in Snohomish County, nuisance in King County

**Nuisance weeds in NW area 5:**  
(King and Snohomish County)



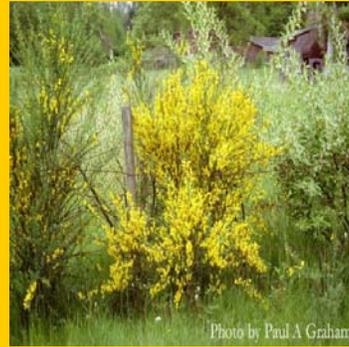
\*Nuisance in King County, designated for control in Snohomish County

**Nuisance weeds in NW area 5:**  
(King and Snohomish County)

Canada Thistle/  
*Cirsium arvense*



Scotch Broom/  
*Cytisus scoparius*



Common Mullein/  
*Verbascum thapsus*



Himalayan Blackberry/  
*Rubus discolor*





Integrated Vegetation Management Record

Org. Code 435420	County Grays Harbor	Date 8/7/2006	Vegetation Management Zone(s) <input checked="" type="checkbox"/> Zone 1 <input checked="" type="checkbox"/> Zone 2 <input type="checkbox"/> Zone 3																			
Area SR 101 MP 104 to MP 137		Location _____																				
Check Appropriate Boxes: <input checked="" type="checkbox"/> Roadside <input type="checkbox"/> Landscaped Area <input type="checkbox"/> Interchange <input type="checkbox"/> Mitigation Site <input type="checkbox"/> Third Party Damage <input type="checkbox"/> Sensitive Sites <input checked="" type="checkbox"/> NB <input type="checkbox"/> EB <input checked="" type="checkbox"/> Shoulder <input type="checkbox"/> Rest Area <input type="checkbox"/> Bridge <input type="checkbox"/> Stormwater <input type="checkbox"/> Yes <input type="checkbox"/> Aquatic <input checked="" type="checkbox"/> SB <input type="checkbox"/> WB <input type="checkbox"/> Median <input type="checkbox"/> Park-n-Ride <input type="checkbox"/> Ramp <input type="checkbox"/> Yard/Stockpile <input type="checkbox"/> Wetlands																						
Target <input checked="" type="checkbox"/> Noxious Weeds <input type="checkbox"/> Brush/Trees <input type="checkbox"/> Other <input type="checkbox"/> Nuisance Weeds <input type="checkbox"/> Hazard Tree List Target/Species: <u>Orange Hawkweed</u>																						
Reason for Action: <input checked="" 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"/> Aesthetic <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"/> Other _____																						
Long term IVM plan (Describe goals/objectives and a step-by-step approach over time) To control and eradicate this weed from zones 1 & 2. This was the first treatment this year but we are seeing good results from the previous treatments from the year before.																						
Approximate Acres to Accomplish <u>1.5</u>																						
<b>Activities</b> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%;"></th> <th style="width:20%;">Planned date of Treatment</th> <th style="width:30%;">Actual date of Treatment</th> </tr> </thead> <tbody> <tr> <td>                     Manual <input type="checkbox"/> Digging <input type="checkbox"/> Pulling <input type="checkbox"/> Planting  <input type="checkbox"/> Logging <input type="checkbox"/> Scaling <input type="checkbox"/> Other _____                 </td> <td style="text-align:center;">_____</td> <td style="text-align:center;">_____</td> </tr> <tr> <td>                     Mechanical <input type="checkbox"/> Aerial Saw Work <input type="checkbox"/> Tractor Brush Cutter <input type="checkbox"/> Mower/Chem  <input type="checkbox"/> Manual Brush Cutting <input type="checkbox"/> Tractor Mower <input type="checkbox"/> Other _____                 </td> <td style="text-align:center;">_____</td> <td style="text-align:center;">_____</td> </tr> <tr> <td>                     Bio-Control <input type="checkbox"/> Insect <input type="checkbox"/> Pathogens  <input type="checkbox"/> Parasites <input type="checkbox"/> Type/Species _____                 </td> <td style="text-align:center;">_____</td> <td style="text-align:center;">_____</td> </tr> <tr> <td>                     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 _____                 </td> <td style="text-align:center;">_____</td> <td style="text-align:center;">_____</td> </tr> <tr> <td>                     Chemical <u>3119456</u> <input type="checkbox"/> Record Number _____                 </td> <td style="text-align:center;">_____</td> <td style="text-align:center;"><u>8/7/2006</u></td> </tr> </tbody> </table>						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"/> Scaling <input type="checkbox"/> Other _____	_____	_____	Mechanical <input type="checkbox"/> Aerial Saw Work <input type="checkbox"/> Tractor Brush Cutter <input type="checkbox"/> Mower/Chem <input type="checkbox"/> Manual Brush Cutting <input type="checkbox"/> Tractor Mower <input type="checkbox"/> Other _____	_____	_____	Bio-Control <input type="checkbox"/> Insect <input type="checkbox"/> Pathogens <input type="checkbox"/> Parasites <input type="checkbox"/> Type/Species _____	_____	_____	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 <u>3119456</u> <input type="checkbox"/> Record Number _____	_____	<u>8/7/2006</u>
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Chemical <u>3119456</u> <input type="checkbox"/> Record Number _____	_____	<u>8/7/2006</u>																				
<b>#1 Evaluation and Date</b> _____																						
<b>#2 Evaluation and Date</b> _____																						
<b>#3 Evaluation and Date</b> _____																						



Pesticide Application

Main Menu	Print	New Record	Form 8420	List View	Blank Record	Delete Record	Find Record
Org. Code 415520	County King	Date of Application 10/13/2006	Start 12:30 Finish 14:00	<input type="radio"/> AM <input checked="" type="radio"/> PM	ICP 051A	Stores Issue Ticket Number(s) F42735/F42733/42734	
Area SR 99 MP 25.12 to MP 26.01 and MP to MP and MP to MP and MP to MP							
Check Appropriate Boxes: <input type="checkbox"/> Roadside <input type="checkbox"/> Landscaped Area <input type="checkbox"/> Interchange <input type="checkbox"/> Yard/Stockpile <input checked="" type="checkbox"/> Spot Spray <input type="checkbox"/> Aquatic <input checked="" type="checkbox"/> NB <input type="checkbox"/> EB <input checked="" type="checkbox"/> Shoulder <input type="checkbox"/> Rest Area <input type="checkbox"/> Bridge <input checked="" type="checkbox"/> Blanket Spray <input type="checkbox"/> Wetlands <input checked="" type="checkbox"/> SB <input type="checkbox"/> WB <input type="checkbox"/> Median <input type="checkbox"/> Park-n-Ride <input type="checkbox"/> Ramp <input type="checkbox"/> Banded Width							
<input type="checkbox"/> Weeds <input checked="" type="checkbox"/> Noxious Weeds <input type="checkbox"/> Disease <input type="checkbox"/> Brush <input type="checkbox"/> Insects <input type="checkbox"/> Other List/Per(s): <u>Common Reed grass, Japanese knotweed, Blackberries</u>							
Start Weather Conditions Temperature 54 °F(°C) Wind (Direction From) <u>NW</u> Wind (Range) <u>2</u> mph(km/h) <input type="radio"/> Sunny <input checked="" type="radio"/> Broken <input type="radio"/> Overcast No Rain <input type="radio"/> Light Scattered Showers <input type="radio"/> Hard Showers							
Finish Weather Conditions Temperature 60 °F(°C) Wind (Direction From) <u>NW</u> Wind (Range) <u>4</u> mph(km/h) <input checked="" type="radio"/> Sunny <input type="radio"/> Broken <input type="radio"/> Overcast No Rain <input type="radio"/> Light Scattered Showers <input type="radio"/> Hard Showers							
Tank No.	Material Name	Material Type	EPA Reg. No.	Lot Number	Product For Acres (Gallons)	Unit	Total Daily Usage Unit
1	Water	Carrier	-----	Spokane St.	100	Gal	50 Gal
1	Aquamaster	Pesticide	524-343	MTR00805AJ	96	Ozl	48 Ozl
1	MSO	Adjuvant	-----	77562	32	Ozl	16 Ozl
1	Turf Trax	Adjuvant	-----	34294	32	Ozl	16 Ozl
Total 0.50 Acres(hectares) Treated at 100 gallons(liters) of spray per acre(hectare).							
Equipment Number 21A36-5	Tank Size 1 200 3 5	Calibration Date 09/25/2006	Vehicle Speed n/a mph(km/h)	Nozzle Pressure 5 PSI(lPa)	Width of Spray Pattern N/A Feet(meters)		
<input type="checkbox"/> Handpreader <input checked="" type="checkbox"/> Hand gun <input type="checkbox"/> Boom <input type="checkbox"/> Backpack <input type="checkbox"/> Fixed Nozzle <input type="checkbox"/> Other (Specify) _____				<input checked="" type="checkbox"/> Tank Mix (Conv.) <input type="checkbox"/> Injection <input type="checkbox"/> Invert			
Operator Name Gabriel Olivas		Operator Pesticide License No. 52698		Operator Signature		Driver Name Richard Blair	
Remarks No water was present at the time of spray.						Buffer Area/Driver's Name	
						Pesticide Sensitivity Registration Apply: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
						Contact _____ _____ _____	
Division of Emergency Management (1-800-258-5990)							

DOT Form 540-506 EF      Distribution: OSC Maint. Operator Region File      Ocl= Ounces Dry Lb= Pound      g= gram kg=kilogram  
 Revised 9/2001      Send OSC Copy Within 5 Days      Ocl= Ounces Liquid Ga= Gallon      ml=Milliliter L= Liter  
 P= Pint Q= Quart

	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 Lake Forest Park	17425 Ballinger Way NE Lake Forest Park, WA	Frank Zenk	Works Works Director	(206) 368-5440	<a href="mailto:fzenk@ci.lake-forest-park.wa.us">fzenk@ci.lake-forest-park.wa.us</a>
City of Kenmore	18120 68th Ave NE PO Box 82607 Kenmore WA 98028	Jennifer Gordon	Manager	(425) 398-8900 x6160	<a href="mailto:jgordon@kenmorewa.gov">jgordon@kenmorewa.gov</a>
City of Woodinville	17301 133rd Ave. NE Woodinville, WA 98072	Tom Hansen	Public Works Director	(425) 477-2291	<a href="mailto:thomash@ci.woodinville.wa.us">thomash@ci.woodinville.wa.us</a>
City of Bothell	9654 NE 182nd St. Bothell, Wa 98011	Erin Leonhart	Public Works Director	(425) 486-2768	<a href="mailto:erin.leonhart@ci.bothell.wa.us">erin.leonhart@ci.bothell.wa.us</a>
City of Mountlake Terrace	6100 219th St. SW Suite 200 Mountlake Terrace, Wa 98043	Curt Brees	Public Works Director	(425) 670-8264 Fax: (425) 670-8267	<a href="mailto:cbrees@ci.mlt.wa.us">cbrees@ci.mlt.wa.us</a>
City of Shoreline	17544 Midvale Ave. N Shoreline, WA 98133	Mark Relph	Public Works Director	(206) 801-2401	<a href="mailto:mrelph@shorelinewa.gov">mrelph@shorelinewa.gov</a>
City of Seattle	700 Fifth Ave, Suite 3900 Seattle, WA 98124	Nolan Rundquist	City Arborist	(206) 68-8733	<a href="mailto:nolan.rundquist@seattle.gov">nolan.rundquist@seattle.gov</a>
City of Burien	400 SW 152nd St. Suite 300 Burien, Wa 98166	Maiya Andrews	Public Works Director	(206) 248-5521	<a href="mailto:maiya@burienwa.gov">maiya@burienwa.gov</a>
City of Tukwila	6300 Southcenter Blvd. Tukwila, WA 98188	Bob Giberson	Public Works Director	(206) 433-0179	<a href="mailto:publicwork@tukwilawa.gov">publicwork@tukwilawa.gov</a>
City of Kirkland	123 Fifth Ave. Kirkland, Wa 98033	Pam Bissonette	Public Works Director	(425) 587-3802	<a href="mailto:PBissonette@kirklandwa.gov">PBissonette@kirklandwa.gov</a>
City of Redmond	18080 NE 76th St. Redmond, WA98073	Linda Deboldt	Public Works Director	(425) 556-2715	<a href="mailto:ledeboldt@redmond.gov">ledeboldt@redmond.gov</a>
City of Bellevue	450 110th Ave NE Bellevue, WA 98009	Brad Miyake	City Manager	(425) 452-7228	<a href="mailto:bmiyake@bellevue.gov">bmiyake@bellevue.gov</a>
City of Sammamish	801 228th Ave SE. Sammamish, WA 98705	Laura Philpot	Public Works Director	(425) 295-0570	<a href="mailto:lphilpot@ci.sammamish.wa.us">lphilpot@ci.sammamish.wa.us</a>
City of Issaquah	301 Rainier Blvd S. Issaquah, Wa 98027	Alan Haywood	City Arborist/ Horticulturist	(425) 837-3365	<a href="mailto:alanh@issaquahwa.gov">alanh@issaquahwa.gov</a>
City of Snoqualmie	38194 S.E. Stearns Rd. Snoqualmie, WA 98065	Daniel J. Marcinko	Public Works Director	(425) 831-1555 x1135	<a href="mailto:dmarcinko@ci.snoqualmie.wa.us">dmarcinko@ci.snoqualmie.wa.us</a>
City of North Bend	1155 E North Bend Way North Bend, WA 98045	Don Deberg	Public Works Director	(425) 888-7652 Fax: (425) 888-3502	<a href="mailto:ddeberg@northbendwa.gov">ddeberg@northbendwa.gov</a>
King County	201 S. Jackson St. Suite 600, Seattle, WA 98104	Steve Burke	Noxious Weed Coordinator	(206) 205-6927 Fax: (206) 296-0192	<a href="mailto:steve-i.burke@metroke.gov">steve-i.burke@metroke.gov</a>
Snohomish County	8915 Cathcart Wa, Snohomish, Wa 98296	H.F. "Sonny" Gohrman	Noxious Weed Coordinator	(425) 388-7548 Fax: (425) 388-7538	<a href="mailto:sonny.gohrman@co.snohomish.wa.us">sonny.gohrman@co.snohomish.wa.us</a>
Kittitas County	507 Nanum #26 Ellensburg, WA 98926	Todd Davis	Noxious Weed Coordinator	(509) 962-7007 Fax: (509) 962-7033	<a href="mailto:todd.davis@co.kittitas.wa.us">todd.davis@co.kittitas.wa.us</a>