Northwest Region, Area 1
Integrated Roadside Vegetation Management Plan
2018

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

The Washington State Department of Transportation’s (WSDOT) Northwest Region Area 1 manages vegetation within approximately 210 miles of state highway corridor in Whatcom and northwest Skagit Counties. In addition to the Interstate 5 corridor between Burlington and the Canadian border, the area maintains State Route (SR) 9 throughout Whatcom County and all of SR 11 (Chuckanut Drive), 539, 542 (Mt. Baker Highway), 543, 544, 546, 547, and 548. A map of the area is included as Figure 1 on the following page.

The primary roadside vegetation management objectives are in relation to traffic safety and preservation of the highway infrastructure. Additionally, as a landowner WSDOT is required to control all listed noxious weeds that occur on the right-of-way by state law (RCW 17.10 and 15.15.010). It is important that WSDOT not only meet the legal requirements for weed control, but also consider the needs and concerns of adjacent landowners in this area.

In order to best manage roadsides with these priority objectives in mind, WSDOT practices an annually cycling process called Integrated Vegetation Management (IVM). Plans like this are maintained and updated annually for all areas of the state with an overall goal of establishing the most naturally self-sustaining roadsides vegetation possible. Adjustments are made year to year in each area plan based on monitoring the previous years’ accomplishments and results, available budget, and prioritization of other highway maintenance activities.

This plan serves as the guidance document for vegetation maintenance in Northwest Region Area 1 for the 2018 growing season. It identifies priority locations and prescribes treatments for accomplishing safety and weed control objectives through the use of a combination of seasonally-timed control measures. Each year’s actions are designed as part of a coordinated multi-year strategy to minimize roadside maintenance requirements wherever possible. This plan also accounts for specific locations where maintenance tactics are adjusted due to environmental issues, neighboring properties, local partnerships, or restoration work done through WSDOT design and construction.

As of the 2018 season, the information contained in this plan document can be geographically referenced by crews in the field using iPads and the Highway Activity Tracking System (HATS). Accomplishments and results will also be tracked geographically through this new system. This development in WSDOT maintenance management will greatly improve the agency’s success in properly executing planned actions, monitoring and documenting results of treatments, and in measuring cost and results over time.

WSDOT welcomes input from local public and private entities on its weed control and other vegetation management activities. Wherever appropriate the agency is looking for opportunities to plan and cooperate with others in managing the roadside. Please direct any questions, comments or suggestions to the Northwest Region Area 1 Maintenance Superintendent – Theo Donk or the State’s Roadside Asset Manager – Ray Willard.

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Area Vicinity Map
Figure 1
The section outlines the overall approach and geographic distribution of roadside vegetation management requirements throughout the maintenance area in 2018. Information is organized in relation to four groups defined in the WSDOT Maintenance Accountability Program (MAP) for the performance of roadside vegetation maintenance activities: Control of Vegetative Obstructions, Noxious Weed Control, and Nuisance Vegetation Control. Specific locations as noted in this work plan are also mapped in the Highway Activity Tracking System (HATS) for reference by maintenance in the field.

Control of Vegetative Obstructions – 3A4
The work of this group of maintenance activities relates to the safety and operational requirements of the highway. These items are considered first priority in terms of the overall roadside maintenance needs. Vegetation management objectives and work activities in this category fall into four groups – Pavement Edge Maintenance/Zone 1, One Pass Mowing/Zone 2, Tree and Brush Control/Zone 2 and 3, and Hazard Tree Removal/Zone 3.

Pavement Edge Maintenance/Zone 1
Work Operation: 1615
HATS Form: Pesticide Application
HATS Map Layer: Reference lines – Roadside Features/Spray Zone 1 Reference
This work includes the application of herbicides to road shoulders where necessary throughout the area. The objective of these applications in designated locations is preserving of a band of gravel shoulder adjacent to the pavement that is free of vegetation. This treatment is necessary in the mapped locations described below to provide visibility and maintainability of roadside hardware and guideposts, allow room for vehicles to safely pull off on shoulders, facilitate stormwater drainage, and/or provide added visibility of wildlife approaching the highway.

Total Units of Planned Treatment
• Approximately 45 acres of herbicide treatment will be applied to road shoulders where hardware exists throughout the area.

Locations of Planned Treatments
• Planned treatment sites are being mapped in HATS layer – Spray Zone 1 Reference.
• Bare ground treatments will be applied to all shoulder sections except as noted below:
  o SR 542 west of Glacier on USFS land will be treated with aquatic glyphosate and surfactants only, following a mowing pass in late May/June.

Treatment Methods
• Herbicides are applied using a truck mounted power spray system calibrated to deliver either a 3 or 5-ft. band of spray mixture on and adjacent to the paved shoulder. The resulting width of treated shoulder may be wider than 3 to 5 ft. in areas with steeper shoulder slope.
• Application widths are typically set to 3 ft. and extend out to guideposts in locations without guardrail or cable rail present.
• Application widths are typically set to 5 ft. in locations with guardrail or cable rail, extending to back edge of the hardware.
• Wider applications are also planned in select areas due to control vegetation obstructions from spring grass growth particularly in locations where mowing is difficult.
• Except on SR 542 as noted above, all locations will be treated in spring with the following pre-blended products in 15 gallon reusable containers, mixed with 25 gallons of water per acre:
  
  **Blend #6**
  - Method 240 @ 12.7 oz/acre
  - Escort XP @ 1.5 oz/acre
  - Rodeo @ 51 oz/acre
  - Crosshair @ 1 oz./acre
  - LI 700 @ 11 oz/acre

**Safety Mowing/Zone 2**
**Work Operation: 1625**
**HATS Form: Mowing Zone 2**
**HATS Map Layer: Reference lines – Roadside Features/Mowing Zone 2 Reference**

This work includes routine mechanical cutting of all vegetation on the road shoulder in a band width immediately adjacent to pavement. Mowing is necessary in areas where taller growing grasses or other vegetation are present and must be annually or semi-annually cut back for visibility and maintenance of roadside hardware and delineators, to maintenance traffic sight distance at curves and intersections, and for improved visibility of wildlife approaching the highway. Mowing height for these operations is typically 6 to 8 inches above the ground.

**Total Units of Planned Mowing**
- Approximately **250 acres** will be mowed in Zone 2 throughout the area.

**Locations of Planned Treatments**
- Planned Zone 2 mowing locations are mapped in HATS reference layer - **Mowing Zone 2 Reference**
- All roadsides with vegetation along the edge of pavement will be mowed once per year in late spring/early summer

**Treatment Methods**
- Mechanical mowing with side and rear mounted flail mowers, or with boom mounted mowing heads.
- Mowing width varies between 5 and 15 feet as specified on the HATS maps.

**Tree and Brush Control/Zone 2 and 3**
**Work Operations: 1622, 1625, 1626**
**HATS Other Forms: 4 sub-forms under Tree/Brush Control – Spray, Trimming Mechanical, Trimming Manual, and Mowing**
**HATS Map Layer: None**

This includes work in Zone 2 such as periodic trimming or removal of brush and trees encroaching on traffic operations and visibility. Also included is work in Zone 2 and 3 when controlling emergent undesirable tree species to prevent them from growing into hazard trees.

**Total Units of Planned Treatment**
- Approximately **100 acres** throughout the area will be treated with mechanical cutting.
- Approximately **40 acres** throughout the area will be treated with herbicide applications in the fall.
- Approximately **10 acres** throughout the area will be trimmed with hand tools.

**Locations of Planned Treatments**
- Forested roadsides throughout the area require ongoing periodic trimming and seedling tree control, these area are typically addressed with some form of encroaching tree and brush control on a 3 to 4 year cycle.

**Treatment Methods**
• Mechanical trimming for tree branches and brush encroaching in Zone 2 will be accomplished using tractors with boom mounted mowing heads.
• In some areas with overhanging branches pruning is accomplished with high lift buckets and hand held saws.
• Herbicide treatments with Garlon 3A @ 128 ozl/acre are used in the fall to control seedling trees and encroaching brush in Zone 2.
• In some locations along I-5 mowing is used to remove seedling cottonwood and alder in Zone 3. These operations are accompanied with herbicide treatment either on the cut stumps, or with a foliar treatment for regrowth the following year.

Hazard Tree Removal/Zone 3
Work Operation: 1628
HATS Forms: Hazard Tree Removal – Individual Tree Removal, Stand Removal, and Cleanup Fallen Trees
HATS Map Layer: None

Trees within and adjacent to the right of way are routinely monitored by maintenance staff for potential risk to the highway and/or neighboring structures. Individual and stands of mature trees identified as a potential imminent threat will be further evaluated and removed as soon as possible where needed. These activities also include clean up of wind blown limbs and debris if not part of a declared disaster.

Total Units of Planned Treatment
• Up to 200 mature hazard trees are removed throughout the area in a typical year.

Locations of Planned Treatments
• Annual evaluation and removal of identified hazard trees is a year-round practice throughout the area.
• Through an agreement with the Forest Service, the USFS land bordering SR542 is cruised every year for hazard trees. Mutually identified hazard trees are then removed.

Treatment Methods
• Crews are continuously looking for trees that exhibit structural defects and could strike the road or neighboring property if they come down. Any hazard trees identified at any time are then removed as soon as possible.
• If trees growing outside WSDOT right of way are hazards, crews work with the neighboring property owner to negotiate removal.
• Cut and drop in place wherever possible
• Stump treat with herbicides to prevent re-growth when needed

Noxious Weed Control – 3A2
This group of activities includes control of non-native invasive weed species as defined by state law and individual county designation. This group of activities is second priority vegetation management work after safety related objectives have been addressed. While all Class A, B, and C noxious weed species as listed in RCW 17.10 are considered potential targets for WSDOT noxious weed control, the agency is currently not funded to achieve 100% control of all noxious weeds. Therefore, the top priorities for weed control are focused on locations and species that are more limited in distribution on the right of way – where there is a chance of successful eradication. To prioritize control of species that are already widespread in the area, WSDOT works with the local county noxious weed boards and coordinators, to annually review and determine which species and locations will be specifically targeted.
To prioritize, plan, and track noxious weed control, WSDOT maps and monitors weed infestations in three categories: **Priority**, **Planned Treatment**, and **General Reference**. **Priority** locations are where Class A noxious weed species exist on the right of way, and complete eradication is required by state law. **Planned Treatment** sites are locations where there are new, and/or limited distribution infestations of Class B and C noxious weed exist, and eradication is possible. **General Reference** sites are recorded for reference only to document the presence of noxious weed species which are more commonly occurring in the local area.

**Noxious Weed Control**

**Work Operations:** 1616, 1618, 1641, 1699

**HATS Forms:** Pesticide Application (for spray applications,) and three sub-forms under Noxious Weed Control General– Manual/Mechanical, Seed/Fertilize/Mulch, and Biological

**HATS Map Layer:** Reference Points – Roadside Features/Noxious Weed Control Priority (red dots), Noxious Weed Control Planned Treatment (orange dots), and Noxious Weed Control General Reference (pink dots)

Operations are prescribed throughout the season to prevent the spread of any legally designated noxious weed species, and to reduce or eliminate populations wherever possible. Integrated treatment plans combine field monitoring and an integral mixture of seasonally timed control methods with proven effectiveness on designated species. Successful plans are consistently implemented over a series of years and annually adjusted as necessary based on field observations. Care must be taken in all cases to avoid damage to surrounding desirable/native vegetation.

No Class A noxious weed species are known to exist on WSDOT right of way in Northwest Region Area 1.

**Target Noxious Weed Species on WSDOT Right of Way in Northwest Region Area 1:**

<table>
<thead>
<tr>
<th>Common Name/Botanical Name</th>
<th>Treatment Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knotweed sp./Polygonum sp.</td>
<td>Target sites mapped, and treated in late summer/fall</td>
</tr>
<tr>
<td>Knapweed sp./Centaurea sp.</td>
<td>Control where visible in conjunction with seasonal patrols</td>
</tr>
<tr>
<td>Purple loosestrife/Lythrum salicaria</td>
<td>Target sites mapped and treated at early flower stage in summer</td>
</tr>
<tr>
<td>Wild chervil/Anthriscus sylvestris</td>
<td>Target sites mapped and treated in spring</td>
</tr>
<tr>
<td>Poison hemlock/Conium mculatum</td>
<td></td>
</tr>
<tr>
<td>Ragwort tansy/Senecio jacobae</td>
<td>Occurs sporadically throughout the area. All visible plants are sprayed in the spring prior to bud/seed set, any remaining plants visible in flower are hand pulled with seed heads removed, bagged, and disposed of</td>
</tr>
<tr>
<td>Sulfur cinquefoil/Potentilla recta</td>
<td>Target sites mapped and treated in spring</td>
</tr>
<tr>
<td>Orange hawkweed/Hieracium aurantiacum</td>
<td>Target sites mapped and treated in spring</td>
</tr>
<tr>
<td>Smooth hawkweed/Hieracium laivigatum</td>
<td>Target sites mapped and treated in spring</td>
</tr>
<tr>
<td>Scotch broom/Cytisus scoparius</td>
<td>Target where present in small patches and individual plants, and all plants on SR542 west of Deming.</td>
</tr>
</tbody>
</table>

**Total Units of Planned Treatment**

- Approximately **50 acres** of noxious weed infestations will be addressed with herbicide treatments.
• Less than 2 acres of manual hand pulling.

Locations of Planned Treatments

• Planned treatment areas and species as described in the table above are identified in collaboration with the Lewis County Noxious Weed Board and mapped in the HATS map layer – Noxious Weed Control General.
• Area IVM technicians will verify and edit weed location data in HATS as treatments are carried out through the season.

Treatment Methods

• Applications are made with backpack sprayers when possible for specific targets.
• Larger applications are made with spray trucks on the shoulder, either spraying from the cab, or pulling hose and spot spraying on foot.
• Seasonal target species and herbicide prescriptions include:
  Mix 1:
  o Opensight @ 3 ozl/acre
  o SylTac @ 8 ozl/acre
  Mix 2:
  o Capstone @ 128 ozl/acre
  o SylTac @ 8 ozl/acre

Nuisance Vegetation Control – 3A3

Nuisance vegetation control takes place only in a select set of carefully prioritized locations throughout the area. These locations are delineated on maps in HATS as polygon outlines in Zone 3. Locations are prioritized to take place where there is heightened local interest in the visual appearance and condition of the roadside vegetation. Typical locations include: wider areas along limited access freeways in urban and suburban areas, freeway interchanges for local urban centers, environmentally sensitive areas, and areas where neighbors are willing to partner with WSDOT on management efforts. Because nuisance weed control activities are not related to safety or legal requirements, and are primarily undertaken to improve the visual appearance of the roadside, they are considered the last priority vegetation management needs.

For all areas designated to receive Nuisance Vegetation Control, multi-year treatment plans have been developed. The actions contained in these plans will be executed and tracked in relation to specific Zone 3 polygons for Nuisance Vegetation Control Zone 3, referenced on HATS maps and described below.

Nuisance Vegetation Control
Work Operations: 1611, 1612, 1641, 1699
HATS Feature-based Forms: Herbicide Application, Manual/Mechanical, Biological, and Seed/Fertilize/Mulch
HATS Map Layer: Feature polygons – Roadside Features/Nuisance Vegetation Control Zone 3

Maintenance activities in each identified location are planned and tracked as multi-year treatment strategies utilizing monitoring and the most effective combination of control methods – with a goal of establishing desirable vegetation that requires only minimal maintenance. Undesirable species are identified and specifically targeted while care is be taken to avoid damage to surrounding desirable/native vegetation. In some cases, soil enhancements may be used as well as seeding or planting of beneficial competition species. Successful plans are consistently implemented over a series of years and annually adjusted as necessary based on field observations.
Total Units of Planned Treatment
- Approximately **25 acres** of nuisance weed control will be conducted with a combination of spraying, mowing, and manual cutting/pulling in designated priority locations.

Locations of Planned Treatments
- Reference HATS layer – **Nuisance Vegetation Management**.
- Locations for this type of work include interchanges and areas planted through Bellingham and Blaine on I-5.
- Sites are prioritized if needed due to emergence of homeless camping sites.

Treatment Methods and Timing
- A map and description of multi-year management plans will be developed over the 2018 season for implementation beginning this year.