North Central Region, Area 1
Integrated Roadside Vegetation Management Plan
2017
Summary

The Washington State Department of Transportation (WSDOT) North Central Region, Area 1 manages approximately 560 miles of roadside right-of-way in the heart of Washington State throughout Chelan County, and touching on part of Douglas, King and Kittitas Counties. The state highway system in this area includes the major arterial routes in and around the Wenatchee metropolitan area, portions of US2, US97, US97A, SR285, SR971, SR207, SR150, and SR28, as well as several other secondary state routes.

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 these roadsides with these priority objectives in mind WSDOT practices an annually cycling process called Integrated Vegetation Management (IVM). Plans like this are developed and updated annually for all areas of the state with an overall goal of establishing the most naturally self-sustaining roadside vegetation possible. Adjustments are made year to year in each area plan, based on tracking the previous years’ accomplishments and monitoring for results. Integrated treatment plans are developed and prioritized based on available budgets and working around other highway maintenance needs.

This plan serves as a reference and guidance document for roadside vegetation maintenance in North Central Region Area 1 for the 2017 growing season. It provides detailed treatment prescriptions and location data for accomplishing safety and weed control objectives through the use of a combination of control measures. Each year’s actions are designed as part of a coordinated multi-year strategy to efficiently maintain traffic safety and comply with weed control laws on all state roadsides, and working within budget, to invest in restoring a set of selected priority locations to a stable self-sustaining native condition. This plan also accounts for specific locations where maintenance tactics are adjusted due to environmental sensitivity, neighboring properties, local partnerships, or restoration work done through WSDOT design and construction.

The information contained in this plan document is referenced and utilized by crews in the field using iPads and the Highway Activity Tracking System (HATS). Accomplishments and results also tracked and referenced through this system, as part of the budget planning and maintenance accountability process. Carrying iPads in the field also gives maintenance crews the ability to reference a wide range of technical information and alerts for locations with environmental sensitivity or special agreements with neighbors.

WSDOT welcomes input from local public and private entities and its weed control and other vegetation management activities. Wherever appropriate the agency is looking for opportunities to plan and cooperate with others in management of the roadside. Please direct any questions to North Central Region Area 1 Superintendent – Terry Van Hoven, Area Supervisor – Rob Sweigard, or State Roadside Asset Manager – Ray Willard

Terry Van Hoven
Maintenance Superintendent
vanhovt@wsdot.wa.gov
(509) 677-2811
2830 Euclid Avenue
Wenatchee, WA 98807-0098

Rob Sweigard
Maintenance Supervisor
sweigar@wsdot.wa.gov
(509) 677-2812
2830 Euclid Avenue
Wenatchee, WA 98807-0098

Ray Willard, PLA
State Roadside Asset Manager
willarr@wsdot.wa.gov
(360)705-7865
PO Box 47358
Olympia, WA 98504-7358
North Central Region, Area 1 IVM Work Plan – 2016

The section outlines the overall approach and geographic distribution of roadside vegetation management requirements throughout the maintenance area in 2017. Information is organized in relation to three 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, Safety 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: Spray Zone 1
HATS Map Layer: Reference lines – Roadside Features/Spray Zone 1 Reference

This work involves the annual 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 vegetation-free gravel shoulder adjacent to the pavement. 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 325 acres of herbicide treatment is applied to road shoulders throughout the area each year.

Locations of Planned Treatments
- Planned treatment locations are mapped in HATS
- Locations where bare ground treatments will be applied to all gravel shoulder sections include:
  - SR28 – Throughout the maintenance area, (between MP15 and 19 the application band width is 20' to efficiently manage vegetation and weeds adjacent to orchard plantings.)
  - SR150 – Entire route
  - For all other corridors and road shoulders in the area, Zone 1 herbicide treatments occur only under guardrails and around other types of roadside hardware as needed.

Treatment Methods
- Shoulders in designated areas will be treated annually with pre-emergent herbicides in the fall.
- Herbicides are applied using a truck mounted power spray system set up to deliver a 3-foot band of spray mixture adjacent to the paved shoulder. The resulting width of treated shoulder may be wider than 3 feet (measured along the surface of the slope) in areas with steeper shoulder slope. In some locations as noted application width may be increased to accommodate roadside hardware.
- Treatments will be made in the fall with the following locations and mixtures of herbicides and adjuvants:
  - SR28 –
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 Treatment
- Approximately 50 acres of shoulder will be mowed annually to provide improved visibility for traffic operations.

Locations of Planned Treatments
- Safety edge mowing is planned as described for the following road sections:
  - SR150 – except within City of Chelan
  - SR971 – As needed
  - SR28 – MP 9 – 10
  - US 2 – MP 118.5 – 119.5 and North End Interchange

Treatment Methods
- Mowing will occur as needed once per year, after seed set and selective control of noxious weeds.
- Mowing typically consists of a single 4 to 6-foot-wide pass with a tractor mounted sickle-bar, locations with additional sight distance needs may be mowed beyond one pass as necessary.

Tree and Brush Control/Zone 2 and 3  
Work Operations: 1622, 1625, 1626  
HATS Forms: Tree/Brush Control – Spray, Trimming Mechanical, Trimming Manual, and Mowing  
HATS Map Layer: None

This includes safety and traffic operations related work in Zone 2, such as periodic side-trimming or removal of brush and trees or tree branches encroaching on or overhanging traffic operations, and impacting sign visibility. Also included is work in Zone 2 and 3 when selectively controlling emergent early succession tree species – to prevent them from growing into mature hazard trees within striking distance of the road. Removal of mature-sized dead, diseased, dying or structurally defective and hazardous trees is also included in this activity group.

Total Units of Planned Treatment
- Approximately 100 acres of mechanical trimming and pruning will be conducted along corridors through forested areas.
- Another 15 acres will be treated with herbicides in the fall to control emerging seedlings and brush in Zone 2.
Locations of Planned Treatments

- US2 MP70-80 – This area is overdue for trimming and mature shrubs and trees encroaching into the back side of Zone 2 will be removed using a heavy duty mowing/mulching attachment to a mowing arm on a tractor.
- Selective trimming is necessary in isolated instances throughout the area where trees and brush are present.

Treatment Methods

- This work is typically done in late winter or early spring so that new spring growth will hide the visual impact of these operations.
- Tractor mounted brush cutters and hand tools as needed for mechanical operations.
- Herbicides are applied throughout forested areas in late summer/early fall to control undesirable seedling tree species:
  - Alder:
    - Krenite S @ 320ozl/acre
  - Seedling Conifer Species:
    - Escort XP @ 2ozd/acre
    - Sylgard @ 16ozl/acre

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 trees exhibiting structural or health defects and identified as a potential imminent threat are removed as soon as possible.

Total Units of Planned Treatment

- The area has experienced a high number of hazard trees in recent years due to fire and insect damage.
- Between **800 and 1,000 hazard trees** will be remove throughout the area this year.

Locations of Planned Treatments

- Pine forest areas are the most effected
- SR 971 MP 5.5 – 6.5

Treatment Methods

- WSDOT crews will conduct falling and leave the debris to decompose on site.
- In cases with difficult removals or corrective pruning, Washington State Parks arborist crew will conduct falling with WSDOT traffic control.

Noxious Weed Control – 3A2

This group of activities is focused on control of weed species and infestation locations identified in this plan document. The focus is on species that are legally designated by state and county regulations for required control by all property owners, along with any other identified and agreed upon species/locations that pose a unique threat to the roadside or surrounding environment if not controlled. Work under this group is considered second priority after safety related objectives have been addressed.

In some counties noxious weed laws may be enforced with fines and/or control work by the counties and billing of property owners – if adequate control is not accomplished. WSDOT communicates annually and throughout the season with each County Noxious Weed Board, to identify and prioritize treatment sites on state highways.
WSDOT employs three distinct strategies in planning and executing noxious weed control efforts. Any and all Class A species that occur on the right of way are treated as **Priority Noxious Weed Control**, and all maintenance actions are planned and tracked as individual, multi-year treatment sites. **General Noxious Weed Control** is planned and executed in one of two ways: 1.) Area-wide patrol and control operations are made in the early summer with a goal of spraying or pulling all visible target species prior to seed-set, and 2.) Early and late season treatments are planned for a set of prioritized and mapped infestation points where the goal is early detection/rapid response/eradication.

**Priority Noxious Weed Control**

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

**HATS Point Feature-based Forms:** Priority Infestation

**HATS Map Layer:** Feature points – Roadside Features/Noxious Weed Control Priority

These operations are directed at locations where Class A noxious weed species are present on the right of way and state law requires complete eradication. Site specific integrated treatment plans are developed for each identified location/species, and all control activities are recorded as point feature data in HATS. Ongoing operations will combine field monitoring and a mixture of seasonally timed treatment methods over a series of years. Sites must also be monitored for 3 to 5 years after control to check for grow back.

**Species and Locations**

- No Class A noxious weed species are known to exist on state right of way in North Central Region Area 1 at this time or in the recent past.

**Locations of Planned Treatments**

- If infestations are discovered, they will be recorded as features in HATS layer – **Noxious Weed Control Priority** for species location and distribution.

**General Noxious Weed Control**

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

**HATS Form:** Noxious Weed Control General – Noxious Weed Control-Spray, Noxious Weed Control-Mechanical, Noxious Weed Control-Manual, and Noxious Weed Control-Biological

**HATS Map Layer:** Reference points – Roadside Features/Noxious Weed Control General (Under Development)

These operations are timed and carried out throughout the season to prevent the spread of designated noxious weed species, and to reduce or eliminate populations wherever possible. Integrated treatments as described in the table below, are planned to address infestations through 1.) seasonally timed treatments of identified priority sites, or 2.) during late spring/early summer section patrols to treat all visible target weed species. Successful plans are consistently implemented over a series of years and annually adjusted as necessary based on field observations. Care is taken in all cases to avoid damage to surrounding desirable/native vegetation.

**Target Noxious Weed Species Known to Exist on WSDOT Right of Way in North Central Region Area 2**

- **Appendix A** contains a list of primary target species present on WSDOT right of way in the area at this time, along with notes for each species explaining how management will be accomplished.

**Total Units of Planned Treatment**

- Approximately **900 acres** of noxious weed infestations will be treated with herbicides.
- Another **50 acres** will be controlled by mowing and/or hand pulling.

**Locations of Planned Treatments**
• Reoccurring infestation sites will be mapped in HATS over the course of the 2017 season, including county weed board identified “hot spots” and priority sites identified by the spray crews.

• Planned treatment sites will be mapped for the following infestations:
  o SR150 MP3 – Whitetop
  o SR28 Restoration planting areas and Bike Path in E. Wenatchee – Puncture vine,
  o US2 MP90.5 – Restoration planting area at the Wenatchee River Bridge.
  o US2 – Isolated knotweed infestations
  o Any additional infestations identified by the County Weed Board

Treatment Methods and Timing
• Seasonal timing is critical to successful reduction in weed populations. However, in some cases the only possible treatments are made when weeds are visible in flower, simply to control seed production, rather than to reduce populations.

• The area will be developing a map of priority treatment sites and seasonal timing goals in HATS for implementation in 2017.

• Herbicide mixtures:
  Broad-spectrum applications –
  § E2 @ 96ozl/acre
  § MSM @ .5ozd/acre
  § Crosshair @ 4ozl/acre
  § Syl-Tac @ 8ozl/acre

  Specialized applications for late season control of knotweed and spot treatment of weeds emerging in Zone 1 –
  § Roundup Pro Concentrate @ 96ozl/acre
  § Crosshair @ 4ozl/acre
  § Syl-Tac @ 8ozl/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, 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. Care must be taken in all cases 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**

- Because Chelan County requires control of all state listed weed species, there is technically no targeted nuisance weed control in the area. However, the area has prioritized two locations for control of all weeds where recent projects have installed new planting.

**Locations of Priority Treatments**

- Interchanges throughout the City of Wenatchee and East Wenatchee will be selectively treated for control of all weeds.
- SR28 in E. Wenatchee – Selective weed control throughout the recently reconstructed interchange and new bike path.
- US2/US97 Interchange (Don Senn Memorial Interchange) – Additional plant establishment and selective weed control for recent plantings in and around this interchange.

**Treatment Methods and Timing**

- Pre and post-emergent treatments with herbicides as needed
- Supplemental irrigation will be provided during first three years during summer drought.
Most North Central Area 1 roads are in Chelan County where the entire state weed list is designated for control and the area applies this same level of control throughout the area, including parts surrounding counties. Therefore, any weed on the right of way is technically a target for treatment as a noxious weed.

The following table includes all species known to exist or commonly found on WSDOT right of way in the area at this time along with notes on how treatments will be administered:

<table>
<thead>
<tr>
<th>Common Name (Botanical Name)</th>
<th>Treatment Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bull Thistle (Cirsium vulgar)</td>
<td>Handspray</td>
</tr>
<tr>
<td>Canada Thistle (Cirsium arvense)</td>
<td>Broadcast, Handspray</td>
</tr>
<tr>
<td>Dalmatian toadflax (Linaria dalmatica ssp. dalmatica)</td>
<td>Broadcast, Handspray, Hand pull, Bugs</td>
</tr>
<tr>
<td>Hawkweed, mouseear (Hieracium pilosella)</td>
<td>Broadcast</td>
</tr>
<tr>
<td>Hawkweed, orange (Hieracium aurantiacum)</td>
<td>Broadcast, Handspray</td>
</tr>
<tr>
<td>Hawkweed, yellow (Hieracium caespitosum)</td>
<td>Broadcast, Handspray</td>
</tr>
<tr>
<td>Hoary Cress / Whitetop (Cardaria draba)</td>
<td>Broadcast, Handspray</td>
</tr>
<tr>
<td>Hoary alyssum (Berteroa incana)</td>
<td>Broadcast</td>
</tr>
<tr>
<td>Houndstongue (Cynoglossum officinale)</td>
<td>Handspray</td>
</tr>
<tr>
<td>Knapweed, diffuse (Centaurea diffusa)</td>
<td>Broadcast, Handspray</td>
</tr>
<tr>
<td>Knapweed, Meadow (Centaurea jacea x nigra)</td>
<td>Handspray</td>
</tr>
<tr>
<td>Knapweed, Russian (Acroptilon repens)</td>
<td>Broadcast, Handspray</td>
</tr>
<tr>
<td>Knapweed, spotted (Centaurea stoebe)</td>
<td>Broadcast, Handspray</td>
</tr>
<tr>
<td>Knotweed, Japanese (Polygonum cuspidatum)</td>
<td>Handspray, Cut / Treat</td>
</tr>
<tr>
<td>Kochia (Kochia scoparia)</td>
<td>Broadcast</td>
</tr>
<tr>
<td>Loosestrife, purple (Lythrum salicaria)</td>
<td>Handspray (Aquatic)</td>
</tr>
<tr>
<td>Oxeye Daisy (Chrysanthemum leucanthemum)</td>
<td>Broadcast</td>
</tr>
<tr>
<td>Puncturevine (Tribulus terrestris)</td>
<td>Broadcast, Handspray</td>
</tr>
<tr>
<td>Rush skeletonweed (Chondrilla juncea)</td>
<td>Handspray</td>
</tr>
<tr>
<td>Scotch broom (Cytisus scoparius)</td>
<td>Cut, Bag, Treat</td>
</tr>
<tr>
<td>Spurge, leafy (Euphorbia esula)</td>
<td>Broadcast</td>
</tr>
<tr>
<td>St. Johns Wart (Hypericum perforatum)</td>
<td>Broadcast, Handspray, Bugs</td>
</tr>
<tr>
<td>Tansy ragwort (Senecio jacobaea)</td>
<td>Broadcast, Handspray</td>
</tr>
<tr>
<td>Thistle, musk (Carduus nutans)</td>
<td>Broadcast</td>
</tr>
<tr>
<td>Thistle, plumeless (Carduus acanthoides)</td>
<td>Handspray</td>
</tr>
<tr>
<td>Thistle, Scotch (Onopordum acanthium)</td>
<td>Broadcast, Handspray</td>
</tr>
<tr>
<td>Yellow nutsedge (Cyperus esculentus)</td>
<td>Broadcast, Handspray</td>
</tr>
<tr>
<td>Yellow starthistle (Centaurea solstitialis)</td>
<td>Broadcast, Handspray</td>
</tr>
</tbody>
</table>