North Central Region, Area 3
Integrated Roadside
Vegetation Management Plan
2017

Washington State
Department of Transportation
Maintenance Operations Division
Introduction

The Washington State Department of Transportation (WSDOT) North Central Region, Area 3 manages approximately 1000 miles of roadside right-of-way throughout Okanogan, Chelan and Douglas Counties. This right-of-way is part of the state highway system including US 97, SR-20, US-2, SR 155, SR 153, SR 17 in addition to a number of other state routes. A map of state highways and routes in this area is shown on the following page.

The primary roadside vegetation management objective for all state highways is safety for both traffic and maintenance operations. Preservation of the highway infrastructure also dictates vegetation management priorities. Additionally, as with all landowners, WSDOT is required to control designated noxious weeds that occur on this right-of-way (RCW 17.10 and 15.15.010). It is important to WSDOT to not only meet the legal requirements, but also to 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 North Central Region Area 3 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 to strategically 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 3 Superintendent – Wayne Rice, or State Roadside Asset Manager – Ray Willard

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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 major 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 Weed 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: Spray Zone 1
HATS GIS Layer: Lines – Spray Zone 1
This work includes the annual application of herbicides to road shoulders in a select set of corridors and locations throughout the area. The objective of these applications in the designated locations is maintenance of a 3 to 4 foot gravel shoulder that is free of vegetation in most. This treatment is necessary in the locations described below to provide visibility and maintainability of roadside hardware and guideposts, room for vehicles to pull off on shoulders, allow for stormwater drainage, and/or allow for added visibility of wildlife approaching the highway.

Total Units of Planned Treatment
- Approximately **125 acres** of herbicide treatment is applied annually to road shoulders throughout the area.
- Treatment areas are designated for either spring or fall annual applications.

Locations of Planned Treatments
- Planned treatment are mapped in HATS layer – Zone 1 Treatments.
- All shoulders throughout the area will receive bare ground treatments annually in the fall except as noted below.
- Areas where Zone 1 treatments will be applied under guardrail only:
  - SR20, west of MP 177
  - SR20, MP210-215
  - SR20, MP292
- Locations along SR20 where the right of way runs through the Okanogan National Forest will only receive treatment with herbicides approved for use within the forest.
- There are several “No Spray” agreements throughout the area, where neighbors have agreed to provide the needed vegetation management.
- Most pit sites are also treated annually in the spring for bare ground control with residual herbicide mixtures.

Treatment Methods
- Residual applications are made annually in the fall. Any sections not treated in the fall due to weather constraints will be noted and treated the following spring.
• In the south end of the area where the road is more than 60’ from a standing or flowing water body:
  o Krovar 1DF @ 8 lb./acre
  o Roundup Pro @ 64 ozl/acre
  o In-Place @ 12 ozl/acre

• In the south end of the area where the road is within 60’ of a standing or flowing water body:
  o Payload @ 8 ozd/acre
  o Roundup Pro @ 64 ozl/acre
  o Sulfomet @ 2 ozd/acre
  o In-Place @ 12 ozl/acre

• In the north end of the area where the road is within 60’ of a standing or flowing water body:
  o Payload @ 8 oz./acre
  o Roundup Pro @ 64 ozl/acre
  o In-Place @ 12 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. In many cases this type of mowing is unnecessary if an adequate width of Zone 1 is present.

**Total Units of Planned Treatment**
- Approximately **150 acres** of shoulder primarily in areas where there is no bare ground Zone 1 present.
- Several areas are mowed specifically to prevent snow drifts on the roadway.

**Locations of Planned Treatments**
- This type of mowing is used throughout the area in select locations where spring vegetation growth blocks visibility at intersections and curves.
- One pass mowing is planned as described for the following road sections:
  o US2 MP 194-201 – Isaacs Corner to Hartline, for snow drift control
  o SR20 MP 226-227
  o SR172 MP 14-35 for snow drift control
  o SR173 MP 5-10.5
  o US2 MP 194-201 – Isaacs Corner to Hartline, for snow drift control
  o SR20 MP 226-227
  o SR172 MP 14-35 for snow drift control
  o SR173 MP 5-10.5

**Treatment Methods**
- Mowing with tractor mounted equipment

**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.

**Total Units of Planned Treatment**

- Approximately **150 acres** of Zone 2 will be side trimmed as needed in conjunction with Zone 2 mowing operations as described above. After spring growth has occurred to control encroaching tall grass and brush to provide visibility of guideposts and other roadside hardware, and animals approaching the roadway.
- Additional areas will be trimmed by hand where sign visibility may be blocked, or occasional tree seedlings emerge too close to the road.

**Locations of Planned Treatment**

- Treatments are carried out as needed throughout the area.
- SR20 MP 148-171 – Within the National Forest, Zone 2 is trimmed with a side arm mower once every four years, the crew typically addresses ¼ of the overall area each year.

**Treatment Methods**

- Tractor mounted arm mowers
- Hand tools
- Any species such as cottonwood, willow, alder, will receive follow up herbicide treatments with Capstone @ 128 ozl/acre, where there is regrowth.

**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. USFS is included in any considerations for removal on US forest land.

**Total Units of Planned Treatment**

- Around **300 trees** per year require removal along forested sections

**Locations of Planned Treatments**

- Mainly along forested sections of road on the western parts of the area.

**Treatment Methods**

- Fallen trees are left to decompose on site whenever possible.

**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. 1.) 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. All other actions are considered **General Noxious Weed Control**, and are carried out either by: 2.) 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, or 3.) 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, 1699*

*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 3 at this time or in the recent past.
- Class A species to watch for in this area include:
  - Meadow clary (*Salvia pratensis*)
  - Spurge flax (*Thymelaea passerine*)
  - Garlic mustard (*Alliaria petiolata*)
  - Syrian bean-caper (*Zygophyllum fabago*)
  - Wild four o’clock (*Mirabilis nyctaginea*)

**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, 1641*

*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 Species on WSDOT Right of Way in North Central Area 3:

<table>
<thead>
<tr>
<th>Common Name/Botanical Name</th>
<th>Treatment Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black henbane <em>(Hyoscyamus niger)</em></td>
<td>County weed board will notify if found</td>
</tr>
<tr>
<td>Bugloss, annual <em>(Anchusa arvensis)</em></td>
<td>Target sites mapped and treated in the spring with follow up treatments in summer if needed</td>
</tr>
<tr>
<td>Bugloss, common <em>(Anchusa officinalis)</em></td>
<td>Target sites mapped and treated in the spring with follow up treatments in summer if needed</td>
</tr>
<tr>
<td>Bull thistle <em>(Cirsium vulgaris)</em></td>
<td>Only controlled when growing next to other target species</td>
</tr>
<tr>
<td>Canada Thistle <em>(Cirsium arvense)</em></td>
<td>Target sites mapped and treated in the early to mid summer</td>
</tr>
<tr>
<td>Cereal Rye <em>(Secale cereal)</em></td>
<td>Target sites mapped in Grant County and treated in the spring with a wick applicator</td>
</tr>
<tr>
<td>Common reed <em>(Phragmites australis)</em></td>
<td>Target sites mapped and treated in the spring</td>
</tr>
<tr>
<td>Common tansy <em>(Tanacetum vulgare)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Dalmatian toadflax <em>(Linaria dalmatica)</em></td>
<td>Control where visible in conjunction with seasonal weed patrols</td>
</tr>
<tr>
<td>Field bindweed <em>(Convolvulus arvensis)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Hawkweed sp. <em>(Hieracium sp.)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Hawkweed, orange <em>(Hieracium aurantiacum)</em></td>
<td>Target sites mapped and treated in the spring</td>
</tr>
<tr>
<td>Hoary alyssum <em>(Berteroa incana)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Hoary cress <em>(Lepidium draba L.)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Houndstongue <em>(Cynoglossum officinale)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Knapweed sp. <em>(Centaurea sp.)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Knapweed, Russian <em>(Acroptilon repens)</em></td>
<td>Target sites mapped and treated in the fall</td>
</tr>
<tr>
<td>Knotweed, Japanese <em>(Polygonum cuspidatum)</em></td>
<td>Not currently present on the right of way. Past infestations have been controlled</td>
</tr>
<tr>
<td>Kochia <em>(Kochia scoparia)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Longspine sandbur <em>(Cenchrus longispinus)</em></td>
<td>Target sites mapped and treated in the spring</td>
</tr>
<tr>
<td>Loosestrife, purple <em>(Lythrum salicaria)</em></td>
<td>Not currently present on the right of way. Past infestations have been controlled</td>
</tr>
<tr>
<td>Perennial pepperweed <em>(Lepidium latifolium)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Poison hemlock <em>(Conium maculatum)</em></td>
<td>Target sites mapped and treated in the spring</td>
</tr>
<tr>
<td>Puncturevine <em>(Tribulus terrestris)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols. More of a problem in and around the towns</td>
</tr>
<tr>
<td>Rush skeletonweed <em>(Chondrilla juncea)</em></td>
<td>Target sites mapped and treated in the spring</td>
</tr>
<tr>
<td>Spurge, leafy <em>(Euphorbia esula)</em></td>
<td>Not currently present on the right of way. Past infestations have been controlled</td>
</tr>
<tr>
<td>St. Johnswort <em>(Hypericum perforatum)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Sulfur cinquefoil <em>(Potentilla recta)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Thistle, musk <em>(Carduus nutans)</em></td>
<td>Control where visible in conjunction with summer seasonal weed patrols</td>
</tr>
<tr>
<td>Thistle, Scotch <em>(Onopordum acanthium)</em></td>
<td>Target sites mapped and treated in the spring</td>
</tr>
<tr>
<td>Yellow starthistle <em>(Centaurea solstitialis)</em></td>
<td>Target sites mapped and treated in the spring</td>
</tr>
</tbody>
</table>
Total Units of Planned Treatment
- The area has been averaging a total of 1,500 acres of selective herbicide applications for noxious weed control over the past several years.
- Priority infestations:
  - SR155 MP20 – Prevent spread of Kochia north of this location
  - US2 MP188-207 – Cereal Rye

Locations of Planned Treatments
- Any designate species occurring in the area will be treated prior to seed production whenever possible.
- Mapping of target sites described in the table above will be mapped over the course of the 2017 growing season.

Treatment Methods and Timing
- Selective herbicides and/or non-selective spot treatment are used throughout the growing season as described in the table above.
- Wick applications for cereal rye will be made with a 2% solution of Roundup Pro in water.
- Herbicide mixtures used for noxious weed control:
  - Mix 1 (Kochia and Thistle)
    - E-2 @ 48 oz./acre
    - LI 700 @ 16 oz./acre
    - In-Place @ 12 oz./acre
    - Bronc Max @ 32 oz./acre
  - Mix 2
    - Roundup Pro Concentrate @ 96 oz./acre
    - LI 700 @ 16 oz./acre
    - In-Place @ 12 oz./acre
    - Bronc Max @ 32 oz./acre
  - Mix 3
    - Roundup Pro Concentrate @ 48 oz./acre
    - Milestone @ 7 oz./acre
    - LI 700 @ 16 oz./acre
    - EDT Concentrate @ 12 oz./acre

Nuisance Vegetation Control – MAP Activity 3A3
Nuisance vegetation control includes control/management of weed species that are recommended but not mandated by state and/or county law. These maintenance activities also may address vegetation growth that presents a publically perceived negative visual impact. Because nuisance weed control activities are not legally mandated and they do not pose a safety risk, they are considered the last priority vegetation management needs. Maintenance funding currently only allows for control of nuisance weed species in designated higher profile areas such as urban freeway corridors and at interchanges or when they are growing alongside designated noxious weed species and control is incidental.

Nuisance Vegetation Management
Work Operations: 1611, 1612, 1699
HATS Feature-based Forms: 4 sub-forms tied to polygons, layer Nuisance Vegetation Control Zone 3 – Herbicide Application, Manual/Mechanical, Biological, and Seed/Fertilize/Mulch
HATS GIS Features: Nuisance Weed Control Zone 3

Total Units of Planned Treatment
- No Zone 3 nuisance weed management areas are mapped as polygons in NC Area 3.