

South Central Region, Area 1

Integrated Roadside Vegetation Management Plan

2019



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

Introduction

The Washington State Department of Transportation (WSDOT) South Central Region, Area 1 manages approximately **580 miles** of roadside right-of-way throughout all of Kittitas County and extending into King County along I-90 from Snoqualmie Pass to North Bend. Right-of-way corridors in this area include I-90 over Snoqualmie Pass, I-82/US-97 heading south from Ellensburg, and portions of State Routes 10, 970, and 821.

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.

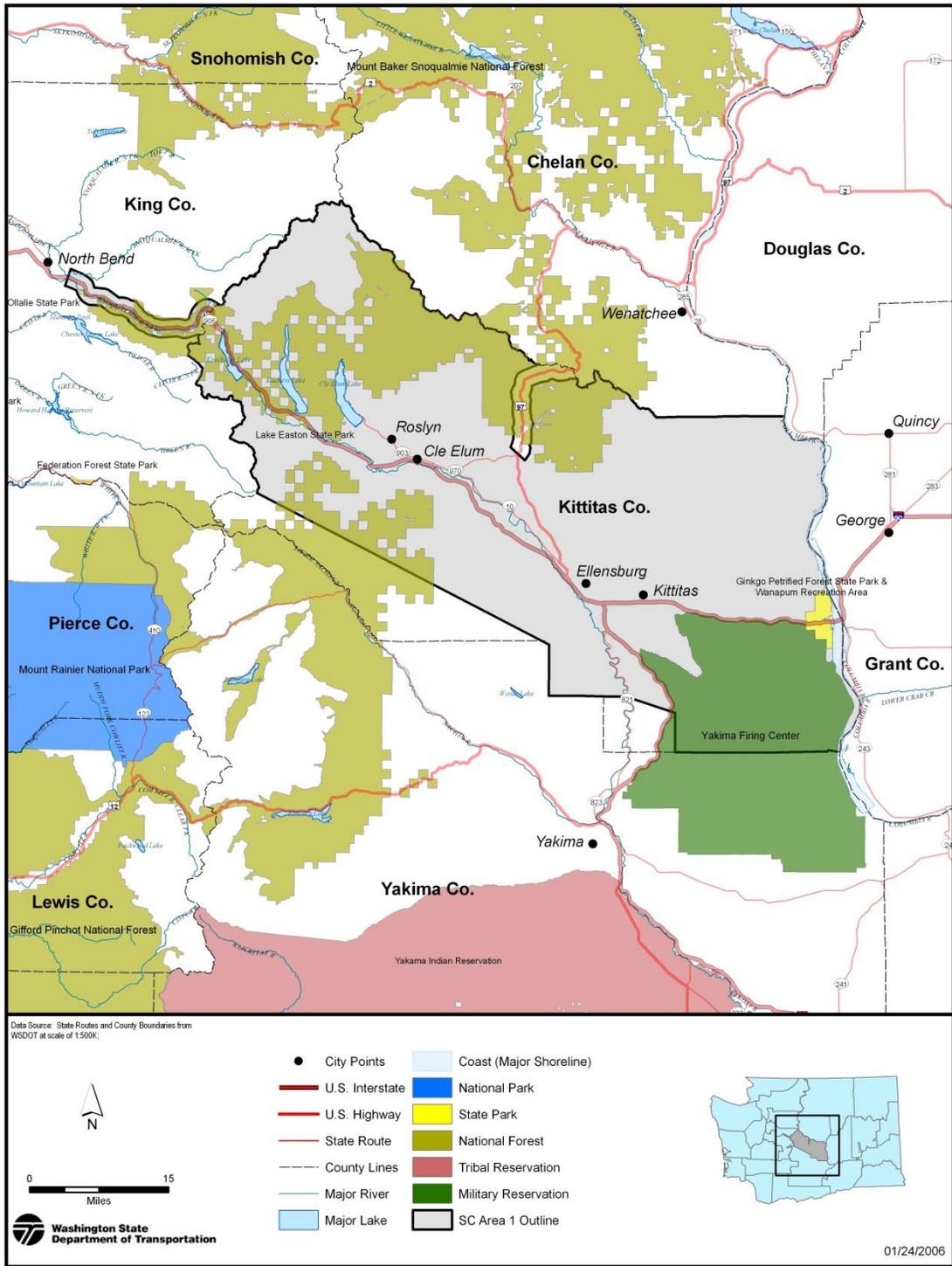
This plan serves as the guidance document for vegetation maintenance in South Central Region Area 1 for the 2019 growing season. It identifies priority locations and prescribes treatments for accomplishing safety and weed control objectives through the use of a combination of seasonally-timed control 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 2019 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 vegetation management activities. Wherever appropriate the agency is looking for opportunities to plan, cooperate, and partner with others in managing the roadside. Please direct any questions or comments to Area 1 Acting Maintenance Superintendent – Mike Krahenbuhl, or the State's Roadside Asset Manager – Ray Willard.

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South Central Region, Area 1 Vicinity Map

South Central Region Area 1 IVM Work Plan – 2019

The section outlines the overall approach and geographic distribution of roadside vegetation management requirements throughout the maintenance area in 2019. Information is organized in relation to the four 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, Nuisance Vegetation Control, and Landscape Maintenance**. 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 measured 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: 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 **50 acres** of Zone 1 will be treated

Locations of Planned Treatments

- The area has gone a number of years without treating shoulders for bare ground, but is now re-establishing bare-ground shoulders in a number of locations under guard rail, and in areas with higher fire starts due to hot vehicles pulling off the road.
- All guardrail replacement contracts that were implemented Zone 1 will be reestablished and maintained into the future.
- In the 2018 season, I-90 Ryegrass Hill, MP 118 to 136 (Vantage Bridge) Zone 1 was reestablished on all four shoulders.
- In the 2019 season, another set of sections with guardrail present will be cut and/or graded to clear out existing vegetation that has grown up around the rail. All guardrail sections cleared of vegetation in 2019 will be mapped and designated to begin receiving annual residual herbicide treatments starting in the 2019 season.
- All designated bare-ground treatment sites will be mapped in HATS map layer – **Zone 1 Spray** including additional locations cleared this season for treatment in 2019.
- Locations where bare-ground shoulders will be established on all shoulders include:
 - I-90 MP 118 to 136 (Vantage Bridge) will be established at width of 2-6 ft. for fire prevention.

Treatment Methods

- Designated locations will be treated in the fall, when there is enough precipitation to activate the herbicides.
- Herbicide mix
 - Method 240SL @ 12 oz/acre
 - Esplanade @ 5 oz/acre
 - Escort @ 1 oz/acre
 - Roundup @ 64 oz/acre
 - Insist 90 @ 16 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 Treatment

- Approximately **70 acres** of shoulder mowing is planned throughout the area.

Locations of Planned Treatments

- Locations that will be mowed one pass are mapped in HATS layer – **Zone 2 Mowing** (under development)
- Only areas needing additional site distance will be mowed as needed
- Locations that typically get mowed once per year include:
 - I-90 MP 97-118
 - I-82 MP 0-4
 - SR97 MP 135-135.5

Treatment Methods

- Mowing will be conducted with tractor mounted mowing decks (up to three decks).
- Mowing widths vary between 6 ft. and 30 ft. depending on roadside slope configurations.

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 control of safety and traffic operations related vegetation obstructions in Zone 2, including actions 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 **200 acres** this year will be mechanically trimmed and mowed to reclaim Zone 2 areas where alder and cottonwood species have grown, particularly west of the crest on I-90.
- Approximately **50 acres** of herbicide treatments will be applied for control of seedling trees and encroaching brush and tree branches.

Locations of Planned Treatment

- Roadside locations requiring tree and brush control include:
 - I-90 MP 47-33 where 5-10 year old alder trees are growing within 50 ft. of the pavement, priority locations within this road section will be addressed as time allows, over the next several years.
 - Where sage brush growth along the edge of pavement is covering delineators or blocking site distance. These locations are trimmed back to a height of approximately 18 inches on a 3 to 4 year cycle.
 - Herbicide treatments for tree and brush control are planned mainly for the west side of the pass on I-90.

Treatment Methods

- For any mechanical cutting in the vicinity of I-90 National Forest lands, work must be timed to avoid impacts to threatened and endangered terrestrial animal species.
- Control of 5 to 10 year old red alder along I-90 west of the pass will be accomplished with mechanical cutting and treatment of the cut stumps with herbicides. Mechanical cutting will be done with tractor mounted mowing arms rotary mulching heads where possible, in areas beyond reach of the tractor chain saws will be used. Material near the road will be mulched in place with mowing heads. In areas beyond 20 to 30 ft. from the road, material will be dropped in place and left to naturally decompose. Herbicide will applied to the cut surfaces the same day cuts are made. Herbicide used for stump treatment:
 - 50% Garlon 3A/50% water applied directly to the cut surfaces.
- Trimming of sage brush will be accomplished using tractor mounted mowing arms with flail cutting heads.
- Herbicides used for seedling tree and brush control in fall:
 - Alder and Blackberry:
 - Krenite S @ 356 ozl/acre
 - Other tree and brush species:
 - Capstone @ 128 ozl/acre
 - SylTac @ 8 ozl/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 mature trees identified as a potential imminent threat will be further evaluated and removed as soon as possible where needed. This work also includes removal of trees and large limbs blown down from “non-disaster” events.

Total Units of Planned Treatment

- As many as **400 mature hazard trees** are removed throughout the area each year.

Locations of Planned Treatments

- Annual evaluation and removal of identified hazard trees is a year-round practice throughout the area.

- In areas crossing USFS land, all evaluation and removal is coordinate with the Forest Service.

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 are further evaluated and removed as soon as possible if necessary.
- If trees growing outside WSDOT right of way are hazards, crews work with the neighboring property owner to negotiate removal.
- WSDOT crews cut and drop in place wherever possible
- For difficult removals Washington State Parks arborist crew may be utilized.
- 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 known to exist in South Central Area 1 at this time.

Target Species on WSDOT Right of Way in South Central Region Area 1:

Common Name/Botanical Name	Treatment Notes
Bugloss, annual (<i>Anchusa arvensis</i>)	Target sites mapped and treated in the spring, check for additional plants during summer weed patrol
Butterfly bush (<i>Buddleia davidii</i>)	Occasional seedlings west of the pass on I-90. Map and control any visible plants
Common tansy (<i>Tanacetum vulgare</i>)	Control where visible in conjunction with summer seasonal weed patrols.
Common teasel (<i>Dipsacus fullonum</i>)	Control where visible in conjunction with summer seasonal weed patrols.
Dalmatian toadflax (<i>Linaria dalmatica</i>)	Target sites mapped and treated in the spring and fall.
Hairy whitetop (<i>Cardaria pubescens</i>)	Target sites mapped and treated in the spring.
Hawkweed sp. (<i>Hieracium sp.</i>)	Target sites mapped and treated in the spring.
Hawkweed, European (<i>Hieracium sabaudum</i>)	Target sites mapped and treated along with summer weed patrols.
Hawkweed, orange (<i>Hieracium aurantiacum</i>)	Target sites mapped and treated in the spring.
Herb-Robert (<i>Geranium robertianum</i>)	Monitor for presence, treat and map if found.
Hoary alyssum (<i>Berteroa incana</i>)	Target sites mapped and previously control, continue to monitor for regrowth.
Hoary cress (<i>Cardaria draba</i>)	Target sites mapped and treated in the spring.
Horseweed	Control in areas as directed by county in conjunction with summer weed patrols.
Houndstongue	Target sites mapped and treated in the spring.
Jointed goatgrass (<i>Aegilops cylindrical</i>)	Monitor for presence, treat and map if found.
Knapweed sp. (<i>Centaurea sp.</i>)	Control where visible in conjunction with summer seasonal weed patrols.
Meadow Knapweed	Target sites mapped and treated in the spring.
Knapweed, Russian (<i>Acroptilon repens</i>)	Target sites mapped and treated in conjunction with summer seasonal weed patrols
Knotweed sp. (<i>Polygonum sp.</i>)	Target sites mapped and treated in the spring.
Kochia (<i>Kochia scoparia</i>)	Control all visible seedlings along I-90 throughout the Kittitas Valley in spring, control visible plants throughout the area in conjunction with summer weed patrols.
Loosestrife, purple (<i>Lythrum salicaria</i>)	Target sites mapped, Kittitas County controls WSDOT infestations when treating surrounding areas.
Perennial pepperweed (<i>Lepidium latifolium</i>)	Target sites mapped and treated in conjunction with summer weed patrols
Poison hemlock (<i>Conium maculatum</i>)	Monitor for presence, treat and map if found.
Puncturevine (<i>Tribulus terrestris</i>)	Monitor for presence, treat and map if found.
Rush skeletonweed (<i>Chondrilla juncea</i>)	Only two known infestation sites in Kittitas County and both are on I-90. Sites are mapped and treated spring, summer and fall.
Russian thistle (<i>Salsola iberica</i>)	Control all visible seedlings along I-90 throughout the Kittitas Valley in spring,

	control visible plants throughout the area in conjunction with summer weed patrols.
Scotch broom (<i>Cytisus scoparius</i>)	Mainly occurs on I-90 west of the pass. Control all visible seedlings in conjunction with summer seasonal weed patrols.
Scentless mayweed (Target sites mapped and treated in conjunction with summer weed patrols
St. Johnswort (<i>Hypericum perforatum</i>)	Control where visible in conjunction with summer seasonal weed patrols.
Sulfur cinquefoil (<i>Potentilla recta</i>)	Target sites mapped and treated in 2019
Tansy ragwort (<i>Senecio jacobaea</i>)	Target sites mapped and treated in 2019
Thistle, bull (<i>Cirsium vulgare</i>)	Control where visible in conjunction with summer seasonal weed patrols.
Thistle, Canada (<i>Cirsium arvense</i>)	Control where visible in conjunction with summer seasonal weed patrols.
Thistle, musk (<i>Carduus nutans</i>)	Target sites mapped and treated in conjunction with summer weed patrols
Thistle, Scotch (<i>Onopordum acanthium</i>)	Target sites mapped and treated in 2019, County will help control and map sites
Wild carrot (<i>Daucus carota</i>)	Target sites mapped and treated in 2019
Wild chervil (<i>Anthriscus sylvestris</i>)	Target sites mapped and treated in 2019
Yellow starthistle (<i>Centaurea solstitialis</i>)	Target sites mapped and treated in 2019
Yellow toadflax (<i>Linaria vulgaris</i>)	Target sites mapped and treated in 2019

Total Units of Planned Treatment

- Approximately **500 acres** will be treated with herbicides and/or hand pulled.
- Up to **10 acres** will be controlled with manual trimming.

Locations of Priority Treatments

- Treatments will be made in the late-spring/early-summer timeframe prior to seed production wherever possible.
- Technicians will develop location maps of priority treatments during the 2019 growing season.

Treatment Methods and Timing

- A broad spectrum mixture of herbicides will be utilized in the late-spring/early-summer treatment window:
 - Element 3A @ 32 ozl/acre
 - Milestone @ 4.5 to 6 ozl/acre
 - Metcel @ 1 ozd/acre
 - Insist 90 @ 16 oz./acre
- Hand pulling will be utilized for some species control where necessary

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 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 and mowing in designated priority locations

Locations and Planned Actions

- Mow out East Ellensburg Interchange exit 109 before September 1st if needed
- I-90/I-82 interchange and surrounding roadsides are being considered for nuisance vegetation control in partnership with neighboring farmers. The area will be working on an agreement to mow this area once a year.
- Indian John Rest Area Lagoons- Maintain lagoon slopes to be free of vegetation with fall bare-ground treatment and spring summer follow-up (charge to rest area maintenance)