

Northwest Region, Area 2 Integrated Roadside Vegetation Management Plan

2022



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

Introduction

The Washington State Department of Transportation's (WSDOT) Northwest Region Area 2 manages vegetation within approximately 311 miles of state highway corridor primarily in Island, Skagit and Snohomish Counties, although a short section of SR 20 briefly extends into Whatcom County at the east end. The area maintains the Interstate 5 corridor between the junctions with SR 530 and SR 20, the entire SR 530 corridor, SR 9 between Marysville and the Whatcom County line, SR 20 across Whidbey Island and up through the North Cascades National Recreation Area (as shown on cover,) along with several other smaller connecting routes in the four counties. A map of the area is shown on the following page.

The primary roadside vegetation management objectives are in relation to traffic safety, employee 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 2 for the 2022 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.

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 are also tracked geographically through this new system, providing site specific reference of historic actions and results. 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 2 Superintendent – Bill Joyce, or the State's Roadside Asset Manager – Ray Willard.

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Northwest Region, Area 2 Map
Figure 1

Northwest Region, Area 2 IRVM Work Plan – 2022

The section outlines the overall approach and geographic distribution of roadside vegetation management requirements throughout the maintenance area in 2022. 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**. Maintenance of landscape assets at **Safety Rest Areas**, and vegetation management in **Stormwater and Drainage** assets are also discussed. 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.

Safety First

Safety of our employees, the traveling public, and the environment are WSDOT's highest priorities and key to our success. Pre-Activity Safety Plans (PSAP) are developed for all activities and crews review, discuss, and sign these plans at tailgate meetings, prior to each day's work. When applying herbicides, our licensed pesticide applicators read the entire label before using products and use the products strictly in accordance with label precautionary statements and directions. WSDOT has implemented additional agency specific environmental restrictions on some products, to minimize any risk to aquatic or terrestrial ecosystems. Applicators wear protective equipment applicable to the products being used and discuss any potential environmental and/or human health risks as part of the daily PASP meeting. Technicians inspect their calibrated equipment daily to ensure it is in proper working order. Herbicides are stored in locked facilities and kept in an organized condition.

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: 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

- Apply approximately **365 acres** of herbicide treatment to road shoulders throughout the area.
- Of the total acreage applied throughout the area:
 - **4 acres** will be applied to guardrail section on Whidbey Island
 - **60 acres** of Zone 1 reclamation will be applied in the RLNRA with treatments in summer and fall

Locations and Planned Treatments

- With exception to the locations mentioned below, all shoulders will be treated with a 4 to 5 ft. band of soil residual and non-selective herbicides
 - **SR 020 and SR525 on Whidbey Island**, guardrail will be treated with aquatic labeled herbicide and surfactant only.

- **June: SR 020, MP 111-139.4** treat only under guardrail sections both directions, and **SR 020, MP 139.4-148** treat all shoulder sections with a 3 ft. wide band application
- **August/September: SR 020 MP 111-148** apply soil residual herbicides to all shoulder sections both directions, 3 ft. wide band

Treatment Methods

- Herbicides are applied using a truck mounted power spray system calibrated to deliver a 5 ft. band of spray mixture on and adjacent to the paved shoulder. The resulting width of treated shoulder ranges from 3 to 5 ft.
- Initial treatment of shoulders throughout the lower elevation areas will be conducted in spring between March and May
- Widen out at intersections and corners as needed.
- Whidbey Island and RLNRA (June application):
 - 4 lb./gal aquatic glyphosate product @ 64 oz/acre
 - Rainier MSO @ 16 oz/acre
- RLNRA (September application):
 - Milestone @ 7 oz/acre
 - Roundup Pro @ 64 oz/acre
 - Telar @ 2 oz/acre
 - Rainier EA @ 16 oz/acre
- All other shoulders:
 - Blend R4
 - Roundup Pro Conc. @ 32 oz/acre
 - Esplanade @ 5oz/acre
 - Lockdown SC @ 12.5 oz/acre
 - Escort @ 3oz/acre
 - In Place MSO @ 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 Mowing

- Approximately **300 acres** of shoulder will be mowed annually throughout the area

Locations of Planned Mowing

- All shoulders without guardrail present will receive one mowing pass as soon as possible in the late spring/early summer timeframe.
- **June/July: SR 020, MP111-148** mechanically mow all shoulders and trim back encroaching vegetation as needed in conjunction with the chip seal project in this vicinity

Treatment Methods

- Mowing width varies between 5 and 25 feet as specified on the HATS maps.
- Equipment breakdown can cause significant delays in accomplishing this work.
- Mowing widths may be wider if necessary for traffic visibility at intersections and curves.

Tree and Brush Control/Zone 2 and 3

Work Operations: 1622, 1625, 1626

HATS Forms: Pesticide Application for spray applications, and three sub-forms under Tree/Brush Control –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 or overhanging 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 **150 acres** will be controlled mechanically throughout the area.
- Less than **20 acres** will be controlled with hand tools
- Approximately **50 acres** will be treated with herbicides

Locations of Planned Treatments

- All highway sections will be assessed for canopy removal operations to increase solar/thermal energy transmission to the road surface. Particular attention will be paid to areas where paving operations are proposed for the upcoming season.
- Area supervisors are responsible for prioritizing target locations in their sections, all treated sections are recorded in HATS
- Information related to risk trees which are discovered or reported by the traveling public will be forwarded to Area management for consideration and/or mitigation.
- Excepted areas are as follows:
On Whidbey Island, no spraying tree or brush control with herbicide beyond 15 ft. from the spray nozzle. Hose reels and hand-held application will be used to reach targets more than 15 ft. from pavement.

Treatment Methods

- Wherever practical, and as resources allow Zone 2 right of way areas in Area 2 (with listed exceptions) will be treated with selective herbicides such as Capstone, or Garlon, or trimmed using mechanical and manual methods including long-arm brush cutters, skid steer units with front mounted rotary mower deck, excavators with flail mower heads and sickle-bar mowers. Cut stumps of sufficient diameter will be spot treated with herbicides whenever possible using backpack sprayers or chemical daubers to mitigate secondary sprouting. Mowing and side trimming with tractor mounted side arm flail mower
- Some control of seedling trees and encroaching brush in Zone 2 will be treated with herbicides incidental to noxious weed control operations.
- **September/October: SR 020 MP 111-148** treat encroaching broadleaf vegetation and seedling conifer in a 6-8 ft. band as needed, both directions
 - Garlon 3A @ 64 oz/acre
 - Escort @ 3 oz/acre
 - Rainier EA @ 16 oz/acre
- Cut stump treatment with Garlon 4 when needed in conjunction with tree removal
- For all applications on Whidbey Island, target vegetation will not be sprayed from a distance greater than 15 ft.

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.

Total Units of Planned Treatment

- Up to **500 mature hazard trees** are removed throughout the area each year.

Locations of Planned Treatments

- When dropping trees involves potential damage to surroundings, the Washington State Parks Arborist Crew is consulted and hired to conduct removals.
- Any saplings of pioneer species such as cottonwood and alder within 70 feet of the highway are continuously selectively targeted to be treated with broadleaf herbicides

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 potential hazard trees identified will be further evaluated and removed as soon as possible if necessary.
- In cases where there is potential wildlife habitat or heritage issues with mature hazard trees, the Regional Maintenance Environmental Coordinator is consulted for legal documentation requirements
- 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 Garlon 4 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** and **Planned Treatment**. **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.

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, Noxious Weed Control Planned Treatment, and Noxious Weed Control General Reference

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 the right of way in Northwest Region Area 2.

Target Noxious Weed Species on WSDOT Right of Way in Northwest Region Area 2:

Common Name/Botanical Name	Treatment Notes
Bull thistle/ <i>Cirsium vulgare</i>	Controlled where visible in conjunction with summer seasonal patrols.
Butterfly bush/ <i>Buddleja davidii</i>	Control where visible in conjunction with seasonal patrols.
Canada thistle/ <i>Cirsium arvense</i>	Controlled where visible in conjunction with summer seasonal patrols, priority infestations in Skagit County are mapped and targeted with a combination of mowing and spraying. Target in RLNRA on SR20.
Common teasel/ <i>Dipsacus fullonum</i>	Controlled where visible in conjunction with summer seasonal patrols, priority sites are mapped and treated at rosette stage in spring.
Common tansy/ <i>Tanacetum vulgare</i>	Target in RLNRA on SR20.
Dalmatian toadflax/ <i>Linaria dalmatica</i>	Target sites mapped and treated or hand-pulled in the spring and fall.
Foxglove/ <i>Digitalis purpurea</i>	Target only in RLNRA on SR20
Hawkweed sp./ <i>Heiracium sp.</i>	Control where visible in conjunction with seasonal patrols. Target all plants in RLNRA on SR 20
Herb Robert/ <i>Geranium robertianum</i>	Control where visible in conjunction with seasonal patrols. Target in RLNRA on SR20.
Himalayan blackberry/ <i>Rubus americanus</i>	Target isolated emerging patches as needed, target all emerging plants in RLNRA on SR20.
Knapweed sp./ <i>Centaurea sp.</i>	Control where visible in conjunction with seasonal patrols.
Knotweed sp./ <i>Polygonum sp.</i>	Target sites mapped and treated after flower stage in late summer.
Oxeye daisy/ <i>Leucanthemum vulgare</i>	Target only in RLNRA on SR20
Poison hemlock/ <i>Conium maculatum</i>	Controlled where visible in conjunction with summer seasonal patrols, priority sites are mapped and treated at rosette stage in spring.
Reed Canarygrass/ <i>Phalaris arundinacea</i>	Target in RLNRA on SR20.
Scotch broom/ <i>Cytisus scoparius</i>	Control where visible in conjunction with seasonal patrols, control required in Skagit. Control on SR 20 in USFS and RLNRA land
Tansy ragwort/ <i>Senecio jacobaea</i>	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.
Wild chervil/ <i>Anthriscus sylvestris</i>	Target sites mapped and treated in spring.

Total Units of Planned Treatment

- Approximately **120 acres** will be treated with a combination of herbicide treatments and other methods
- Less than **15 acres** will be treated with mowing or hand pulling as needed.

Locations of Planned Treatments

- Priority locations for planned treatment of early detection sites are mapped as noted above in HATS
- All other widespread target species are controlled in conjunction with seasonal patrols.

Treatment Methods and Timing

- Treatments are carried out as described in the table and location notes above.
- For all applications on Whidbey Island, target vegetation will not be sprayed from a distance greater than 15 ft.
- Herbicide Prescriptions:

Mix 1:

- Milestone @ 7 oz/acre

- Escort @ 3 oz/acre
- Rainier EA @ 16 oz/acre
- Mix 2:**
- Capstone @ 128 oz/acre
- Rainier EA

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 Forms: Pesticide Application (for all spray applications), and 3 sub-forms under Nuisance Veg. Control General – Manual/Mechanical, Biological, and Seed/Fertilize/Mulch
HATS Map Layer: Reference polygons – Zone 3 Nuisance Reference

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

- Approximately **10 acres** will be treated with herbicides for nuisance weed control.
- Approximately **10 acres** will be mowed in Zone 3 interchanges and wide median areas.

Locations of Planned Treatments

- Areas prioritized for nuisance weed management in Zone 3 will be mapped in the 2022 season for this area in reference HATS layer – **Nuisance Vegetation Management**.
- Only areas where occasional Zone 3 maintenance is needed: Interchange quadrants, wide medians on I-5 and SR20
- SR20, MP100 – Sutter Park, roadside park, mowing lawns as needed
- Any environmental mitigation sites that have met their permit conditions and turned over to Maintenance for ongoing care are noted here and will be added as a layer in HATS

Treatment Methods and Timing

- Rotational Zone 3 mowing where possible on a 3-5 year schedule in areas to be designated in the coming season.
- Spot and broadcast treatment as necessary as a follow up to mowing operations depending on regrowth of undesirable plants.

- Herbicide mixtures used include:
 - Milestone @ 7 ozl/acre
 - Syl Tac @ 8 ozl/acre

Drainage and Stormwater Facilities Maintenance – 2A

Highway drainage features which require vegetation management include ditches and culvert ends. Stormwater facilities maintenance operations that include vegetation management considerations are discussed in this section of the plan. This work is regulated by the agreement WSDOT has established under the statewide National Pollution Discharge Elimination System (NPDES) permit granted to the agency by the USEPA.

Drainage System and NPDES Maintenance

Work Operations: 1331, 1363, 1399

HATS Forms: Pesticide Application (for all spray applications), other forms are in Stormwater Feature Layer

HATS Map Layer: All feature types listed under Stormwater Features Layer

Periodic removal of vegetative growth is necessary in ditches and around culvert ends to allow access for routine inspection and repair. There are several vegetation management activities necessary to maintain function and operation of certain constructed stormwater management facilities such as vegetated filter strips and swales along the edge of pavement and throughout the roadside, and stormwater retention/detention ponds in the more urbanized areas. Each of these design features should include a manual which details the requirements in relation to control of vegetation and sediment buildup over time.

Locations of Planned Treatments

- All stormwater management facilities are mapped within the Stormwater Features Layer in HATS.
- All culverts are mapped in HATS, vegetation around culvert ends is maintained to be low growing and free of trees and brush.
- Vegetation management activities in stormwater management features are specified in the Highway Runoff Manual, Chapter 5, and Owner's Manual for each constructed feature (if it exists). If no Owner's Manual questions should be directed to Region Hydraulics and Landscape Architecture.
- Required work in stormwater features within the area for 2022 include:
 - None required

Treatment Methods and Timing

- Weed control within stormwater management features is carried out in concert with other weed control activities throughout the area, as described in the plan section Noxious Weed Control – 3A2 above.
- Removal of trees and brush in ditches and around culvert ends may be conducted in conjunction with other chemical and mechanical tree and brush control operations.