

Olympic Region, Area 3 Integrated Roadside Vegetation Management Plan

2022



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

Introduction

The Washington State Department of Transportation's (WSDOT) Olympic Region Area 3 manages vegetation within 260 miles of state highway corridor in Clallam and Jefferson Counties. The area includes some of the most scenic highways in the state. State Route (SR) 112 is designated as National Scenic Byway. The northernmost loop of United States (US) 101 through Jefferson and Clallam Counties travels through two sections of the Olympic National Park. Major cities within the area boundaries include Port Angeles/Sequim, Port Townsend, and Forks. A map of the area is included as **Figure 1** on the following page.

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

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 Olympic Region Area 3 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 will also be tracked geographically through this new system. This development in WSDOT maintenance management will greatly improve the agency's success in properly executing planned actions, monitoring and documenting results of treatments, and in measuring cost and results over time.

WSDOT welcomes input from local public and private entities on its weed control and other vegetation management activities. Wherever appropriate the agency is looking for opportunities to plan and cooperate with others in managing the roadside. Please direct any questions, comments or suggestions to the Olympic Region Area 3 Superintendent – Connie Rae, Assistant Superintendent – Nate Bergeman, or the State's Roadside Asset Manager – Ray Willard.

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Olympic Region, Area 3 Map
Figure 1

Olympic Region, Area 3 IVM Work Plan – 2022

This is an outline of 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 of activities 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.

Safety First

Safety of our employees, the traveling public, and the environment are WSDOT's highest priorities and key to our success. Our licensed 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 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 product exposure procedures at a daily Pre-Activity Safety Plan meeting. They inspect their calibrated equipment daily to ensure it is in proper working order. Herbicides are kept in locked storage facilities which are always kept in an organized and presentable condition. In addition to their morning safety meeting, the applicators hold brief tailgate meeting at the job site prior to work to address current and unforeseen circumstances.

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 is preserving the 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 **350 acres** of herbicide treatment to road shoulders throughout the area.

Locations of Planned Treatments

- Planned treatment sites are mapped in HATS layer – **Spray Zone 1 Reference**
- Bare ground treatments will be applied to all gravel shoulder sections in roads throughout the area, except in locations listed below.
- Locations where no bare ground treatment will be applied include:
 - Any locations where neighbors are taking regular care of roadside vegetation up to the edge of pavement. (Neighbors are encouraged to obtain a “no-spray” agreement where desired.)
 - US101 MP 154-166 Olympic National Park

- US101 MP 190-192.4 City of Forks
 - US101 MP 219-231.4 Olympic National Park
 - US101 MP 247-250 City of Port Angeles
 - US101 MP 261.6-261.8 EB south side (median OK)
 - US101 MP 261.58-261.63 WB no spray agreement (median OK)
 - US101 MP 287.4-288.3 Organic farm
 - SR116 MP 0.8-1.2 Port Hadlock
 - SR116 MP 4.55-9.83 Marrowstone Island
 - SR20 MP 10.0-12.0 City of Port Townsend
 - SR19 MP 8.9-9.6 Chimacum
 - SR19 MP 10.4-11.8 Port Hadlock
- Locations where only aquatic labelled herbicides will be applied:
 - SR112 – 2 ft. wide treatment full length
 - SR112 spot spray Horsetail with a Telar at a rate of 2 oz/acre
 - Location where we will be treating sidewalk cracks and edges with backpack sprayers
 - US101 MP 249.84-252.33 Eastbound
 - US101 MP 249.84 -251.86 Westbound

Treatment Methods

- Herbicides are applied using a truck mounted power spray system calibrated to deliver either a 2 or 4 ft. band of spray mixture on and adjacent to the paved shoulder. The resulting width of treated shoulder may be wider than 2 to 4 ft. in areas with steeper shoulder slope.
- Application widths are typically set to 2 ft. and extend out to guideposts in locations without guardrail or cable rail present.
- Application widths are typically set to 4 ft. in locations with guardrail or cable rail, extending to back edge of the hardware.
- In some locations where rail is set back from the edge of pavement a 3 to 4 ft. band will be applied along the base of the rail only, leaving a grass strip next to the roadway.
- At gore points with ramps applications will extend to 6 ft. across the gore
- In the 2022 season a select set of locations at intersections and corners will be established with wider bare ground treatments where there are traffic visibility impacts from spring grass growth.
- With the exception of SR112 all shoulders will be treated in mid to late spring with the following mixture of herbicides and adjuvants mixed with water and applied at the following rates:
 - Roundup Pro Conc. @ 32 oz/acre
 - Esplanade @ 7 oz/acre
 - Milestone @ 7 oz/acre
 - Oust @ 3 oz/acre
 - Agri-dex @ 16 oz/acre
 - No Foam @ 0.5 oz/acre
- SR112 will also be treated in May-June timeframe using only aquatic labeled products:
 - Aquatic glyphosate @ 48 oz/acre
 - Polaris @ 48 oz/acre
 - Agri-Dex @ 16 oz/acre
 - No Foam @ 0.5 oz/acre
- To control the growth of horsetail along the pavement edge along SR 112 and any other locations throughout the area an additional application of Telar XP @ 2 oz/acre with Syl-tac @ 16 oz/acre will be applied in spot application later in the season.

- Sidewalk treatment on 101 in City of Port Angeles is glyphosate 128 @ 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 **300 acres**

Locations of Planned Treatments

- Planned routine mowing locations are mapped in HATS layer – **Mowing Zone 2 Reference**
- Routine single pass mowing occurs throughout the spring and early summer, as necessary on US101, SR104, SR110, SR112, SR113, SR116, SR19, and SR20
- Intersections with site distance problems are given special attention and mowed to adequate widths throughout the area.

Treatment Methods

- Tandem tractors or trucks with boom mounted mowing heads will be used to mow 5 to 10 foot widths on the shoulders and trim encroaching branches and seedling trees in Zone 2.

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 tree limbs impacting traffic operations and visibility. Also included is work in Zone 3 when specifically targeting emergent undesirable tree species to prevent them from growing into potential hazard trees within striking distance of the road. Removal of mature-sized dead, diseased, dying or structurally defective trees is also included in this activity group.

Total Units of Planned Treatment

- Approximately **300 acres** will be mechanically trimmed throughout the area
- Approximately **10 acres** will be trimmed using hand-held tools
- Approximately **100 acres** will be controlled with herbicides

Locations of Planned Treatments

- Encroaching vegetation is controlled throughout the area, some locations require routine periodic trimming/hedging every 3 to 5 years.
- SR19 has some canopy trimming along with site distances.
- SR20 has some canopy trimming along with site distances.
- SR112 has some canopy trimming along with site distances.
- SR116 has some canopy trimming along with site distances
- US101 for sight distance on inside corners and around intersections.

Treatment Methods

- Use Reach Mower with wet head spraying Element 3A at 128oz/acre or manually cut and spray using Element 3A at 64 oz/acre
- 315 Cat Excavator with a brush head
- Truckat Mower
- 2 – JD Reach Mower
- Skid-steer or mini-excavator with brush mulching head for special areas
- Herbicide treatments:
 - Krenite @ 384 oz/acre (use existing inventory until gone)
 - Vastlan @ 64 oz/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 threat, are removed as soon as possible.

Total Units of Planned Treatment

- Number depends on weather conditions and annual growth rate
- As many as **300 mature hazard trees** are typically removed throughout the area each year.

Locations of Planned Treatments

- SR19, 3 to 5 trees.
- SR20, 10 to 20 trees.
- SR112, 5 to 10 trees
- US101, 15 to 25 trees.

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.
- If trees growing outside WSDOT right of way are hazards, crews work with the neighboring property owner to negotiate removal.
- State Parks Arborist crew is used for the more challenging removals
- Cut and drop in place wherever possible
- Stump treat with herbicides to prevent re-growth when needed
- 315 Cat Excavator with a brush head with 65-foot man lift for choking
- PUD crews where power lines are present.

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.

Priority Class A Noxious Weed on WSDOT Right of Way in Olympic Region Area 3:

Common Name/Botanical Name	Treatment Notes
Giant hogweed/ <i>Heracleum mantegazzianum</i>	Known to occur in one location, which has been controlled and is still being monitored for any regrowth.

Target Weed Species on WSDOT Right of Way in Clallam and Jefferson Counties

Common Name/Botanical Name	Treatment Notes
Butterfly bush/ <i>Buddleia davidii</i>	Target sites mapped and treated mid to late summer
Common reed/ <i>Phragmites australis</i>	Target sites mapped and treated in early summer
Common teasel/ <i>Dipsacus fullonum</i>	Control where visible in conjunction with seasonal patrols
Canada thistle/ <i>Cirsium arvense</i>	Control small patches and individual plants where visible in conjunction with seasonal patrols
Dalmation toadflax/ <i>Linaria dalmatica</i>	Target sites mapped and treated in the spring and fall
European hawkweed/ <i>Hieracium sabaudum</i>	Target sites mapped and treated in the late summer.
Herb Robert/ <i>Geranium robertianum</i>	Control where visible in conjunction with seasonal patrols throughout the area, priority target sites are mapped and treated in the early spring
Himalayan blackberry/ <i>Rubus armeniacus</i>	Small isolated patches will be mapped for treatment throughout the area, focusing on Sequim bypass

Hoary alyssum/ <i>Berteroa incana</i>	Target sites mapped and treated in spring
Knapweed sp./ <i>Centaurea sp.</i>	Control small patches and individual plants where visible in conjunction with seasonal patrols
Orange hawkweed/ <i>Hieracium aurantiacum</i>	Target sites mapped and treated at early flower stage in summer
Perennial peavine/ <i>Lathyrus latifolius</i>	Avoid mowing, control is being conducted through volunteer weed control on US101 between Lakes Quinalt and Crescent.
Poison hemlock/ <i>Conium maculatum</i>	Control where visible in conjunction with seasonal patrols throughout the area, priority target sites are mapped and treated in the early spring. SR 101 MP
Purple loosestrife/ <i>Lythrum salicaria</i>	Target sites mapped and treated at early flower stage in summer
Reed canary grass/ <i>Phalaris arundinacea</i>	Control is being conducted through volunteer weed control on US101 between Lakes Quinalt and Crescent. Always decontaminate mowers after mowing this plant to prevent seed spread.
Scotch broom/ <i>Cytisus scoparius</i>	Control in Clallam Co. pit sites, controlled in conjunction with seasonal weed patrols, when present in small isolated patches, SR104/US101 interchange and portions of the Sequim bypassed are being managed as Nuisance Vegetation Control.
Spurge laurel/ <i>Daphne laureola</i>	One known location – 101 MP 267 inc. (already mapped by SP)
Sulfur cinquefoil/ <i>Potentilla recta</i>	Target sites mapped and treated in spring
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 early spring
Hawkweed sp./ <i>Hieracium sp.</i>	Control where visible in conjunction with seasonal patrols

Total Units of Planned Treatment

- Approximately **50 acres** will be spot treated with herbicides
- Up to **20 acres** will be pulled by hand, depending on weather and growth patterns.

Locations of Planned Treatments

- Locations will be listed in the plan in coordination with what is being mapped
- Priority treatment areas and species are identified by the Clallam and Jefferson County Noxious Weed Boards and mapped in the HATS map layer – **Noxious Weed Control General**.
- Area IVM technicians will verify and edit weed location data in HATS as treatments are carried out through the season.

Treatment Methods and Timing

- Treatments are carried out as described in the table above.
- Herbicides used include:
 - Early Season Targets**
 - Milestone/Vastlan
 - Late Season Targets**
 - Vastlan
 - Krenite (Blackberry and Alder)

Nuisance Vegetation Control – 3A3

Nuisance vegetation control takes place only in a select set of carefully prioritized locations along the wider areas of right of way throughout the state. These locations are delineated on maps in HATS as polygon outlines where right of way is wide enough for Zone 3 to exist. Locations are prioritized to receive treatments where there is heightened local interest in a more controlled visual appearance and highly maintained condition. 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 lowest 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 Zone 3

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 **15 acres** will be treated with herbicides for nuisance weed control in Zone 3 management areas.
- No mowing for nuisance vegetation will be done in this maintenance area in 2022.
- Add note for selective hand removal

Locations of Planned Treatments

- Reference HATS layer – **Nuisance Vegetation Control Zone 3**
- The two areas in the area where Zone 3 is being managed for control of nuisance weeds are along US101 through the Sequim Bypass, and the SR104/US101 interchange.
- Recently planted areas along US 101 east of Port Angeles will be maintain all weeds to allow plantings to establish.
- Add notes about selective tree removal along the bypass – need to reach consensus on setbacks, site lines, etc.
- Add a note describe that agreement with **10,000 Years Institute**

Treatment Methods and Timing

- Herbicides used at both sites:
 - Perspective @ 3 ozd/acre
 - SylTac @ 8 ozl/acre
- Cut stump treatment:

- Garlon 4 mixed 50% with water and Blue Dye, and sprayed directly onto the edge of each stump

Feb/March Gateway

- We are cleaning up the area West of the Hood Canal Bridge MP 13.9 as a Gateway to our Region. This will include the removal of garbage, small trees (about 35-40 under 6”), mowing and herbicide spraying of bot nuisance and noxious vegetation on approximately 1 acre. To bring good vegetation and grasses back, we will treat the blackberries and emerging trees again late Spring to early Summer and again late Summer to early Fall.

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, 1368, 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.