Northwest Region, Area 1

Integrated Roadside Vegetation Management Plan

2024

Washington State Department of Transportation
Maintenance Operations Division

Introduction

The Washington State Department of Transportation's (WSDOT) Northwest Region Area 1 manages vegetation within approximately **210 miles** of state highway corridor in Whatcom and northwest Skagit Counties. In addition to the Interstate 5 corridor between Burlington and the Canadian border, the area maintains State Route (SR) 9 throughout Whatcom County and all of SR 11 (Chuckanut Drive), 539, 542(Mt. Baker Highway), 543, 544, 546, 547, and 548. 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.

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 refining the most efficient maintenance procedures, and establishing the naturally self-sustaining roadside 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 with other required highway maintenance activities.

This plan serves as the guidance document for vegetation maintenance in Northwest Region Area 1 for the 2024 growing season. It identifies priority locations and prescribes treatments for accomplishing safety and weed control objectives through a combination of integrated, 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 agency's Highway Activity Tracking System (HATS). Accomplishments and results are also tracked geographically through this 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 1 Maintenance Superintendent – Theo Donk or the State's Roadside Asset Manager – Ray Willard.

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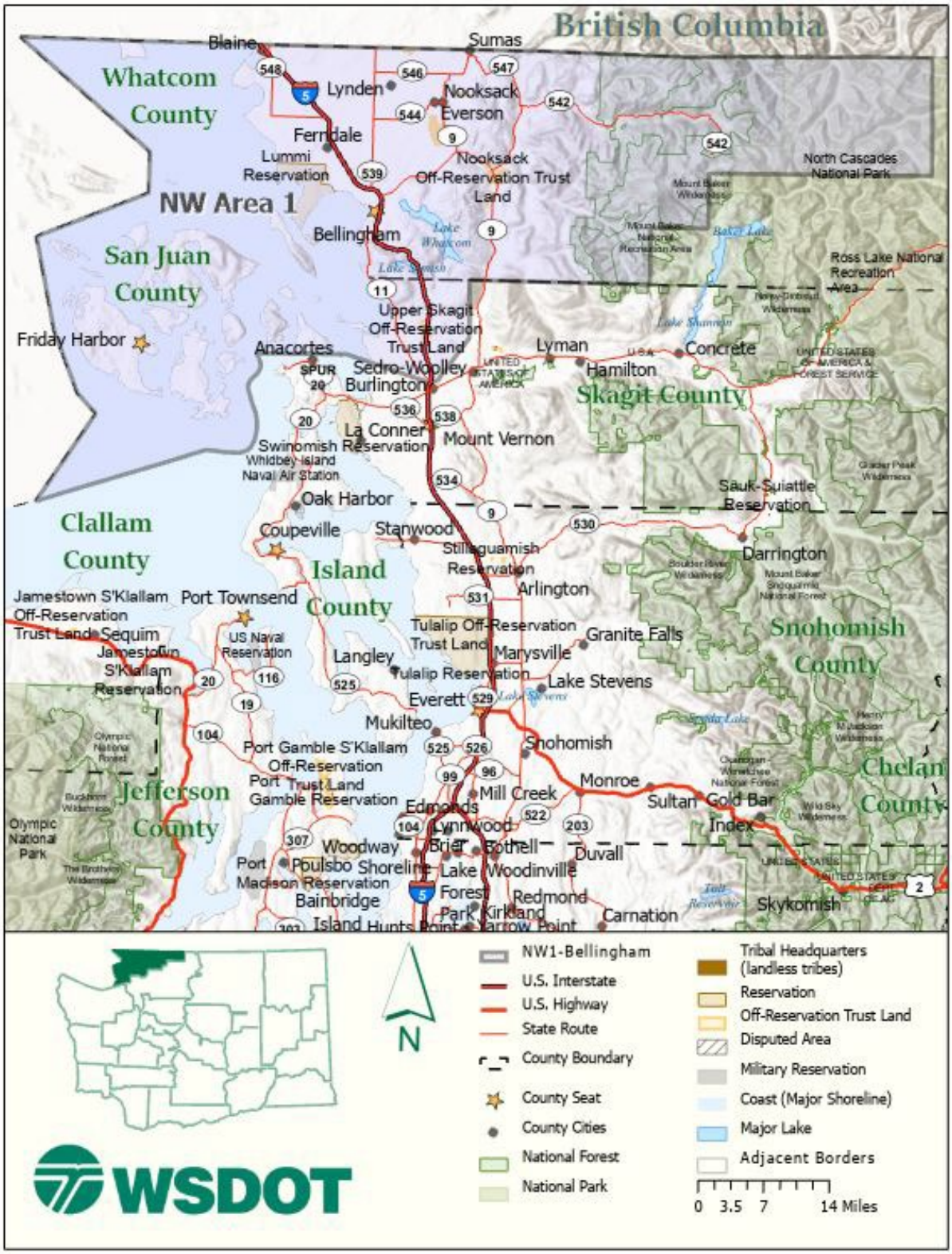

Area Vicinity Map
Figure 1

The section outlines the overall approach and geographic distribution of roadside vegetation management requirements throughout the maintenance area in 2024. Information is organized in relation to four 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**. **Safety Rest Area** Landscape Maintenance and **Stormwater** Facilities vegetation maintenance activities are also covered. 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 kept well organized in locked storage facilities.

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: 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 **250 acres** of herbicide treatment will be applied to road shoulders throughout the area.

Locations of Planned Treatments

- Planned treatment sites are being mapped in HATS layer – **Spray Zone 1 Reference**.
- Hardware only, all other shoulders will be skipped this year (with limited budget)
- All shoulders throughout the area will be treated for Zone 1.
    - SR 542 west of Glacier on USFS land will be treated with aquatic glyphosate, following a mowing pass in late May/June.

Treatment Methods

- Herbicides are applied using a truck mounted power spray system calibrated to deliver either a 3 or 5-ft. band of spray mixture on and adjacent to the paved shoulder. The resulting width of treated shoulder may be wider than 3 to 5 ft. in areas with steeper shoulder slope.
- Application widths are typically set to 3 ft. and extend out to guideposts in locations without guardrail or cable rail present.
- Application widths are typically set to 5 ft. in locations with guardrail or cable rail, extending to back edge of the hardware.
- Wider applications are also planned in select areas due to control vegetation obstructions from spring grass growth particularly in locations where mowing is difficult.
- SR542 USFS will treated in fall with:
    - Aquaneat @ 128 oz/acre
    - Agri-Dex @ 16 oz/acre
- All other locations will be treated in fall with the following pre-blended products in 15 gallon reusable containers:

    Blend R6:

    - Roundup Pro @ 32 oz/acre
    - Lockdown SC @ 8 oz/acre
    - Milestone @ 7 oz/acre
    - Telar @ 2 oz/acre
    - Syl-Tac @ 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

- **250 acres** is mowed annually in Zone 2 throughout the area.

Locations of Planned Treatments

- Planned Zone 2 mowing locations are mapped in HATS reference layer - **Mowing Zone 2 Reference**
- Due to timing setbacks with spring IVM work, mowing will be administered based on site distance concerns only on I-5, and on all shoulders throughout secondary roads in the area.

Treatment Methods

- Mechanical mowing with side and rear mounted flail mowers, or with boom mounted mowing heads.
- Mowing width varies between 5 and 15 feet as specified on the HATS maps.

Tree and Brush Control/Zone 2 and 3
Work Operations: 1622, 1625, 1626
HATS Other Forms: 4 sub-forms under Tree/Brush Control – Spray, 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 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 **100 acres** throughout the area will be treated with mechanical cutting.
- Approximately **20 acres** throughout the area will be treated with herbicide applications in the fall.
- Approximately **10 acres** throughout the area will be trimmed with hand tools.

Locations of Planned Treatments

- Forested roadsides throughout the area require ongoing periodic trimming and seedling tree control, these area are typically addressed with some form of encroaching tree and brush control on a 3 to 4 year cycle.
- Crews will carry cutting tools, and a way to apply herbicide as a stump treatment for any species prone to re-sprouting.
- SR547, SR542, and SR011 will be the focus corridors in the coming years
- I-5 corridor between Bow Hill and south end of town is a high priority and will be addressed as soon as possible within the next two years for overhanging branches and seedling trees growth in Zone 1 and 2

Treatment Methods

- Mechanical trimming for tree branches and brush encroaching in Zone 2 will be accomplished using tractors with boom mounted mowing heads.
- In some areas with overhanging branches pruning is accomplished with high-lift buckets and hand-held saws.
- Chemical stump treatment for incidental seedling and brush control will be applied using either, a small spray can or bottle, or an herbicide dauber. Herbicide will be a mixture of 50% Trycolpyr and 50% water.
- Herbicide treatments with Garlon 3A @ 128 ozl/acre are used in the fall to control seedling trees and encroaching brush in Zone 2.
- In some locations along I-5 mowing is used to remove seedling cottonwood and alder in Zone 3. These operations are accompanied with herbicide treatment either on the cut stumps, or with a foliar treatment for regrowth the following year.

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. These activities also include cleanup of wind-blown limbs and debris if not part of a declared disaster.

Total Units of Planned Treatment

- Up to **300 mature hazard trees** are removed throughout the area in a typical year.

Locations of Planned Treatments

- Annual evaluation and removal of identified hazard trees is a year-round practice throughout the area.
- Emphasis will be placed on I-5 between Bow Hill and south end of town, where a significant number of dead and diseased trees – this will require coordinated lane closure.

- Through an agreement with the Forest Service, the USFS land bordering SR542 is cruised every year for hazard trees. Mutually identified hazard trees are then removed.

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 at any time are then removed as soon as possible.
- 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 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**. **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 (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 are known to exist on WSDOT right of way in Northwest Region Area 1.

Target Noxious Weed Species on WSDOT Right of Way in Northwest Region Area 1:

Common Name/*Botanical Name*	Treatment Notes
Hairy Willowherb/*Epilobium hirsutum*	Target sites to be mapped and treated.

Common Name/*Botanical Name*	Treatment Notes
Canada thistle/*Circium arvense*	Skagit County listed/farmland
Knotweed sp./*Polygonum sp.*	Target sites mapped, and treated in late summer/fall
Knapweed sp./*Centaurea sp.*	Control where visible in conjunction with seasonal patrols
Orange hawkweed/*Hieracium aurantiacum*	Target sites mapped and treated in spring
Policeman's helmet/*Impatiens glandulifera*	Target sites on 542 mapped and treated at early flower stage in summer
Purple loosestrife/*Lythrum salicaria*	Target sites mapped and treated at early flower stage in summer
Poison hemlock/*Conium mculatum*	Target sites mapped and treated in spring
Ragwort tansy/*Senecio jacobae*	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
Sulfur cinquefoil/*Potentilla recta*	Target sites mapped and treated in spring
Smooth hawkweed/*Hieracium laivigatum*	Target sites mapped and treated in spring
Scotch broom/*Cytisus scoparius*	Target where present in small patches and individual plants, and all plants on SR542 west of Deming.
Wild chervil/Anthriscus sylvestris	Target sites mapped and treated in spring

Total Units of Planned Treatment

- Approximately **20 acres** of noxious weed infestations will be addressed with herbicide treatments.
- Up to **10 acres** of manual hand pulling.

Locations of Planned Treatments

- Planned treatment areas and species as described in the table above are identified in collaboration with the Lewis County Noxious Weed Board 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

- Applications are made with backpack sprayers when possible for specific targets.
- Larger applications are made with spray trucks on the shoulder, either spraying from the cab, or pulling hose and spot spraying on foot.
- Seasonal target species and herbicide prescriptions include:
  - **Mix 1:**
    - Opensight @ 3 ozl/acre
    - SylTac @ 8 ozl/acre
  - **Mix 2:**
    - Capstone @ 128 ozl/acre
    - SylTac @ 8 ozl/acre
- Inject straight aquatic glyphosate @ 4 cc/stem

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 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 be 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

- Up to **15 acres** of nuisance weed control will be controlled with initial mowing, and manual cutting/pulling
- Up to **10 acres** of nuisance weed regrowth will be treated with herbicides

Locations of Planned Treatments

- Reference HATS layer – **Nuisance Vegetation Management**.
- I-5 at Blaine – Mechanical selectively thin out all the undesirable vegetation
- I-5 through Bellingham – Continue to cut back areas with blackberry growth
- Roundabout at SR542/Smith Road – converted to rock garden
- Roundabouts are also prioritized for this work item.
- Sites are prioritized if needed due to emergence of homeless camping sites.

Treatment Methods and Timing

- Any sites being reclaimed will selectively mowed out to remove undesirable vegetation.
- In the late season or following all sites being reclaimed will treated with herbicide to address seedbank and regrowth.

Safety Rest Area Site Maintenance – 7B1

Landscape maintenance work at safety rest areas throughout the state includes all vegetation management activities that take place in relation to the design and layout of individual rest areas. For these highly developed landscape assets, the goal is to maintain healthy, attractive plantings throughout the site as well as along the rest area frontage along the highway. Planted vegetation is intended to be preserved and enhanced over time, through pruning, hedging, trimming, with irrigation and periodic fertilization used where necessary.

Safety Rest Area Site Maintenance
Work Operations:
HATS Forms:

HATS Map Layer: Reference polygons – SRA Landscape Reference

Rest area landscape maintenance operations are carried out by the Rest Area Attendants in many cases, with the local area maintenance crews or regional specialty crews helping out when needed for irrigation and specialized weed control operations.

Locations of Planned Treatments

- Rest area facilities maintained by NW Region Area 1 include:
  - Custer SRAs NB and SB I-5 @ MP 267 and 269
  - Bow Hill SRAs NB and SB I-5 @ MP 238.1 and 238.3

Total Units of Planned Treatment

- High maintenance landscape – less than **1 acre per site**
- Low maintenance landscape – approximately **2 acres per site**

Treatment Methods and Timing

- Routine pickup of vegetative debris as needed
- Annual start up and winterization of irrigation system
- Routine lawn mowing throughout the growing season
- Weed control operations

Stormwater Facilities Maintenance – 2A4

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.

NPDES Maintenance

Work Operations: 1368, 1399

HATS Forms: Pesticide Application (for all spray applications)

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

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 features includes a manual which details the requirements in relation to control of vegetation and sediment buildup over time. Any vegetation control work required within designed treatment features is charged to the stormwater program.

Locations of Planned Treatments

- All stormwater management facilities with biofiltration components are mapped within the Stormwater Features Layer in HATS.
- Vegetation management activities in stormwater management features are specified in the Owner's Manual for each constructed feature.
- Required work in stormwater features within the area for 2024 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.