



Olympic Peninsula Cooperative Noxious Weed Control 2017 Project Report

A Title II Participating Agreement between:
USDAFS Olympic National Forest
And
Mason County Noxious Weed Control Board

Report compiled by
Mason County Noxious Weed Control Board

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A copy of this report will be posted to the Mason County WSU Extension website at:
<http://extension.wsu.edu/mason/natural-resources/noxious-weed-program/mcnwcb-reports/>
2017 Title II Report

Acknowledgements

We'd like to acknowledge the support and cooperation from the following people and organizations. Thanks for your continued efforts in reducing the impacts of invasive plants and noxious weeds on the resources of Mason County!

Mason County Noxious Weed Control Board Assistants

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Washington Conservation Corps

Darrell Borden and WCC crew

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EXECUTIVE SUMMARY

Project Goal:

With the purpose of protecting the agricultural resources and natural area resources of Mason County, the Mason County Board of County Commissioners reactivated the Mason County Noxious Weed Control Board (MCNWCB) in 2003. In 2004, the first Title II funded participating agreement was crafted between the USDA Forest Service, Olympic National Forest and Mason County.

Today, the Mason County Noxious Weed Control Board continues to work collaboratively with the Olympic National Forest and others to contribute to the mission of the Forest Service, "To sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations".

Throughout the county, grant funded or locally funded noxious weed control activities benefit the Mason County economy, public health and way of life. With nearly 21% of Mason County's land base, or just over 127,000 acres, located within the Olympic National Forest (ONF), activities benefitting this area comprised 13% of the program's 2017 budget. This Participating Agreement continues the federal contribution to strengthening the framework within which the ONF, Mason County and other community stakeholders can build a collaborative noxious weed control effort in Mason County.

The Mason County Noxious Weed Control program participates at community events providing noxious weed education to the public as a key component of the program. This emphasis on education and prevention integrates with "Early Detection, Rapid Response" (EDRR) to further a coordinated and efficient approach to the protection of Mason County's resources from the adverse effects of invasive plants.

The Mason County Noxious Weed Control Board continues to work collaboratively with the Olympic National Forest in:

"Caring for the land and serving people".

Project Overview:

Since 2005, Title II funding has been instrumental in the development of a noxious weed control program in Mason County. As an active participant in the protection of ONF lands from the threat of invasive plant species, program staff works to locate and treat noxious and invasive plant infestations within, and adjacent to, the Olympic National Forest. Cooperation and collaboration between federal and local governments are among the goals of the Title II program of the Secure Rural Schools Act. These funds have provided the MCNWCB the opportunity to develop the capacity to undertake projects that require the availability of field going expertise, labor and equipment. In 2017, Title II funding augmented county and grant funds to provide seasonal employment for two field staff and additional staff time for the part-time coordinator.

Funding from these agreements has given MCNWCB staff the opportunity to survey and treat noxious weed infestations adjacent to Forest Service lands.

2017 Project Goals:

- Control invasive plants within special project areas
- Control invasive plants on roads scheduled for project work or decommissioning
- Control invasive plants in areas planned for future forest management activities.
- Survey for and treat invasive species in rock sources within the Olympic National Forest
- Control invasive plants in campgrounds, at trailheads and other frequently visited sites
- Revisit previously controlled sites and perform necessary follow-up control work
- Identify and treat new populations utilizing Early Detection and Rapid Response (EDRR)
- Conduct surveys of, and provide technical expertise to owners of, private and public rock sources in Mason County
- Build new relationships with other agencies, citizens, businesses and non-profits in Mason County

2017 Resources:

- Mason County Noxious Weed Control Board Coordinator (60 hours/month, 3.0 months)
- MCNWCB Field Assistants (2 @ 70 hours/month for 3 months)
- Washington Conservation Corps crew - 2 weeks

2017 Accomplishments:

- Treated, either manually or with herbicide, approximately 117 weed-infested acres within the ONF
- Completed and submitted 61 paper accomplishment forms for the Forest Activity Tracking System (FACTS) database. In addition, site specific notes and recommendations were included for many locations
- Participated in 7 public events or meetings, resulting in over 1100 contacts with Mason County residents or visitors
- A Land Use License (“License”) with Washington Department of Natural Resources, which expired December 31, 2017, provided an opportunity for noxious weed removal along Forest Service Road 2500. The work was planned in conjunction with roadside mowing and a proposed herbicide treatment by DNR within their jurisdictions.
- The Master Land Use Permit between GREEN DIAMOND RESOURCE COMPANY and Mason County Noxious Weed Control Board was renewed in May 2017 and will expire on December 31, 2018. This permit provides for survey and implementation of control measures for lands adjacent to National Forest land. Primary Forest Service roads 2300 and 2340 have rights-of-way across Green Diamond Resource Company lands.
- In September 2016, the City of Tacoma, Department of Public Utilities and the MCNWCB finalized a **Permission to Enter Private Land and Waiver of Liability**. This document, in effect until December 31, 2019, provides permission to treat noxious weeds and will provide an opportunity to control Scotch broom, herb Robert and other invasive species along FS Road 2400, a primary access corridor to the Olympic National Forest and Park in the Lake Cushman area.
- Completed annual project report

PROJECT SUMMARY

Project Goal

The Mason County Noxious Weed Control Board was established in 1975, but had not been active since the mid 1980's. As a result of citizen involvement, the Mason County Board of County Commissioners (BOCC) reactivated the Weed Board in the fall of 2003 with the mission of protection of Mason County's agricultural resources and natural area resources from the negative impacts of noxious weeds.

In early 2004, the Mason County Board of County Commissioners appointed five persons to the Mason County Noxious Weed Control Board in the manner provided by RCW 17.10.050. Later in 2004, the first Title II funded Participating Agreement was crafted between the USDA Forest Service, Olympic National Forest and Mason County.

Mason County Noxious Weed Control Board staff have utilized this funding during the past 13 years to develop the capacity to provide a knowledgeable resource to other Mason County departments, public and private landowners, while working to reduce the impact of noxious weeds on the Olympic National Forest.

Today, the Mason County Noxious Weed Control Board continues to work collaboratively with the Olympic National Forest and others to contribute to the mission of the Forest Service, "To sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations".

Throughout Mason County, grant funded or locally funded noxious weed control activities benefit the Mason County economy, public health and way of life. With nearly 21% of Mason County's land base, or just over 127,000 acres, located within the Olympic National Forest (ONF), activities benefitting this area comprised 13% of the program's 2017 budget. This Participating Agreement continues the federal contribution to strengthening the framework within which the ONF, Mason County and other community stakeholders can build a collaborative noxious weed control effort in Mason County.

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The Mason County Noxious Weed Control Board continues to work collaboratively with the Olympic National Forest in:

"Caring for the land and serving people"

Project Overview

Executive Order 13112 of February 3, 1999 (Invasive Species), called upon executive departments and agencies to take steps to prevent the introduction and spread of invasive species, and to support efforts to eradicate and control invasive species that are established. On December 05, 2016, President Barack Obama amended Executive Order 13112 to direct actions to continue coordinated Federal prevention and control efforts related to invasive species. This order maintains the National Invasive Species Council (Council) and the Invasive Species Advisory Committee; expands the membership of the Council; clarifies the operations of the Council; incorporates considerations of human and environmental health, climate change, technological innovation, and other emerging priorities into Federal efforts to address invasive species; and strengthens coordinated, cost-efficient Federal action.

Extensive invasive plant survey work took place on National Forest lands in the mid 1990's. This work became the foundation of the *Olympic National Forest Final Environmental Impact Statement and Record of Decision Beyond Prevention: Site-Specific Invasive Plant Treatment Project* (March 17, 2008). This analysis incorporated the best available science related to invasive plant management on National Forest system lands and is tiered to the *Pacific Northwest Invasive Plant Program Final Environmental Impact Statement* (R6 2005 FEIS). Mason and Clallam County Weed Board staff, a Forest Service crew and crews from the Washington Conservation Corps (WCC) are now actively involved with implementation of components for control of invasive plants identified in the FEIS.

Control priorities are based on a matrix of criteria that includes:

- ecological impact
- new infestations of aggressive species (EDRR)
- treatment in areas of high public use and infestation potential (e.g. parking lots, campgrounds, trailheads, horse camps, gravel pits)
- containment/control of existing large infestations of species with focus on boundaries of infestation



This area of the Cushman pit is currently a “weed free” source for project materials

Treatments continue to emphasize control of high priority noxious weeds (Appendix E) in areas with high potential for spread, such as rock sources or campgrounds. Ecologically unique environments, such as the Mint Meadow, are also a high priority.

On non-Forest Service lands, including other federal lands, state, county and private lands, the emphasis continues to be in areas where uncontrolled noxious weed populations are spreading and hindering coordinated control activities. The MCNWCB provides a link to private landowners whose weeds threaten federal lands. Program goals include public education, monitoring infested sites, surveying for new noxious weed infestations, seeking both private and public landowner compliance with RCW 17.10 and WAC 16-750 and assisting other public agencies with their efforts to control noxious weeds.

Title II funding continues to support the MCNWCB program of public education and “Boots on the Ground” control efforts and provides employment to several local residents and training opportunities to county staff, partners and volunteers.

In Mason County, several individuals and crews accomplish control efforts within the ONF. During the 2017 season, the MCNWCB coordinator and three assistants received funding through this agreement. In addition, two WCC crew under the direction of MCNWCB personnel, and a Forest Service crew contributed to program goals.

Utilizing the Washington State Department of Agriculture’s iPhones and iForm database, the MCNWCB has expanded its ability to collect updated noxious weed occurrence data on National Forest and adjacent lands.

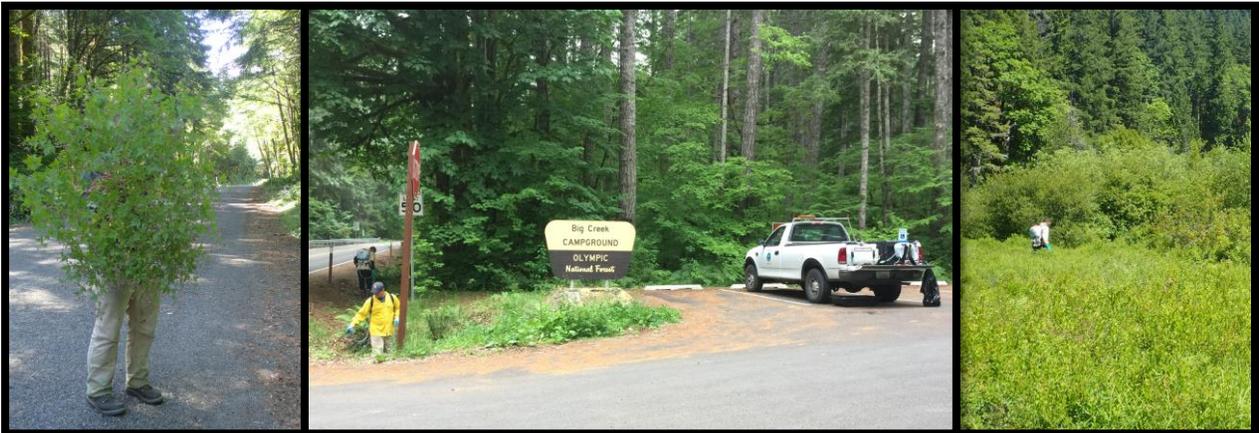


MCNWCB staff remove flowering tansy ragwort along the Skokomish Valley road, the primary access road to the S.F. Skokomish watershed.

Mason County Noxious Weed Control program

2017 Snapshot

Number of weed species known to occur in Mason County (2017 Weed List)	58
Number of regulated species	30
Most common regulated weeds	giant hogweed, knapweeds, hawkweeds,
Least common regulated weeds	common reed, Spanish broom, yellow nutsedge
Most common treated weeds	tansy ragwort, giant hogweed, bohemian knotweed, scotch broom, herb Robert
Educational Events – Events, Presentations, etc.	7
Public contacts at educational events	1166
County funding for Noxious Weed Control program (General fund)	\$60,823.00



Prize winning herb Robert along FS Rd 2300

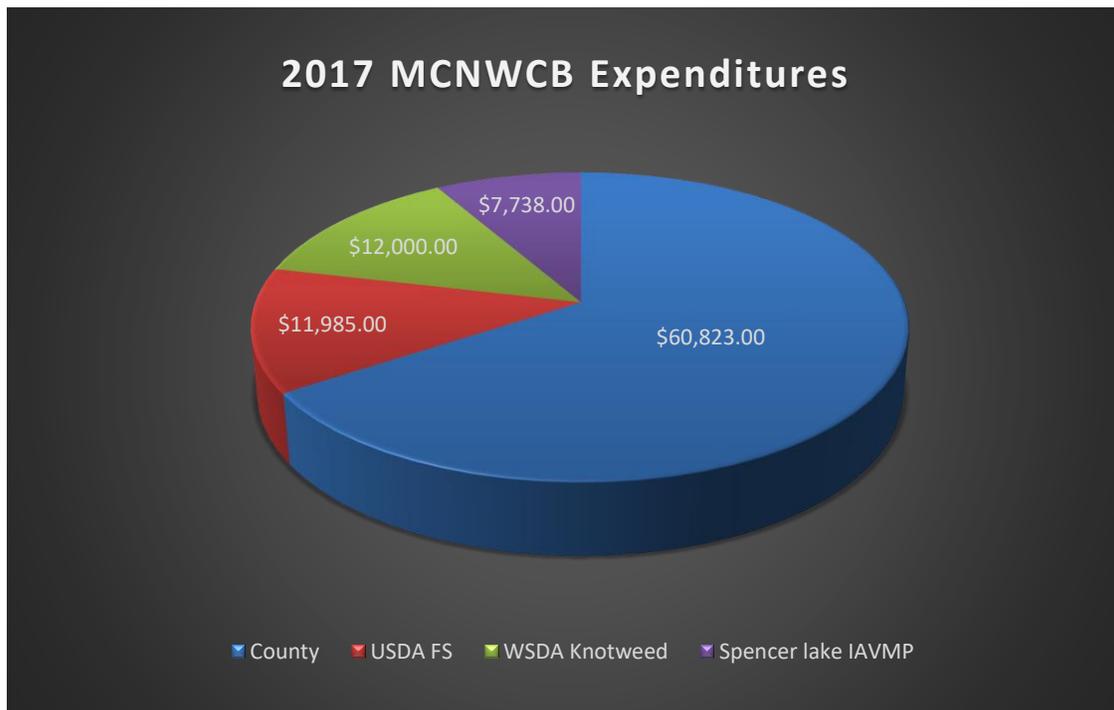
Noxious weed treatment at entrance to Big Creek campground

Treatment at Mint Meadow

2017 Project Description

A preseason work session was held at the Hood Canal Ranger District office in Quilcene, WA on May 10, 2017 with Forest Service personnel, Mason County and Clallam County Noxious Weed Control Board coordinators. A project work plan was developed by the Forest Service that established priority sites (Appendix A) and species for the season (Appendix E). The planned work involved treating previously identified weed infestations on Forest Service land. The Forest Activity Tracking Sheet (FACTS) form was used to document manual or chemical treatments. Treatment reporting was based on a unique "Reference Number", assigned within Project Areas.

Increased support and funding from the Mason County General Fund has supported additional coordinator and field staff time. Expertise and equipment utilized to support the Title II work has been leveraged to secure funding from other grant sources, including the Washington State Department of Agriculture and the Washington State Department of Ecology.



In 2017, treatments on Forest Service lands continue to be prioritized as follows:

- Control weeds in quarries and other rock sources on National Forest land
- Control weeds in special project areas such as wildlife forage enhancement areas or timber sales
- Control weeds in campgrounds, trailheads and other heavily used sites
- Revisit previously controlled sites and perform necessary follow-up control work
- Identify and treat new populations (EDRR), identified by Forest Service or MCNWCB personnel

2017 Project Resources and Performance

The number of staff/participants, the amount of time devoted to this project, and tasks completed were:

- **Supervisor (MCNWCB coordinator): 60 hours/month, for 3.0 months, licensed applicator**
 - Supervised and administered the project
 - Provided crew training, technical information and support; and planned and supervised most field treatments
 - Participated in a beginning of the year planning meeting with Forest Service staff
 - Completed end-of-season reporting and planning for 2018 field season

- **Program Assistants: 2 at 70 hours/month, for approximately 3.0 months, no licensed applicator until September 2017.**
 - Responsible for daily preparation for field activities
 - Reviewed, finalized and submitted 61 FACTS forms for all treated sites
 - Provided crew training, technical information and support

2017 Project Accomplishments

2017 Accomplishments	
Acres Treated	117
Acres Examined for Weeds	146
New sites (EDRR)	0

County staff completed the majority of the treatments with support from eight days of a Forest Service funded 3-5 person WCC crew. Appendix B summarizes types of treatment and specific weed species treated.

Where infestation levels are too large, a program of maintenance control or containment has replaced an eradication effort. With species such as herb Robert or Scotch broom, this approach is the only practical way to limit ecological or economic damage where eradication is highly unlikely.

2017 Rock Pits Inspected/Treated

Rock Source	Ref #	Option A Rock Source Exceeds Requirements	Option B Rock Source Meets Requirements	Option C Rock Source Meets Minimum Requirement	Treatment (Manual)	Treatment (Herbicide)
Brown Creek Quarry	327				9/21/17	7/3/17
Cushman Pit	355					5/22/17
V1043 Quarry	394					8/1/17
Hamma Hamma pit	355					06/22/2017



Cushman Pit



Brown Creek Quarry



Hamma Hamma Pit

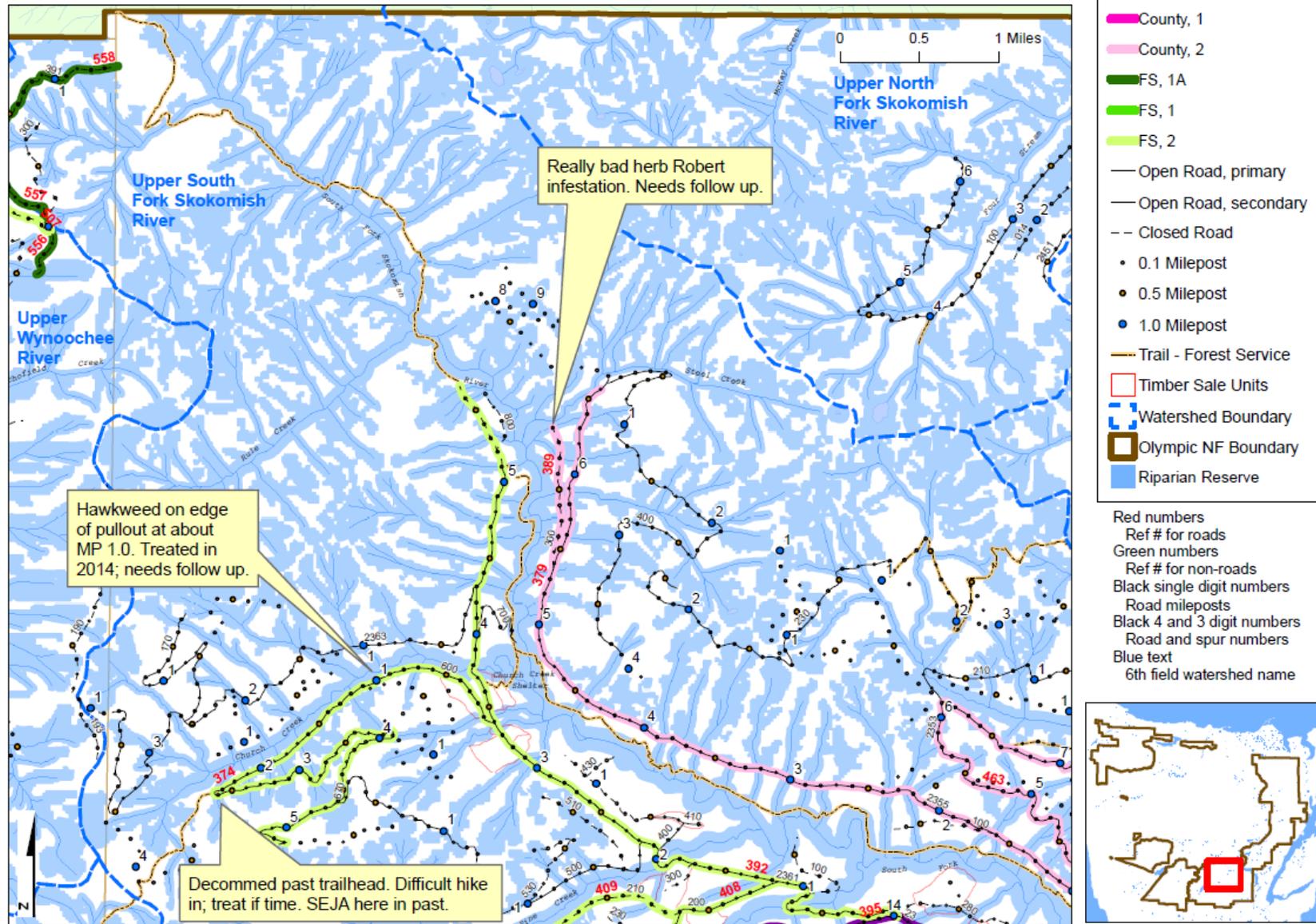
WORK PLAN MAPS

The following nine maps were created by Forest Service personnel and depict the various areas of National Forest land within Mason County where noxious weed control activities were prescribed in 2017. Callout boxes provide valuable information pertaining to species, degree of infestation, road closures, etc.



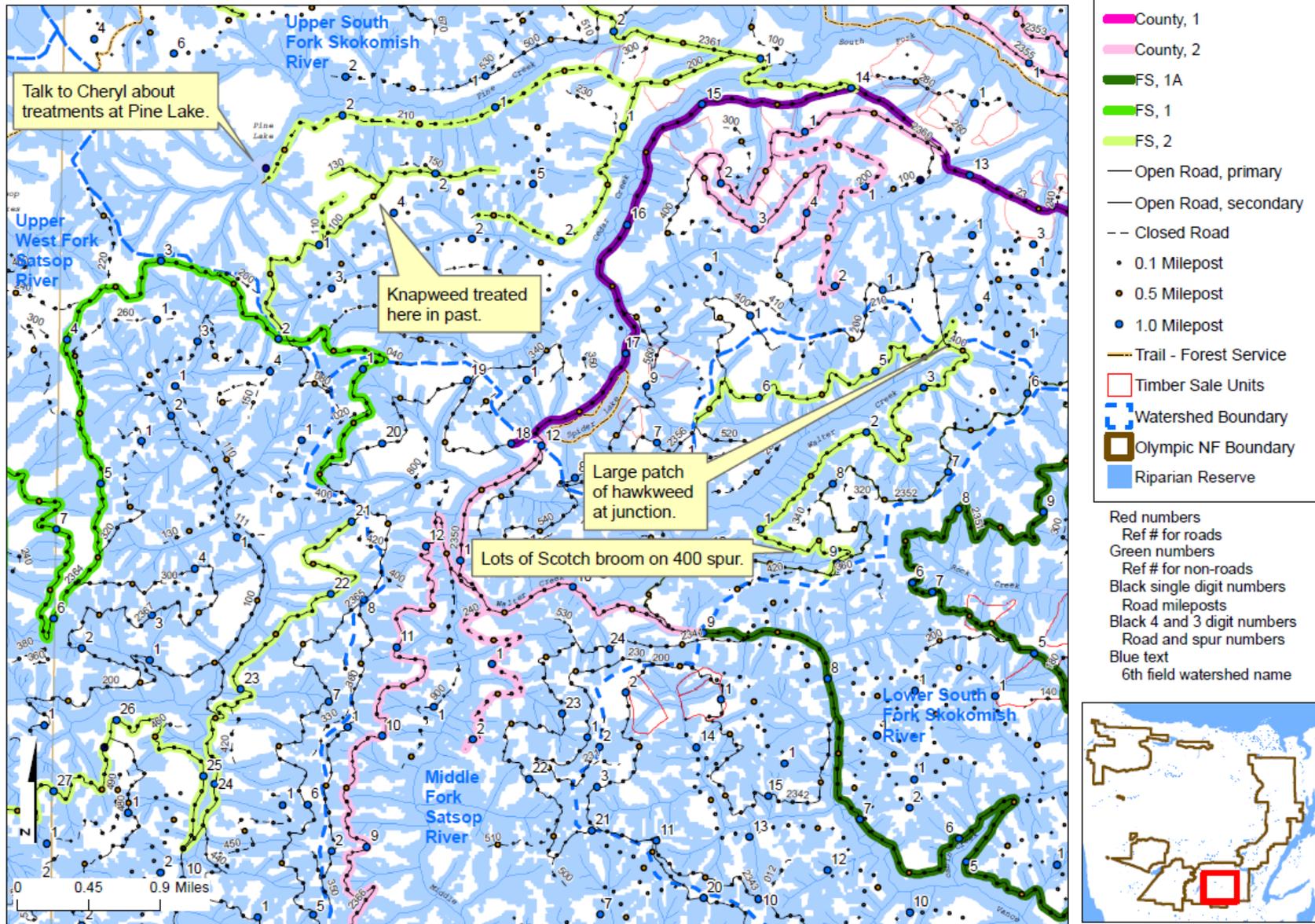
Olympic National Forest FY 2017 Invasive Plant Program

Map 30. Mason County: Upper South Fork Skokomish River



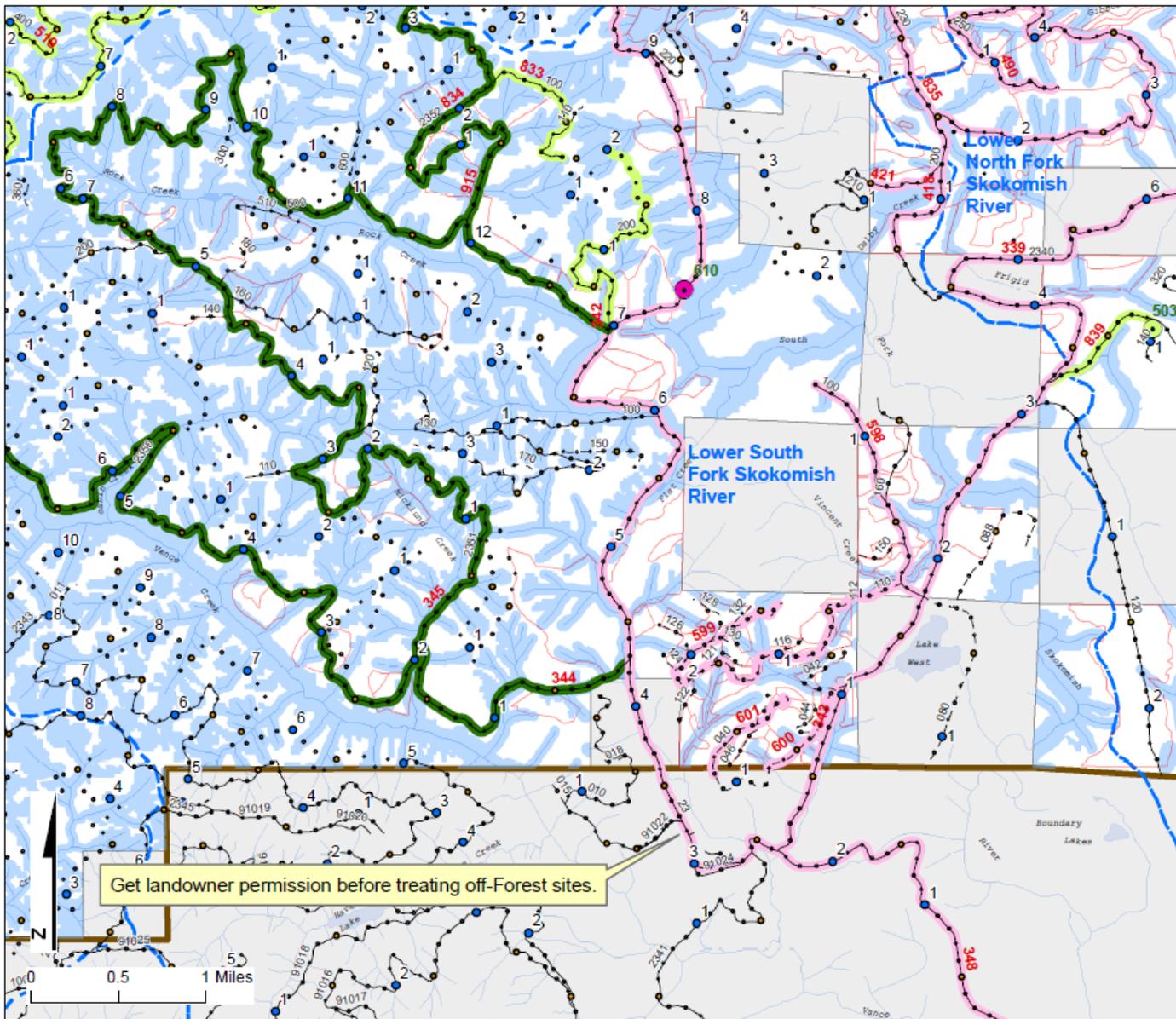
Olympic National Forest FY 2017 Invasive Plant Program

Map 31. Mason County: Satsop and South Fork Skokomish River



Olympic National Forest FY 2017 Invasive Plant Program

Map 34. Mason County: Lower South Fork Skokomish River



Crew, Priority

- █ County, 1A
- █ County, 1
- █ County, 2
- █ FS, 1A
- █ FS, 1
- █ FS, 2
- Open Road, primary
- Open Road, secondary
- - Closed Road
- 0.1 Milepost
- 0.5 Milepost
- 1.0 Milepost
- Trail - Forest Service
- Timber Sale Units
- Watershed Boundary
- Riparian Reserve
- Olympic NF Boundary

Red numbers
Ref # for roads

Green numbers
Ref # for non-roads

Black single digit numbers
Road mileposts

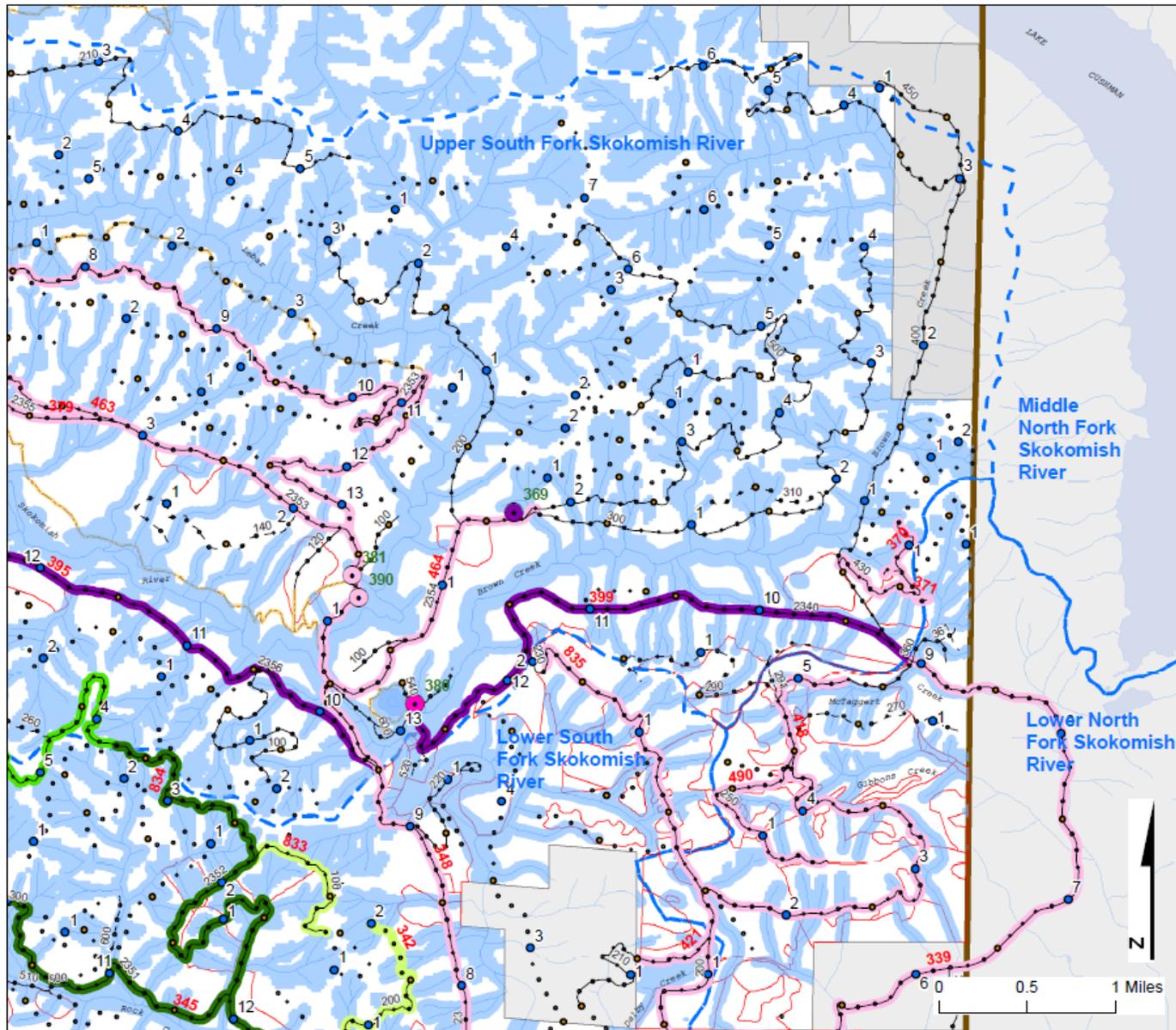
Black 4 and 3 digit numbers
Road and spur numbers

Blue text
6th field watershed name



Olympic National Forest FY 2017 Invasive Plant Program

Map 35. Mason County: North and South Fork Skokomish River



Crew, Priority

- County, 1A
- County, 1
- County, 2
- FS, 1A
- FS, 1
- FS, 2

— Open Road, primary
 — Open Road, secondary
 - - Closed Road

- 0.1 Milepost
- 0.5 Milepost
- 1.0 Milepost

— Trail - Forest Service

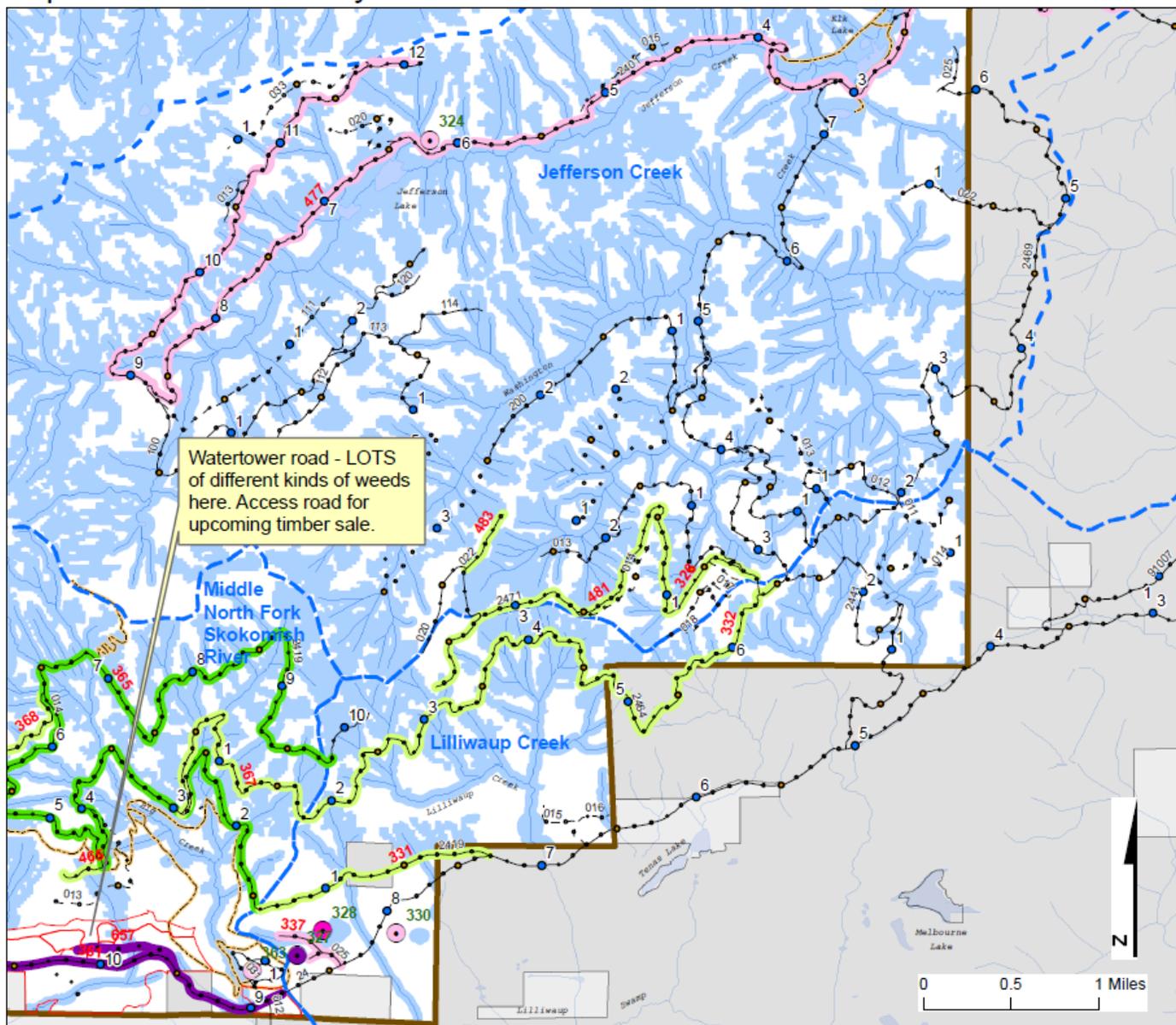
- Timber Sale Units
- Watershed Boundary
- Olympic NF Boundary
- Riparian Reserve

Red numbers
 Ref # for roads
 Green numbers
 Ref # for non-roads
 Black single digit numbers
 Road mileposts
 Black 4 and 3 digit numbers
 Road and spur numbers
 Blue text
 6th field watershed name



Olympic National Forest FY 2017 Invasive Plant Program

Map 37. Mason County: Jefferson Creek



Crew, Priority

- County, 1A
- County, 1
- County, 2
- FS, 1A
- FS, 1
- FS, 2

— Open Road, primary
 — Open Road, secondary
 - - Closed Road

- 0.1 Milepost
- 0.5 Milepost
- 1.0 Milepost

— Trail - Forest Service

□ Timber Sale Units

□ Watershed Boundary

□ Olympic NF Boundary

□ Riparian Reserve

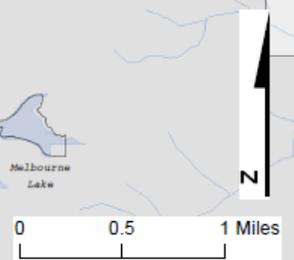
Red numbers
 Ref # for roads

Green numbers
 Ref # for non-roads

Black single digit numbers
 Road mileposts

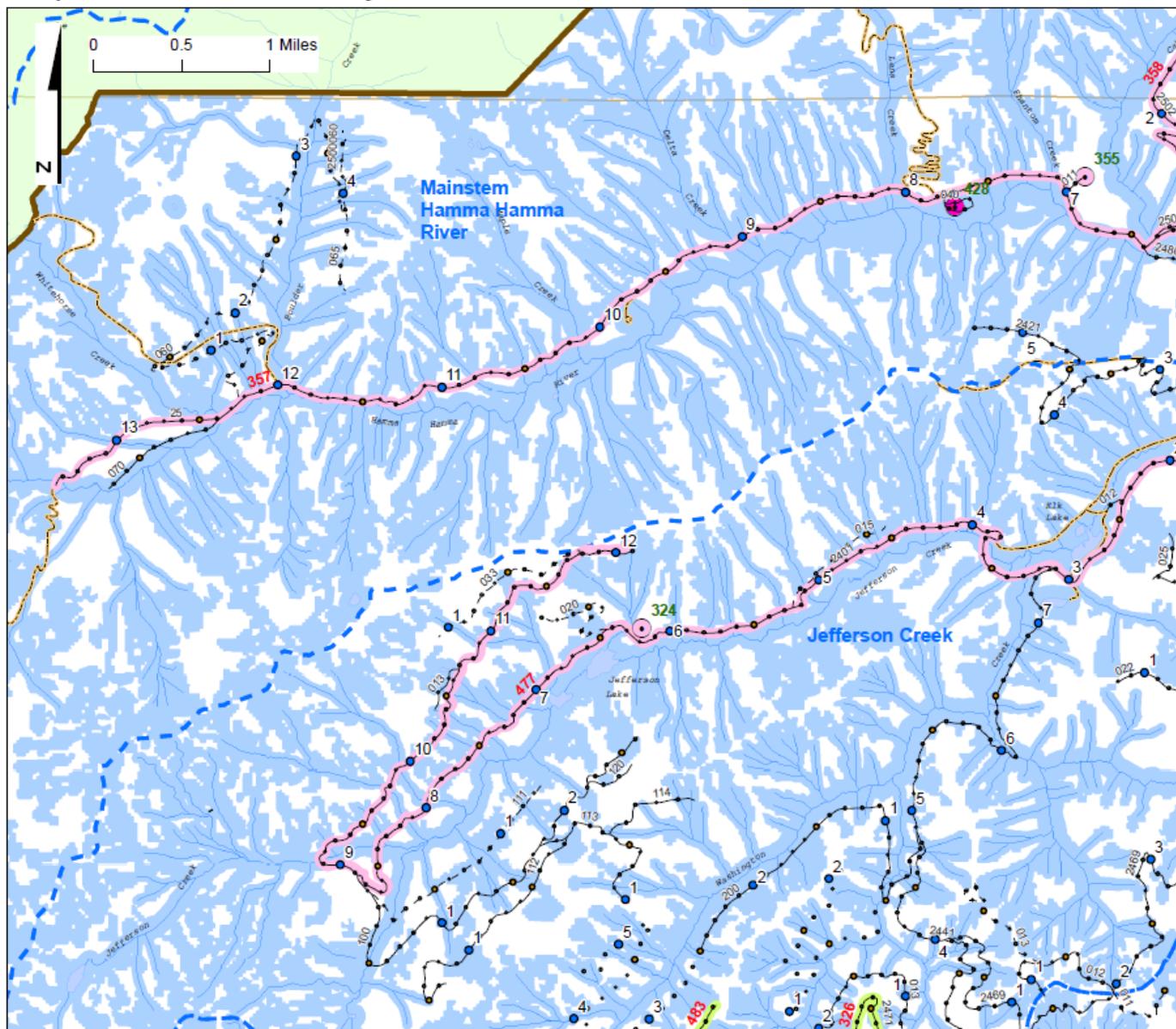
Black 4 and 3 digit numbers
 Road and spur numbers

Blue text
 6th field watershed name



Olympic National Forest FY 2017 Invasive Plant Program

Map 38. Mason County: Hamma Hamma West



Crew, Priority

- County, 1A
- County, 1
- County, 2
- FS, 1A
- FS, 1
- FS, 2

— Open Road, primary
 — Open Road, secondary
 - - Closed Road

- 0.1 Milepost
- 0.5 Milepost
- 1.0 Milepost

— Trail - Forest Service

- Timber Sale Units
- Watershed Boundary
- Olympic NF Boundary
- Riparian Reserve

Red numbers
 Ref # for roads

Green numbers
 Ref # for non-roads

Black single digit numbers
 Road mileposts

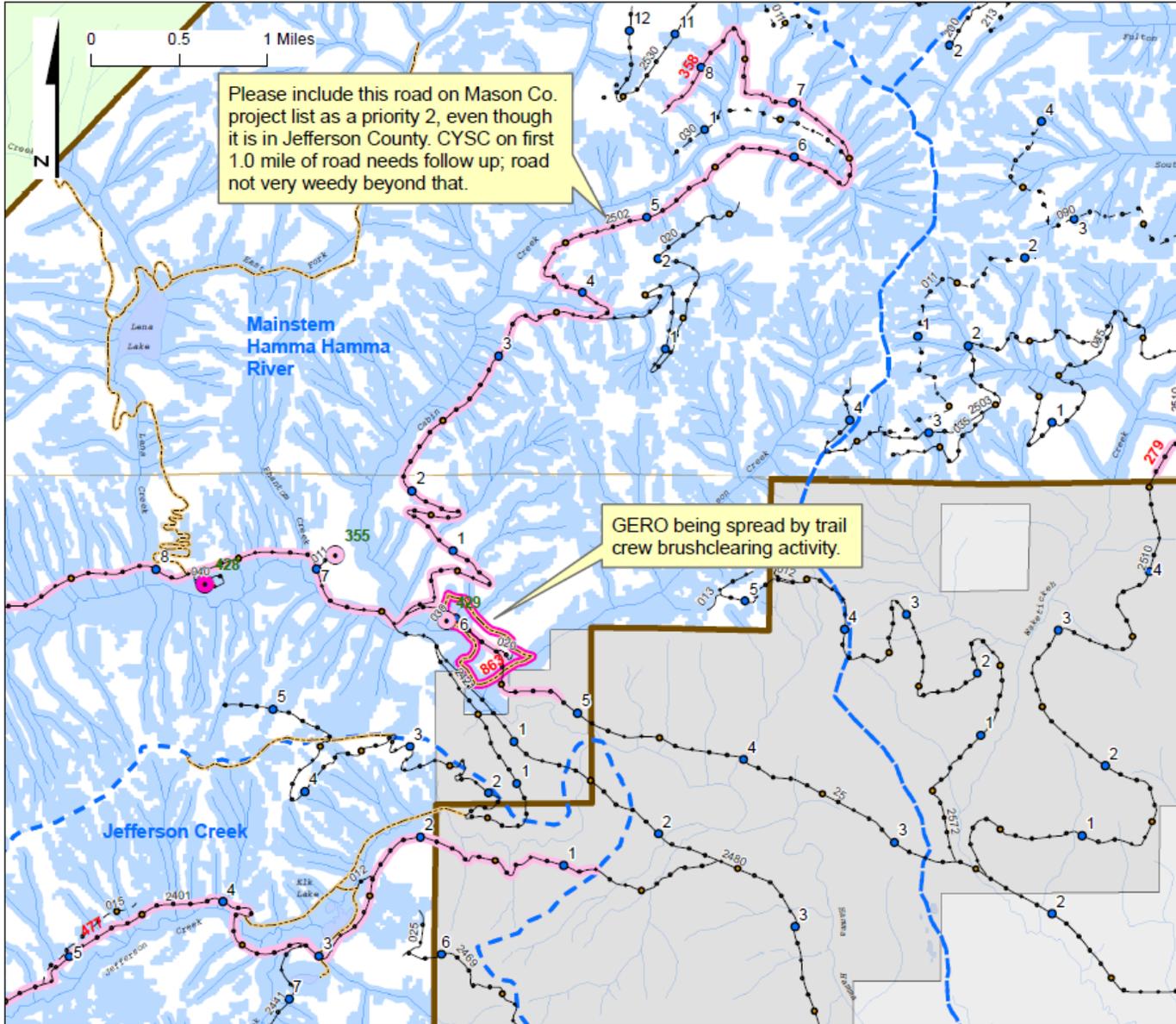
Black 4 and 3 digit numbers
 Road and spur numbers

Blue text
 6th field watershed name



Olympic National Forest FY 2017 Invasive Plant Program

Map 39. Mason County: Hamma Hamma East



Crew, Priority

- County, 1A
- County, 1
- County, 2
- FS, 1A
- FS, 1
- FS, 2
- Open Road, primary
- Open Road, secondary
- - Closed Road
- 0.1 Milepost
- 0.5 Milepost
- 1.0 Milepost
- Trail - Forest Service
- Timber Sale Units
- Watershed Boundary
- Olympic NF Boundary
- Riparian Reserve

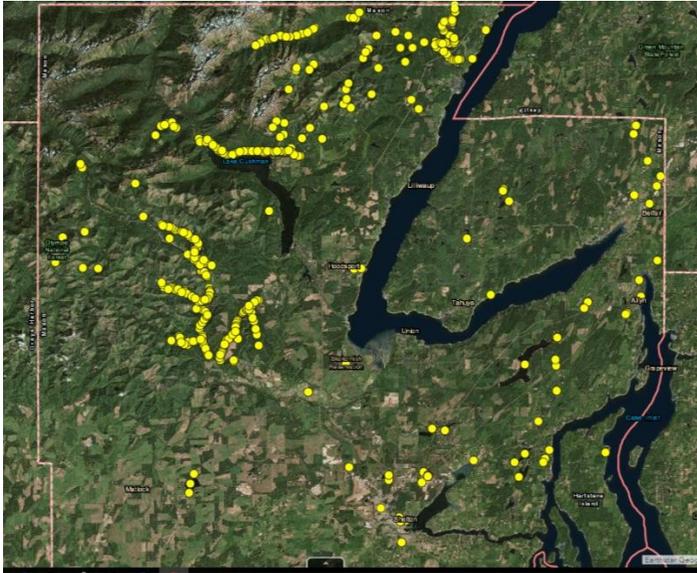
Red numbers
Ref # for roads
Green numbers
Ref # for non-roads
Black single digit numbers
Road mileposts
Black 4 and 3 digit numbers
Road and spur numbers
Blue text
6th field watershed name



POST-SEASON OBSERVATIONS

Nature of the Problem

Invasive species were well documented on USDA Olympic National Forest (ONF) lands in the mid 1990's. This documentation became the basis for the *Olympic National Forest Final Environmental Impact Statement and Record of Decision Beyond Prevention: Site Specific*



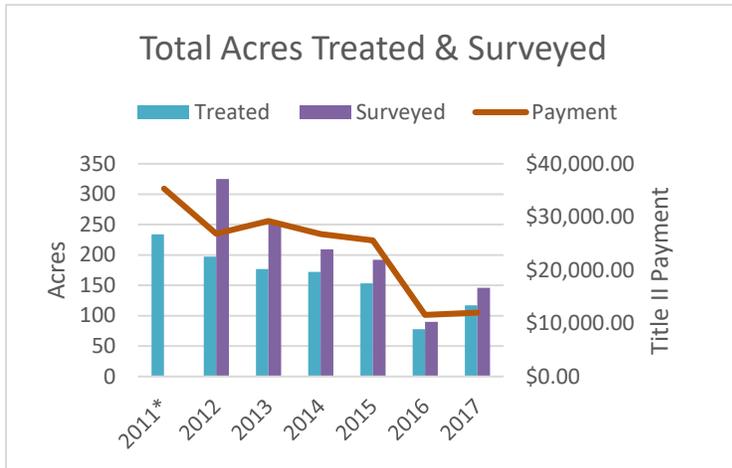
IForm data display, 01/2018

Invasive Plant Treatment Project (March 17, 2008). This document mapped and recorded the occurrence, distribution and abundance of invasive species across the Olympic National Forest. Today, this documentation is captured in other databases, including the Washington State Department of Agriculture, IForm database.

Currently, over 20 years since this initial documentation, the size and extent of invasive species populations is very different. Mason County Noxious Weed Control has extensively mapped noxious weed infestations, points and polygons for Spencer Lake's fragrant waterlily populations and knotweed

infestations throughout the county and continues to build it's ability to survey, and document, noxious weed infestations, utilizing current mapping tools. It is time for an update of this historic noxious weed information.

Since non-native species may be added to the Forest Service priority list each year as their presence and potential impacts are recognized, species such as St. Johnswort, yellow archangel and common mullein were not documented during the early surveys. In 2017, there were 44 **Treatment Priority 1 or 2** species on the Olympic National Forest Invasive Species List (Appendix E).



Since 2009, Mason County personnel, Forest Service employees, WCC crews and contract weed control personnel have been actively treating noxious weeds on sites identified in the ONF’s Integrated Weed Management Program as adopted in the 2008 Final Environmental Impact Statement (EIS). Survey efforts and the number of acres treated by MCNWCB staff have been closely tied to available funding through

Title II. Several factors can affect the “total acres treated”. Although funding is the most significant factor, size and density of the infestation also play a role. Small plants, such as herb Robert, demand greater time and attention to detail to excise individuals from the margins of the population. Effective long-term control, and eventual eradication, can only be accomplished with yearly revisits to the sites and a long term commitment to control.

Invasive Weed Populations

- Distribution and population densities of targeted weed species continue to be reduced on many sites with multi-year treatments.
- The most commonly recorded invasive species on ONF lands within Mason County are Scotch broom, tansy ragwort, herb Robert, Canada thistle, bull thistle or everlasting peavine.
- A species identified as *Clinopodium vulgare*, or wild basil, has been identified in the Hamma Hamma watershed and appears to be spreading rapidly. Characteristics of this species, in the Mint family:



Blooms: June- September
Habit: herb
Duration: perennial
Origin: Introduced from Europe
Distribution: Occurring west of the Cascades crest in Washington; British Columbia south to Oregon, east across North American in scattered states and provinces.
Habitat: Disturbed areas at low elevation



- Himalayan blackberry along FS Rd. 2400 in the Lake Cushman area is expanding. A comprehensive plan for treatment should be developed that will incorporate potential impacts to treatment efficacy, i.e. high visitor vehicle use, early accumulation of dust on leaves. Consideration should be given to brushing early in the season with a fall application of herbicide on the regrowth.



- St. Johnswort is increasing in abundance and distribution. *Hypericum perforatum* is a Washington state Class C Noxious Weed and was listed as a Treatment Priority 2 species in 2017. MCNWCB staff treat this species in rock sources and in high priority areas, such as trailheads, campgrounds, and ecologically sensitive areas. Populations along a majority of roadsides are partially treated when time and resources are available.
- Spotted knapweed, located on the rock bluff above Lake Cushman, remains a control challenge. Accessibility continues to limit efficacy at the site. Aminopyralid was utilized at the site this year and will require followup treatments. Climbing apparatus would allow an applicator better access to the infestation.



Spotted knapweed blooming at Lake Cushman, August 04, 2017

- The infestation of Scotch broom along Forest Service road 2500 was mowed prior to the 2017 field season. In August during a meeting to utilize a WCC crew in the area, DNR reported plans to undertake a roadside herbicide application later in the season. It was agreed that crews would work outside of the spray zone and target large plants in the transition to forest or a distance greater than 15' from the road edge.
- The majority of the herb Robert sites were treated multiple times during the 2017 field season, with aminopyralid as the primary active ingredient utilized. Many of the treated areas were re-vegetated with blue wildrye (*Elymus glaucus*) in October and November.
- Herb Robert infestations at the Olympic National Park (ONP) boundary and along State Route 119 continue to re-infest ONF land in the Lake Cushman area. The full extent of the infestation within the Park has not been identified. Additional herb Robert plants were located within the Cushman pit, likely the result of materials from offsite projects being disposed of at that location. Herb Robert was the primary target for noxious weed treatments in the vicinity of the Olympic Forest Collaborative's Big Creek Skokomish timber sale.

Survey and Treatment

- The required legal notice appeared in the May 04, 2017 edition of the Mason County Journal (Appendix G).
- In 2016, the Olympic National Forest approved the active ingredient aminopyralid for use on Forest Service lands. This year, utilizing a typical mixing rate of 0.13%, Mason County Noxious Weed Control personnel utilized Milestone on a majority of treatment sites. Since Milestone can provide extended control, this characteristic should be an effective tool for managing herb Robert infestations on the Forest.
- This year, there were 7 priority 1A projects, all of which received at least one treatment. Of the 5 priority 1 projects, treatments were accomplished on all but the Lena campground. In addition, there were 37 priority 2 projects with work accomplished on 12.
- The first treatment utilizing herbicide this year was performed on May 22nd and the last was on October 25th.
- Travel to assigned treatment project areas provided an opportunity for informal surveys. No new Class A, or Class B "designate" species were located during the 2017 season on the ONF.
- The MCNWC continues to utilize Integrated Vegetation Management (IVM) to develop site specific treatments.

- Considering volumes of herbicide utilized, triclopyr is the herbicide most widely utilized for treatment by the MCNWCB personnel on ONF land. In 2017, 70% of the 4.03 gallons of herbicide utilized as part of this project were a triclopyr formulation. Additional products utilized included glyphosate (20%), imazapyr (0.5%), and aminopyralid (9.1%). Imazapyr was utilized in pit treatments and an infestation of reed canarygrass.

- Reed canarygrass is expanding in areas along the 2340 road. Treatments were initiated this year utilizing Polaris.



Reed canarygrass along FS Rd. 2340 east of Brown Creek campground

- Pits continue to be a high priority for inspection and treatment. Three pits were identified as priority 1A sites on the 2017 project list.
- Treatment of campgrounds and trailheads remains a high priority due to the risk of introduction of new species and their potential for spread. Campgrounds were busy this year and, in several instances, planned treatments could not be accomplished due to site occupancy.
- Contrary to the cool, wet weather of June 2016, above average temperatures and the lack of precipitation in June, July and August 2017 resulted in dry, dusty conditions throughout much of the treatment window.
- The Mint Meadow was a priority 1 treatment area in 2017. Treatment took place on July 26, 2017.
- During 2017, multiple treatments were made at several of the known herb Robert sites. In addition, manual removal was undertaken when there were a small number of plants or the weather was not suitable for herbicide use. These practices greatly diminished the plants ability to produce seed and ultimately the long term viability of the population.

- Treatment of common tansy has been accomplished with Triclopyr in the past with minimal efficacy. This year, treatments were made utilizing aminopyralid at several locations.

- Many areas where extensive road decommissioning has taken place have not been assessed for noxious weed infestations. These less accessible locations could benefit from future inventory to ensure that unknown infestations do not recolonize other areas.



Treatment of common tansy (*Tanacetum vulgare*) at FS Rd. 2300/2350 junction

Data Collection/Mapping

- Full Color 8 ½ by 11 inch maps were provided by Forest Service personnel with site reference numbers and call-out comments marked on them to identify issues of concern for a particular area. These were very useful and are found on pages 14-22 of this report.
- New personnel were tasked with completion of FACTS forms in 2017. One crewmember was assigned the responsibility for completion of paperwork.
- The field going office, aka the green bag, consists of a notebook which contains the work plan, maps, forms and a field safety notebook which contains emergency contacts, spill plan and copies of herbicide labels and Material Safety Data Sheets (MSDS). The overall project map hangs on the office wall and daily priorities are established based on available field time and weather.
- Field personnel reviewed FACTS forms daily, entered accomplishments into an excel spreadsheet and submitted electronically transmitted copies to the Forest Service on a regular basis.

Education

- MCNWCB personnel set up and staffed educational booths at Matlock Old Timer's Fair, Washington State University (WSU) Master Gardener's Plant Sale, Oakland Bay Day, Tahuya Day, Allyn Days, and Oyster Fest (Appendix D). Informational flyers and booklets were handed out and staff was on hand to answer questions from the public about noxious weeds.



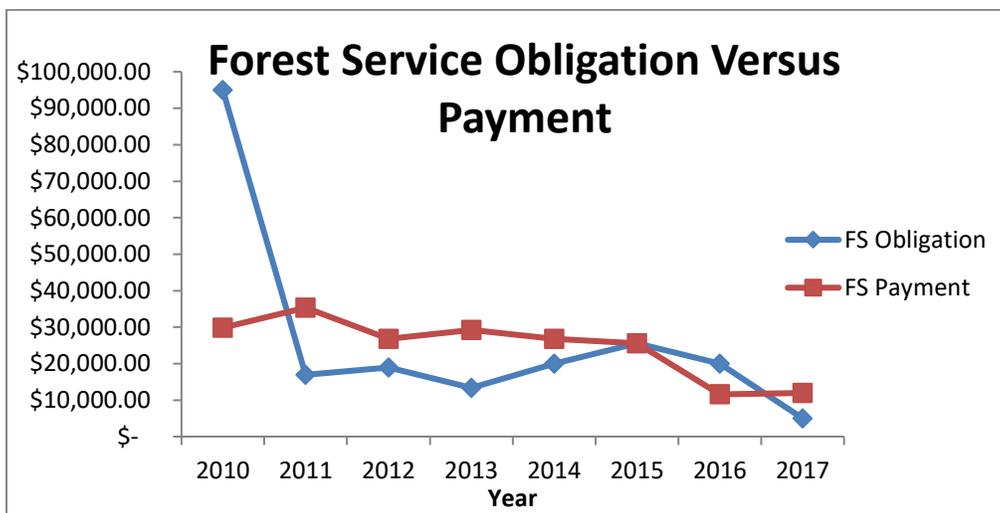
MCNWCB booth at Oysterfest 2017

RECOMMENDATIONS

Future Direction of the Project

After the 2017 billing, the balance in the Participating Agreement between the USDA Forest Service, Olympic National Forest and the Mason County Noxious Weed Control Board is \$1,432.85.

The Olympic Peninsula Resource Advisory Committee (RAC) met on September 20, 2017 to review proposals and provide recommendations for future Title II funding. The Forest Supervisor approved the RAC's recommendation to provide \$15,560.00 to continue the Forest's collaboration with the Mason County Noxious Weed Control Board.



Efficient use of financial resources continues to be a cornerstone of the Mason County Noxious Weed Control program. In Mason County, and other Olympic Peninsula counties, significant progress has been made during the past eight years in the reduction of noxious weeds on ONF lands. It will be imperative for the National Forest to secure future funding to sustain the progress which this cooperative project has achieved.

The successful adoption of the 2008 EIS, which authorized herbicide use throughout the ONF, allows efficient and more effective treatment of larger infestations. We will continue to consider all control methods, but the most effective treatments for a small MCNWCB crew will likely utilize herbicides on a regular basis.

The MCNWCB coordinator has extensive knowledge of the project area, infestation locations, plant identification and continues to gain expertise in best treatment methods. Staff have provided a relatively inexpensive, locally based work force with county wide jurisdiction and long term commitment. However, the MCNWCB program is not equipped to carry out large-scale treatment operations over a large area or many miles of extensively infested roadsides or those requiring specialized all terrain application devices. The expertise of the Weed Board

staff is most efficiently utilized to respond to, and treat new infestations, follow up application to contractor applications during the same treatment year and treat those moderately sized projects which can be efficiently accomplished with backpack spray methods. As the “closest forces” entity, staff can respond quickly to high priority projects, treat new infestations and can work within the constraints of other activities taking place on National Forest lands.

In 2017, MCNWCB staff continued their efforts to revegetate herb Robert treatment sites. Blue wildrye (*Elymus glaucus*) seed, an ONF native grass, was supplied by the Forest Service and utilized as part of an Integrated Vegetation Plan. A majority of sites seeded in 2016 supported a relatively dense *Elymus glaucus* cover in the spring of 2017. Germination for the 2017 season will be assessed in early spring 2018. This seeding provided competition for the germinants of herb Robert, a prolific winter annual and other invasives. Observations suggest that herb Robert expends additional energy growing taller to produce flowers above the competing grass. The sites seeded this year will continue to be monitored in the 2018 field season and treated as necessary.

Efficient treatments and long term control of herb Robert in the Lake Cushman area, and perhaps elsewhere, could benefit from an agreement between the ONF and the Olympic National Park for the control of invasive species.

Early detection is the key to preventing large and costly noxious weed infestations from developing on the forest. All Forest Service staff, including natural resource specialists and timber, recreation, and engineering staff will continue to be instrumental in recognizing and reporting early invaders. Concise location information can often result in same year treatments.



05/22/2017 Photos show woody debris and campground signage deposited at the Cushman pit. The old signage from the Big Creek campground likely introduced herb Robert into this area. Pit inspections and treatment should continue to be a high priority in response to activities which may introduce new species.

A majority of required monitoring was accomplished by USDA ONF personnel in 2017. Monitoring functions to provide feedback to facilitate and prioritize re-treatments and locate new sites since visitation is often during a different time of the growing season. Recommendations for prioritizing areas for retreatment the following year are always noted on each FACTS form.

Stable funding provides improved year-to-year weed control continuity within the ONF and an improved weed control program on other Mason County lands that are adjacent to, or indirectly connected to, the Forest.

Since noxious weeds know no boundary, active participation and collaboration of landowners and citizens is essential to achieving long term control of noxious weeds. In 2018, the MCNWCB plans to continue its efforts to unify Mason County, the Olympic National Forest and others for the mutual goal of stopping the spread of invasive plants in Mason County.

Survey and Treatment

As prioritized by the Forest Service, our focus will continue to be treating known sites. However, many areas of the Olympic National Forest within Mason County have not been surveyed or treated within the past 3-5 years. If programmed for survey, historic survey data could be updated and potential EDRR identified. Walking roads and corridors provides a more comprehensive survey and allows surveyors to see small plants, such as herb Robert, which would be missed while driving.



Crew treating herb Robert at entrance to Big Creek campground and along SR 119

Treatment of an increasing number of herb Robert sites will require multiple treatments per season for long term control. Treatments in campgrounds and at trailheads should remain a priority. A decline in “acres treated” will be noted as a result of this preferred treatment methodology.



The use of aminopyralid has provided an additional tool for the treatment of herb Robert



The Bear Gulch campground was severely damaged by a November 2017 storm. Nature, and the ensuing human activities, will restart the invasive species control process in this area.

Documentation

The FACTS form (Appendix H), pit Inspection forms and monitoring forms have reached a stable, consistent format.

Yearly visits will provide “Early Detection, Rapid Response (EDRR), especially to high priority sites such as campgrounds. Visitor use areas which have undergone extensive renovation or construction are of greater risk for introduction of new species. These areas should continue to receive high priority for survey and treatment.

In 2017, the Mason County Noxious Weed Control program communicated with several entities to continue control within, and adjacent, to National Forest lands. A planning session with other land managers, such as Washington State Department of Natural Resources, Tacoma City Light, and Olympic National Park to identify needs, combine resources and formulate more cross boundary invasive plant control projects could be a valuable tool in protecting National Forest resources from the impacts of invasive species.

Together WE can prevent the spread of noxious weeds!



The Scotch broom at the ecology block wall on FS Rd 2500 was no match for the WCC crew led by Brennan Moores (previous WCC crewmember on crew assigned to MCNWCB in 2013)

2017 PROTOCOLS

Team and Project Dates

Treatment continues to be the focus of the project on ONF lands. Patricia Grover, MCNWCB coordinator, and field assistants Keith Reitz, Aaron Kirby, and Justin Yim performed and documented treatments. Fieldwork began in June 2017 and continued through October 2017.

Invasive Species Recorded

Treatment and surveys focused on Class A and B-designate weeds on the Washington State Noxious Weed List (Appendix F), and additional species that are of concern to the Forest Service (Appendix E). In most cases Class B non-designate, Class C, and unlisted non-native weeds were only documented when an infestation was in a site of particular concern (e.g. a Botanical Area), when the infestation was of notable size, or when a new species was found. Exceptions were made for especially invasive species, such as herb Robert, which can threaten undisturbed areas. Treatments were not intended to target all non-native species.

Road Survey and Treatment **(see Appendix B for summary)**

The project focus was on treatment of known infestations in specific project areas identified by the Forest Service, often including sites that had received treatment in the past. Detection and treatment of new infestations was also a priority, especially if new sites were found enroute to known sites.

- a. Most known sites are roadside. Typically, at least 10 feet on both sides of the road was treated or surveyed. The distance treated/surveyed was recorded in the field and the area treated/surveyed was calculated using the following formula:

$$\frac{\text{miles surveyed} \times 5280 \text{ ft/mi} \times 10 \text{ ft/roadside} \times 2 \text{ roadsides/survey}}{43560 \text{ ft}^2/\text{acre}} = \text{acres surveyed/treated}$$

- b. Trailheads, campgrounds, parking areas and gravel pits were surveyed on foot and area surveyed or treated was estimated.
- c. Herbicide treatments were applied based on guidelines established in the 2008 EIS.
 - i. Foliar herbicide applications were generally made using 1.5% Element 3A (triclopyr) and 0.5% Competitor (surfactant). Areas adjacent to water required a 5' buffer. In these areas a product containing glyphosate was utilized. Use of aminopyralid (Milestone) was initiated this year.
 - ii. A legal notice listing all sites under consideration for herbicide treatment by MCNWCB staff or ONF personnel was published in the Shelton-Mason County Journal on May 12, 2017 (Appendix G). Herbicide applications were carried out between May 22, 2017 and October 25, 2017.

- iii. On-site notices (Appendix G) were posted prior to treatments and left in place for at least 24 hours after treatment. Treatments in high-use areas such as campgrounds were avoided during busy times (near weekends or holidays) and Forest Service recreation personnel were contacted prior to commencing treatment.

Equipment

MCNWCB backpack sprayers were calibrated at the beginning of the field season. The protocol utilized and results are found in Appendix I.

Data Collection

A unique “Reference Number” identifies each treatment area and the corresponding data.

Forest Activity Tracking Sheet (FACTS)

FACT sheets are used to record treatments in each Reference Number. A completed form is in Appendix H.

Invasive Plant Inventory for Rock Sources, Olympic National Forest

The Rock Source Survey is used to track the suitability of quarry materials from both public and private sources to meet the Forest Service “Weed Free” standard for construction materials.

Olympic National Forest Invasive Plant Treatment Monitoring

Monitoring treatment forms were used to record the efficacy of a treatment on a site. Comment for future treatments were also written on the forms.

NRIS

No data was collected for new sites for inclusion in the NRIS database. New sites that were found and treated were recorded on FACTS forms as EDRR (Early Detection Rapid Response) sites.

Data Reporting

Office staff reviewed *FACTS* forms, Rock Source Survey forms and Olympic National Forest Invasive Plant Treatment Monitoring forms and submitted copies to the Forest Service regularly during the field season. The originals were retained in the Mason County Noxious Weed Control Board office. More detailed data is included in the Appendices to this report, as described below.

Appendix A is the Project Area list supplied by the Forest Service.

Appendix B is a master list of reference numbers treated during the 2017 field season. It lists the area of treatment, by road, or other project area, method of treatment, weed species treated, acres treated, and quantity of herbicide used.

Appendix C is a summary of rock source treatments.

Appendix D showcases the MCNWCB participation in various Mason County events.

Appendix E contains the 2017 Forest Service Treatment Priority List.

Appendix F contains the 2017 Washington State Noxious Weed List, which is updated annually according to WAC Chapter 16-750. Under RCW Chapter 17.10 all non-federal landowners in the state are responsible for controlling or eradicating any listed noxious weeds on their property. This same law provides for the formation of the County Noxious Weed Control Boards, and thus the weed control program in Mason County that is supplemented under this project. Federal agencies are required to work with local agencies to meet or match local weed control standards under the Federal Noxious Weed Act amended in 1994.

Appendix G contains the public notice published in the Shelton-Mason County Journal and an on-site posting notice.

Appendix H contains an example of a completed *FACTS* form

Appendix I contains the Backpack Sprayer Calibration protocols

Appendix A
Forest Service 2017
Mason County Project List
(ordered by priority)

Olympic National Forest Invasive Plant Program
2017 Project List
Mason County

Priority 1A = Treatment Mandatory
Priority 1 = Treatment High Priority
Priority 2 = Treatment Discretionary
Priority S = Survey

Ref #	2017 Job Code	2017 Work Crew	Priority	6th Field Watershed Name	Watershed County	Site Name	Road #	BMP	EMP	Total Miles	Hawkweed	Knapweed - treat late summer	Knotweed	Big X: GERO >0.1 acres & CC>2. P = smaller amounts of GERO	Other weeds of concern	Comments
327	Title II	County	1A	Lilliwaup Creek	Mason	Cushman Pit	2400025	0.2	0.2	0						CYSC biggest problem, but peavine, bull thistle, and tansy ragwort also need to be eradicated. Much improved from a few years ago, but needs follow up.
344	NFYW09	FS	1A	Lower South Fork Skokomish River	Mason		2350000	0	9	9	X			X	LAGA	Skok TS units adjacent to road. Yellow hawkweed abundant along road edges on 2350 at MP 10.5 – 11.5, which is in Satsop (Ref # 591). Lower part of 2350 (this Ref #) is in L SF Skok WS so survey for and treat this weed if found on this section of road - small amounts reported in
345	NFYW09	FS	1A	Lower South Fork Skokomish River	Mason		2351000	0	12.9	12.9	X			X		Skok TS units adjacent to road. BRTE found on exposed gravel slope on and just past saddle -MP 6.0. CIAR, CIVU, SEJA, HYPE. Yellow hawkweed (HICA) along road edges, esp on south side of loop. GERO, many other weeds, found along road edges near junction with 2300200.
361	Title II	County	1A	Middle North Fork Skokomish River	Mason		2400000	8.8	14.5	5.7		X		X		Skok TS units adjacent to road. GERO becoming a problem, knapweed also. CIAR, CIVU, CYSC, HYPE, SEJA, PHAR, TAVU. Also treat Mt Rose TH and Bear Gulch Picnic Area as part of this project area. Tacoma Power will be re-building these sites in very near future. Some parts
369	Title II	County	1A	Upper South Fork Skokomish	Mason	Brown Creek Quarry	2354000			0	X			X		SF SkokTS. At junction of 2354 and 2354300 road. Treated 2011 - 2015: Hawkweed, LALA, CIVU, SEJA, GERO, CYSC.
394	Title II	County	1A	Upper South Fork Skokomish	Mason	V1043 Quarry	2360100	0.3	0.3	0						Skok TS rock source. Located at 2360100 spur, MP 0.3 - road currently ends at quarry. Very few weeds here, but common tansy was found here in 2009 (pulled at that time). 2016: Inspect and treat
395	Title II	County	1A	Upper South Fork Skokomish	Mason		2300000	9.5	18	8.5	X					SF Skok TS. Units adjacent to road. SEJA, CYSC, DACA4, Road to Spider Lake. Mystery hawkweed (H. umbellatum?) found in 2010 at jxn of 23 x 2356 on island in road. Not very weedy (relatively speaking...), monitor and treat as time allows.
399	Title II	County	1A	Upper South Fork Skokomish	Mason		2340000	9.1	12.9	3.8					Burdock	SF Skok TS. Haul route. Road closest to Brown Creek CG is highest priority - burdock becoming a problem, as well as other weeds. Other parts of road segment lower priority, but treat as time allows.
657	Title II	County	1A	Middle North Fork Skokomish River	Mason	Wattertower road	2400035	0	0.5	0.5				X		This road will be reopened and used for access to timber sale units. Very weedy last time I was on it (2015).
834	NFYW09	FS	1A	Lower South Fork Skokomish River	Mason		2352000	0.0	3.7	3.7				p		Skok TS units adjacent to road MP0.0 to MP3.2 (jxn with 2352100) GERO, CIVU, SEJA, CIAR, CYSC. Treated 2014, 2015.
328	Title II	County	1	Lilliwaup Creek	Mason	Mint Meadow	2400028			0						HYPE, CIAR4, CYSC4, PHAR. Coordinate with Betsy Howell for treatments in early June, and a second follow up treatment. 360-956-2292

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365	NFVW09	FS	1	Middle North Fork Skokomish River	Mason		2419000	1.4	9.8	8.4					Lots of peavine and SEJA. Also CIAR, CIVU, CYSC, HYPE. Access to Mt Ellinor and Mt Washington THs. Treated in 2016 - needs follow up in 2017.
380	Title II	County	1	Upper South Fork Skokomish	Mason	Brown Creek CG	2340000			0			X	Burdock	Burdock becoming a problem at campground - it seems to be becoming more prevalent.. GERO in campground, as well as at entrance. Many other weeds as well. This Ref # includes the 540, 543, and 600 spurs, which are all roads in the campground.
428	Title II	County	1	Mainstem Hamma Hamma River	Mason	Lena CG	2500040			0			p	Burdock	Treated 2011 - 2015:CIAR,CIVU, HYPE, ARMI, CYSC, GERO treated in sites 4, 6, 10 in 2012. Also ARMI2, CIAR4, HYPE, PHAR3, SEJA
504	NFVW09	FS	1	Upper South Fork Skokomish	Mason	Pine Lake	2361210							Reed canary grass	Ongoing restoration project with very specific treatment plan needs follow up, but do not treat unless you've talked to Cheryl. Small patches of CIAR, SEJA also present.
585	NFVW09	FS	1	Upper West Fork Satsop River	Mason	23 road rock stockpile	2300000	26.2	26.2	0					2300000, MP 26.2. Falls in reference # 523. If coming from the Skok, this is about 1.7 miles past the switchback junction with the 2368 road. Loaded with weeds in 2010, including peavine, Canada thistle, Scotch broom, tansy ragwort, common tansy.
610	Title II	County	1	Lower South Fork Skokomish River	Mason	23 Road deep patch borrow site	2300000	7.5	7.5	0	X				2300000, MP 7.5. Very important to monitor and treat in 2012. Disposal site for Fir Creek AOP, which was a yellow archangel site. Unclear if contractors on that project followed mitigation measures to prevent spread LAGA. Also, yellow hawkweed reported as being treated here in
699	NFVW09	FS	1	Upper West Fork Satsop River	Mason		2364000	0	8.1	8.1	X				Hawkweed found and treated in 2011 and 2012. MP 2.1 - 2.3. Also SEJA, other weeds along road that need treatment. Treated in 2013 and HICA not found. Treated 2015 and CESTM found.
863	Title II	County	1	Mainstem Hamma Hamma River	Mason	Hamma Hamma CG Loop Trail	2500000						X		Pat Grover reported GERO is present along trail and was being spread by trail maintenance activities in 2013. Trail # 128.
324	Title II	County	2	Jefferson Creek	Mason	Jefferson Creek Pit	2401000	3.2	3.2	0					quarry located at MP 3.2 of 2401 road. Contractor treated in 2010. They found CIVU, CYSC4, HYPE, SEJA, TAVU. Treated again in 2011 - 2015, found and treated small amounts of weeds. 2017: Reinspect and treats as necessary.
326	NFVW09	FS	2	Jefferson Creek	Mason		2471000	0.1	2	1.9		X			Dense peavine on this road. CEBI2 at MP 1.3 - 1.5. CIVU and SEJA also present. Treated 2009 - 2011, 2015. 2017: Reinspect and treat as necessary.
330	Title II	County	2	Lilliwaup Creek	Mason	Lilly TS, Unit 3	2400000			0			X		Major infestation of GERO in this unit. Due south of MP 8.0 of the 24 road (east of Big Creek CG).
331	NFVW09	FS	2	Lilliwaup Creek	Mason		2419000	0	1.4	1.4					CIVU, SEJA, CIVU, CYSC, LALA, HYPE Last treated 2011.

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Ref #	2017 Job Code	2017 Work Crew	Priority	6th Field Watershed Name	Watershed County	Site Name	Road #	BMP	EMP	Total Miles	Hawkweed	Knapweed - treat late summer	Knotweed	Big X: GERO >0.1 acres & CC>2. P = smaller amounts of GERO	Other weeds of concern	Comments
332	NFVW09	FS	2	Lilliwaup Creek	Mason		2464000	1.8	6.5	4.7						CIVU, SEJA . ROW questions?
336	Title II	County	2	Lilliwaup Creek	Mason		2400025	0	0.3	0.3			X			Few canes of knotweed found here in past, none reported in 2011 - 2012; monitor site and follow up as needed. Old road to Mint meadow.
337	Title II	County	2	Lilliwaup Creek	Mason		2400026	0	0.3	0.3						walk in
339	Title II	County	2	Lower North Fork Skokomish River	Mason		2340000	3.4	9.1	5.7				X		Skok TS units adjacent to road; major haul route for sale. GERO treated here in 2012 and 2013. Also, CIAR4, CYSC4, SEJA, TAVU, CIVU, CYSC4, HYPE, RULA. Some parts of this road go through non-FS land - please notify landowners of weed treatments if you plan on treating
342	NFVW09	FS	2	Lower South Fork Skokomish River	Mason		2300200	0	2	2	X			X		Decommed in 2013. Large dense infestation of GERO was in ditches and expanding into forest and clearings from MP 0 - 0.3. SEJA scattered all along road, especially upper segments. HICA10 is also along edges of 23 road at junction. MP 0 - 0.3 needs monitoring and follow up;
343	Title II	County	2	Lower South Fork Skokomish River	Mason		2340000	0	3.4	3.4				p		Follow up on GERO just after high steel bridge. Monitor and treat other parts of road segment as time and access allows. SEJA, HYPE, TAVU, CYSC, CIAR, DACA, PHAR.
348	Title II	County	2	Lower South Fork Skokomish River	Mason		2300000	0	9.5	9.5	X	X		p		Skok TS units adjacent to road. Yellow hawkweed at MP 3.0 - 3.5 (just before FS boundary), MP 6.8 - 7.2 (jxn w/ 200 spur), MP 8.8 - 9.0 (just before Oxbow CG entrance). GERO seen Feb 2011 on western rd shoulder just past 2350 jxn; approx MP 4.4. CEDE5 reported as being
355	Title II	County	2	Mainstem Hamma Hamma River	Mason	Hamma Hamma Pit	2500011	0.2	0.2	0					mullein	Includes 2500011 road, a short spur road at MP 7.0 of the 25 road; this pit is located at the end of this spur. Treated 2010 - 2015: CIAR, CIVU, CYSC, LALA, PHAR, ARMI, RUAR, SEJA, HYPE, VETH, DIPU, HYPE, RULA. 2016: Continue annual treatments.
357	Title II	County	2	Mainstem Hamma Hamma River	Mason		2500000	2.8	13.5	10.7			?	p		GERO at Lena Lake TH, CYSC4 main problems. CIAR, DACA6, CIVU, CYSC, SEJA, LALA4, HYPE. GERO highest priority. Database also shows knotweed at MP 7.3 (between 011 spur and Lena Cr CG) but this doesn't seem right. CYSC on this road would be a good rainy day
358	Title II	County	2	Mainstem Hamma Hamma River	Mason		2502000	0	8.3	8.3						Treated 2013; monitor and treat CYSC at MP 0 - 1.0. Treat rest of road as time allows.
360	Title II	County	2	Middle North Fork Skokomish River	Mason	Cushman Riprap	2400000	12.3	12.3	0						Located at MP 12.3 of the 24 road. Monitor and treat as necessary.
363	Title II	County	2	Middle North Fork Skokomish River	Mason	Big Creek CG	2400031			0				X		As of 2013, not very weedy, did see some HYPE scattered at north end of CG. Survey and treat as time allows. Big Creek Well. Access to Trail # 877. GERO seen around campground sign near entrance; rest of CG relatively clean, but needs monitoring.

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364	Title II	County	2	Middle North Fork Skokomish River	Mason	Lake Cushman Quarry	2400000	13.6	13.6	0						Located at MP 13.6 of 24 road. Not very weedy, but needs to be monitored and treated as needed.
367	NFVWD 9	FS	2	Middle North Fork Skokomish River	Mason		2464000	0	1.8	1.8						Has not been treated before - unknown what's here. CIVU in old inventory
368	NFVWD 9	FS	2	Middle North Fork Skokomish River	Mason		2419014	0	1	1						CIAR, CIVU, CYSC Access to Ellinor Shortcuts TH
370	Title II	County	2	Upper South Fork Skokomish	Mason		2340430	0	1.2	1.2						Treated in 2013, needs follow up. CYSC biggest problem; also CIAR, RUDI, CIVU, LALA, SEJA.
371	Title II	County	2	Upper South Fork Skokomish	Mason		2340433	0	0.15	0.15						Treated in 2013, needs follow up.
372	Title II	County	2	Upper South Fork Skokomish	Mason		2340437	0	0.15	0.15						Treated in 2013, needs follow up. SEJA biggest problem, also CIVU.
374	NFVWD 9	FS	2	Upper South Fork Skokomish	Mason		2361600	0	5.4	5.4	X	X				SF Skok TS. Units adjacent to road on first 0.5 miles of this road, but drivable part of road needs treatment; Survey and treat decommed upper part of road as time and access allow. Sensitive botanical species (<i>Pamassia palustris</i>) on this road, sometimes in road prism, grows
379	Title II	County	2	Upper South Fork Skokomish	Mason		2355000	0	6.6	6.6				p		Treated 2011, 2013 - 2015. GERO at MP 5.6. Look for orange flagging around trunk of large alder on east side of road. Many other weed species all along this road that also need treatment.
381	Title II	County	2	Upper South Fork Skokomish	Mason	Brown Creek Flat Quarry	2353000	1.2	1.2	0				x		2353000, MP 1.2. This is NOT the same as the Brown Creek quarry, which is Ref # 369.
389	Title II	County	2	Upper South Fork Skokomish	Mason		2355300	0	0.9	0.9				x		Decomm complete in 2008. Robin Stoddard says bad GERO infestation here. This site will be used as a disposal site in the near future, so important to start treatments now (heavy equipment will be going in and out of site when decomm is active in a few years). Treated
390	Title II	County	2	Upper South Fork Skokomish	Mason	Lebar Horse CG	2353000			0				p		GERO, CIVU, SEJA Treated 2012
392	NFVWD 9	FS	2	Upper South Fork Skokomish	Mason		2361000	0	5.9	5.9	X					Hawkweed Present. SF Skok TS. Units adjacent to road. Treated 2012, 2013, 2015: HICA, CIVU, TAVU, RULA, HIPR, DACA, SEJA, CYSC. Access to Trails 873 and 873.1. Start at end of road (near 800 spur) and work back towards 23 road. 2016: Inspect and treat; hawkweed

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Priority S = Survey

Ref #	2017 Job Code	2017 Work Crew	Priority	6th Field Watershed Name	Watershed County	Site Name	Road #	BMP	EMP	Total Miles	Hawkweed	Knapeweed - treat late summer	Knapeweed	Big X: GERO >0.1 acres & CC>2. P = smaller amounts of GERO	Other weeds of concern	Comments
405	Title II	County	2	Upper South Fork Skokomish	Mason		2360000	0	4.3	4.3	X					SF Skok TS. HICA Units adjacent to road. Road was weedy. Several spurs off this road have been or will be decommed, unsure what decom schedule is. Did not receive treatment in 2014. Treated 2015: CIVU, CESTM, RULA, CYSC, SEJA. Associated TS and hawkweed.
408	NFVWD 9	FS	2	Upper South Fork Skokomish	Mason		2361200	0	2.6	2.6	X			p		SF Skok TS. Units adjacent to road. Road decommed from MP 0.7 - 2.6 in 2011. Treat MP 0 - 0.7 (which is still drivable) as this is where the TS unit is. Goes to Pine Lake TH. GERO and knotweed were on berm at the beginning of the 210 spur (at Pine Lake TH) Monitor for these
409	NFVWD 9	FS	2	Upper South Fork Skokomish	Mason		2361210	0	2.7	2.7			X	p		Road-to-trail conversion completed in 2012. trail to Pine Lake - walk in site. POBO and GERO found on berm at beginning of road in 2009, treated at that time. Knotweed not seen since 2010; still a few GERO at beginning of trail in 2014. SEJA, CIAR, CIVU, CYSC seen on
418	Title II	County	2	Lower North Fork Skokomish River	Mason		2340200	0.5	5.7	5.2	X					Skok TS units adjacent to road. Combined with old Ref 420 and 489. Treated 2014, 2015: CIVU, CIAR4, CYSC4, SEJA, TAVU, GERO, HIPR, ILAQ, RUAR0, HYPE,
421	Title II	County	2	Lower South Fork Skokomish River	Mason		2340210	0	0.5	0.5						Skok TS units adjacent to road. Treated 2014, 2015: GERO, TAVU, CIVU, ARMI, SEJA.
429	Title II	County	2	Mainstem Hamma Hamma River	Mason	Hamma Hamma CG	2500030			0				X	Burdock	Treated 2011, 2012, 2014, 2015: RUAR0, CIAR, ARMI, CYSC, GERO treated in sites 6, 7, 12 in 2012.
463	Title II	County	2	Upper South Fork Skokomish	Mason		2353000	0	13.2	13.2				X		SF Skok TS. Haul route, and unit adjacent to road at ~MP 2.5. CYSC, CIAR4, CIVU, ARMI2, HYPE, PHAR3, SEJA. GERO at approx MP 0.8, "on a trail to the LeBar Cr & SF Skok confluence. East end of LeBar bridge on left." From datasheet: 475144, 5251590
464	Title II	County	2	Upper South Fork Skokomish	Mason		2354000	0	1.8	1.8				X		SF Skok TS. Haul route, and unit adjacent to road at ~MP 1.3. This segment of road is from the Skok bridge to the Brown Creek quarry (at 300 spur fork). Large infestation of herb Robert at MP 0 - 0.1; extends downslope towards road into Brown Creek CG, just past jxn. Other weeds as
465	NFVWD 9	FS	2	Middle North Fork Skokomish River	Mason		2419012	0	0.3	0.3						Don't know what's here. Survey and treat as time allows.
477	Title II	County	2	Jefferson Creek	Mason		2401000	0.8	12.1	11.3	X					Lower part of road (below MP 7.0) treated by contractors in 2010 - needs follow up. Upper part of road needs to be looked at and treated as appropriate. Mystery hawkweed (HISA?) found and treated here in 2012. 2017: Locate and treat hawkweed sites - these are the priority;
481	NFVWD 9	FS	2	Jefferson Creek	Mason		2471000	2	3.86	1.86		X				Dense peavine on this road. CEBI2 at MP 1.3 - 1.5. CIVU and SEJA also present. Treated 2009 and 2010 2017: This area hasn't been treated in awhile; inspect and treat as necessary
483	NFVWD 9	FS	2	Jefferson Creek	Mason		2471022	0	0.42	0.42						Has not been treated before - unknown what's here. CYSC in old inventory.

Olympic National Forest Invasive Plant Program
2017 Project List
Mason County

Priority 1A = Treatment Mandatory
Priority 1 = Treatment High Priority
Priority 2 = Treatment Discretionary
Priority S = Survey

Ref #	2017 Job Code	2017 Work Crew	Priority	6th Field Watershed Name	Watershed County	Site Name	Road #	BMP	EMP	Total Miles	Hawkweed	Knapweed - treat late summer	Knotweed	Big X: GERO >0.1 acres & CC>2. P = smaller amounts of GERO	Other weeds of concern	Comments
490	Title II	County	2	Lower North Fork Skokomish River	Mason		2340250	0	1.5	1.5						Skok TS units adjacent to road. Treated 2014: CIVU, CYSC, CIAR, TAVU, ARMI, SEJA
503	NFVWD 9	FS	2	Lower North Fork Skokomish River	Mason	Dennie Ahl seed orchard	2340140			0	X					Located off of 2340 road, past high steel bridge. Will need key to get in. Scotch broom is biggest concern, although many weed species are present and need to be controlled.
518	NFVWD 9	FS	2	Middle Fork Satsop	Mason		2356000	4.2	6.6	2.4	X					Hawkweed Present. Treated 2011, 2014: HYPE, GERO, SEJA, CISR4, CYSC4, CIVU, HISA4. Hawkweed is the priority.
519	NFVWD 9	FS	2	Middle Fork Satsop	Mason		2352400	0	3.6	3.6	X					Treated 2014: CYSC, SEJA, HICA10 esp at opening at 2356 jxn, CIVU. Hawkweed treatments should be a priority.
523	NFVWD 9	FS	2	Upper West Fork Satsop River	Mason		2300000	21	32.4	11.4	X					At MP 21.4 and continuing along the road as you increase your mileage, large patch of yellow hawkweed, needs treatment; this is highest priority for treatment on this segment of the road; but other parts of road should be treated as time allows. 23 road rock stockpile also occurs on
577	Title II	County	2	Upper South Fork Skokomish	Mason		2360200	0	2.1	2.1	X	X		p		WS restoration project. This road is on a list of road scheduled for decomm in the future - decomm may have already happened. If so, monitor and treat as time and access allows - 2011: diffuse knapweed at MP 1.2, abundant SEJA and hawkweed. Only a few diffuse
581	NFVWD 9	FS	2	Upper South Fork Skokomish	Mason		2364110	0	0.4	0.4						Decommed in 2011, survey and treat only as time allows. SEJA was biggest problem, esp near end of road. Treated in 2010 and 2011; will need monitoring in the future.
582	NFVWD 9	FS	2	Upper South Fork Skokomish	Mason		2364130	0	0.4	0.4						Decommed in 2011, survey and treat only as time allows. SEJA was biggest problem, esp near end of road. Treated in 2010 and 2011; will need monitoring in the future.
591	Title II	County	2	Middle Fork Satsop	Mason		2350000	9	12.1	3.1	X			p		Yellow hawkweed abundant along road edges at MP 10.5 – 11.5. Lower part of 2350 is in L SF Skok WS also needs to be surveyed for this weed - Ref # 344. Other weeds observed here include CYSC, SEJA, etc. These need treatment, too.
592	Title II	County	2	Middle Fork Satsop	Mason		2366000	2.3	12.8	10.5	X					Yellow hawkweed abundant along road edges near jxn with 2350 road (MP 12.0 – 12.8). Entire 2366 and associated spurs (open and closed) should be surveyed for this weed, but focus on treating known hawkweed infestation. Dispersed campground at Walters Creek bridge also has
598	Title II	County	2	Lower South Fork Skokomish River	Mason		2340100	0	1.4	1.4				p		Ahl Over TS. Ref. #598, also see 599, 600, 601 Ahl Over TS road system (2340100) and spurs – just west of Lake West; This Ref # includes all associated spurs (150, 160) and surrounding unit, so total miles/acres is higher than what is represented here. Just west of Lake West. Herb
599	Title II	County	2	Lower South Fork Skokomish River	Mason		2340110	0	2.65	2.65				p		Ahl Over TS. This Ref # includes all associated spurs (112, 116, 121, 122, 124, 126, 128, 130, 132) and surrounding unit, so total miles/acres is higher than what is represented here. Herb Robert found at MP 0.5 of 110 spur and English holly found at various locations - treat other spurs as

Appendix B
Summary of 2017 Project Accomplishments

Ref #	2017 Priority	Date of Treatment	6th Field Watershed Name	2017 Site Name	Road #	Priority for Retreat in 2017?	Acres Examined for Weeds	Species Treated	Acres Treated (App'n Area or Manual App'n)							Herbicide Amount (oz)	Monitoring	
										Aquaneat	Element 3A	Garlon 3A	Milestone	Polaris	RoundUp Custom			Vastlan
327	1A	5/22/2017	Lilliwaup Creek	Cushman Pit	2400025	Y	4.6	CYASC4, RUAR9, RULA, SEJA, GERO, LEVU, HYPE	4.6		12						12	N/A
361	1A	6/26/2017	Middle NF Skokomish River	M.P. 13.1-14.3	2400000	Y	4	GERO, CIVU, SEJA, RULA, RUAR9, CYSC4, CESTM	3			1.2					1.2	N/A
361	1A	6/26/2017	Middle NF Skokomish River	M.P. 13.1-14.3	2400000	Y	4.36	SEJA, GERO, CYSC, HYPE, CIVU, RULA	4.36						32		32	N/A
361	1A	6/27/2017	Middle NF Skokomish River	M.P. 13.0-13.1	2400000	Y	1	GERO	0.9			1.2					1.2	N/A
361	1A	6/27/2017	Middle NF Skokomish River	M.P. 8.8-14.5	2400000	Y	0.5	CYSC4, RUAR9, HYPE	0.5						16		16	N/A
361	1A	6/27/2017	Middle NF Skokomish River	FS RD 2400 and entrance to Big Creek CG	2400000	Y	0.4	GERO, CYSC, CIVU	0.4			0.8					0.8	N/A
361	1A	6/28/2017	Middle NF Skokomish River	N/A	2400000	Y	4	GERO, CYSC4, CIVU, SEJA	4			4					4	N/A
361	1A	6/28/2017	Middle NF Skokomish River	M.P. 8.8-14.5	2400000	Y	4	CYSC4, RUAR9, HYPE, SEJA, CIVU	4						48		48	N/A
361	1A	6/29/2017	Middle NF Skokomish River	M.P. 10.3-10.7	2400000	Y	2.45	GERO, CIVU, CYSC4, HYPE, RULA	2.45						16		16	N/A

Ref #	2017 Priority	Date of Treatment	6th Field Watershed Name	2017 Site Name	Road #	Priority for Retreat in 2017?	Acres Examined for Weeds	Species Treated	Acres Treated (App'n Area or Manual App'n)							Herbicide Amount (oz)	Monitoring	
										Aquaneat	Element 3A	Garlon 3A	Milestone	Polaris	RoundUp Custom			Vastlan
369	1A	7/3/2017	Upper SF Skokomish River	Brown Creek Quarry	2354000	Y	8	CYSC4, GERO, CIVU, DACA6, HICA10, SEJA,	5		8		1.2				9.2	N/A
369	1A	9/21/2017	Upper SF Skokomish River	Brown Creek Quarry	2354000	Y	0.01	GERO	0.01								0	NA
394	1A	8/1/2017	Upper SF Skokomish River	FS RD 2360100 V1043 Quarry	2360100	Y	1.8	SEJA, TAVU, HYPE, DIPU, LEVU, HYRA3	1.8		2		0.16				2.16	NA
395	1A	7/5/2017	Upper SF Skokomish River	B.M.P. 17.3 E.M.P. 18.0	2300000	Y	1.7	HICA10, TAVU, DACA6, SEJA, RULA, CYSC4	1.7				0.34				0.34	N/A
395	1A	7/11/2017	Upper SF Skokomish River	M.P. 15.1-17.0	2300000	Y	4.6	HICA10, HIERA, SEJA, HYPE, TAVU, CIVU	4.6				1.8				1.8	N/A
395	1A	7/26/2017	Upper SF Skokomish River	FS Rd 2300 MP 15.1-14	2300	Y	2.8	SEJA, CYSC4, HYPE, CIVU, CIAR, DACA, RUAR9	2.8				2.8				2.8	NA
395	1A	8/1/2017	Upper SF Skokomish River	FS Rd 2300 MP 14 to 9.7	2300	N	10.4	SEJA, CYSC4, CIAR, DACA, CIVU, TAVU, HIERA	10.4		4		1.8				5.8	NA
395	1A	8/2/2017	Upper SF Skokomish River	FS Rd 2300 MP 9.5-9.7	2300	N	0.5	SEJA, CIVU, CIAR, GERO, HYPE, TAVU	0.5				0.75				0.75	NA
399	1A	7/3/2017	Upper SF Skokomish River	M.P. 12.5-12.9	2340000	Y	1	GERO, SEJA, CIVU, RULA, ARM12	0.5		4		0.32				4.32	N/A
399	1A	7/10/2017	Upper SF Skokomish River	M.P. 9.2-12.5	2340000	Y	8	GERO, PHAR3, CIVU, CIAR4, SEJA, HYPE	4				1.8	2.6			4.4	N/A

Ref #	2017 Priority	Date of Treatment	6th Field Watershed Name	2017 Site Name	Road #	Priority for Retreat in 2017?	Acres Examined for Weeds	Species Treated	Acres Treated (App'n Area or Manual App'n)	Herbicide						Monitoring		
										Aquaneat	Element 3A	Garlon 3A	Milestone	Polaris	RoundUp Custom		Vaslan	Amount (oz)
399	1A	7/17/2017	Upper SF Skokomish River	Rd 2340-00 MP 9.1-9.2	2340	N	0.25	SEJA, HYPE	0.25							0.16	NA	
657	1A	6/27/2017	Middle NF Skokomish River	Water Tower Rd	2400035	Y	1.5	GERO, RULA, CIVU, CIAR4, CYSC4	1.2	6						2.5	8.5	N/A
657	1A	6/27/2017	Middle NF Skokomish River	Water Tower Rd	2400035	Y	0.21	GERO, RULA, CIVU	0.21					16			16	N/A
657	1A	6/28/2017	Middle NF Skokomish River	Water Tower Rd	2400035	Y	0.45	GERO, HYPE, CIVU	0.45							2	2	N/A
657	1A	6/29/2017	Middle NF Skokomish River	Water Tower Rd	2400035	Y	6	GERO, CYSC4, SEJA, CIVU, CIAR, DACA	4							2.5	2.5	N/A
657	1A	6/29/2017	Middle NF Skokomish River	Water Tower Rd	2400035	Y	2.3	HYPE, TAVU, RULA, RUAR9, GERO, CYSC4, CIVU	2.3					32			32	N/A
657	1A	8/14/2017	Mid NF Skokomish River	M.P. 0.0-0.5	2400-035	Y	0.6	Seja, HYPE, GERO	0.6							1.5	1.5	NA
328	1	7/6/2017	Lilliwaup Creek	Mint Meadow	2400026	Y	7	HYPE, CYSC4, CIAR4, SEJA	3.5							2	2	N/A
380	1	7/18/2017	Upper SF Skokomish River	Brown Creek Campground	2340000	Y	1	GERO	0.2							0.5	0.5	N/A
380	1	7/19/2017	Upper SF Skokomish River	N/A	2340000	Y	0.6	GERO	0.6							0.5	0.5	N/A

Ref #	2017 Priority	Date of Treatment	6th Field Watershed Name	2017 Site Name	Road #	Priority for Retreat in 2017?	Acres Examined for Weeds	Species Treated	Acres Treated (App'n Area or Manual App'n)							Herbicide Amount (oz)	Monitoring
										Aquaneat	Element 3A	Garlon 3A	Milestone	Polaris	RoundUp Custom		
380	1	10/25/2017	Upper SF Skokomish River	River access along FS 2340540	2340	Y	0.3	GERO	0.3							0	NA
380	1	10/25/2017	Upper SF Skokomish River	Brown Creek Campground #6	2340000	N	3.75	GERO	0.1							0	NA
610	1	5/24/2017	Lower SF Skokomish River	FS Rd 2300-000 MP 7.5; Deep Patch Borrow Site	2300-000	Y	1.5	SEJA, HICA10, CIVU, CYSC4, DIPU	1.5			2.5				2.5	NA
863	1	8/30/2017	Mainstem Hamma Hamma River	HammaHamma CG Loop Trail	2500		0.3	Gero	0.3				0.5			0.5	NA
348	2	5/24/2017	Lower SF Skokomish River	M.P. 1.8 & M.P. 3.2-3.4	2300	N	1	HICA10, CYSC4, RUAR9, SEJA, CIVU	1			15				15	N/a
348	2	7/11/2017	Lower SF Skokomish River	M.P. 4.3-4.6	2300000	Y	1.5	GERO, SEJA	1.5				2.28			2.28	N/A
348	2	7/12/2017	Lower SF Skokomish River	M.P. 0.0-0.5	2300000	N	2.5	SEJA, HIERA [sp], VETH	2							0	N/A
348	2	8/2/2017	Lower SF Skokomish River	FS Rd 2300 MP 9.5-6.5	2300	N	7.2	SEJA, CYSC4	7.2							0	NA
348	2	8/28/2017	Lower SF Skokomish River	FS2300 MP 0.0-1.0	2300	Y	3	CYSC4, DACA6, RUAR9, SEJA, TAVU	0	96	72					168	NA
348	2	9/21/2017	Lower South Fork Skokomish River	FS2300 MP 3.8	2300	N	0.03	GERO	0.03							0	

Ref #	2017 Priority	Date of Treatment	6th Field Watershed Name	2017 Site Name	Road #	Priority for Retreat in 2017?	Acres Examined for Weeds	Species Treated	Acres Treated (App'n Area or Manual App'n)							Herbicide Amount (oz)	Monitoring
										Aquaneat	Element 3A	Garlon 3A	Milestone	Polaris	RoundUp Custom		
348	2	10/25/2017	Lower SF Skokomish River	2300 MP 3	2300	N	0.25	SEJA, HYRA3	0.01							0.17	NA
348	2	10/25/2017	Lower SF Skokomish River	2300 MP 4.4	2300	N	0.004	GERO	0.004							0	NA
355	2	6/22/2017	Mainstem Hamma Hamma	Hamma Hamma Pit	2500011	Y	1.5	CYSC4, LALA4, SEJA, VETH, GERO, CIVU, CIAR4	0.25		6					6	N/A
357	2	8/29/2017	Mainstem Hamma Hamma River	M.P. 3.5 @ wall & M.P. 10.4-13.5	2500	Y	8	CYSC4, LALA4, HYPE, SEJA	13	9						12	NA
357	2	8/30/2017	Mainstem Hamma Hamma River	M.P. 5.7-10.4	2500	Y	11.4	CYSC4, LALA4, SEJA, TAVU, GERO	14.8							1.5	NA
357	2	8/31/2017	Mainstem Hamma Hamma River	M.P. 4.3-5.7	2500	Y	3.4	CYSC4, CIAR, GERO, DACA, SEJA, TAVU, RULA	0.4			34				34	NA
358	2	8/14/2017	Mainstem Hamma Hamma River	M.P. 0.0-0.2	2502	N	0.5	CYSC4, SEJA, HYPE	0.5		24					24	NA
363	2	9/20/2017	Middle Fork Skokomish River	Big Creek Campground	2400031	N	0.05	GERO	0.05							0	NA
379	2	7/21/2017	Upper SF Skokomish River	FS RD 2355000 MP 6.6-5.7	2355000	N	2.2	GERO, CYSC4, LALA4, CIVU, SEJA	2.2		12					14.4	NA
418	2	7/17/2017	Lower NF Skokomish River	FS RD 2340-200 MP 5.7-5.5	2340	N	0.5	SEJA, CYSC4, HYPE	0.5							0.16	NA

Ref #	2017 Priority	Date of Treatment	6th Field Watershed Name	2017 Site Name	Road #	Priority for Retreat in 2017?	Acres Examined for Weeds	Species Treated	Acres Treated (App'n Area or Manual App'n)							Herbicide Amount (oz)	Monitoring
										Aquaneat	Element 3A	Garlon 3A	Milestone	Polaris	RoundUp Custom		
463	2	8/2/2017	Upper SF Skokomish River	FS RD 2353 MP 0.0-0.5	2353	N	1.2	GERO, TAVU	0.8							0.75	NA
463	2	10/24/2017	Upper SF Skokomish River	FS Rd 2353 MP 0.0-1.0	2353	Y	3	GERO, HYPE, LEVU	1.86							1.5	N/A
464	2	7/17/2017	Upper SF Skokomish River	FS RD 2354 MP 0.0-0.1	2354	N	0.25	GERO	0.25							0.7	NA
464	2	7/18/2017	Upper SF Skokomish River	B.M.P. 0.0 E.M.P. 0.1	2354000	Y	0.7	CYSC4, GERO	0.5							0.5	N/A
464	2	7/19/2017	Upper SF Skokomish River	B.M.P. 0.1 E.M.P. 0.15	2354000	Y	2	GERO	1.6							2.5	N/A
464	2	9/21/2017	Upper SF Skokomish River	FS 2354 MP 0.1	2354	Y	0.03	GERO	0.03							0	NA
591	2	7/5/2017	Middle Fork Satsop	M.P. 10.6-11.0	2350000	Y	2	SEJA, HICA10, CYSC4, GERO	1.5							0.25	N/A
592	2	7/5/2017	Middle Fork Satsop	M.P. 12.5-12.8	2366000	Y	0.8	HICA, SEJA, GERO, CIAR	0.8							0.58	N/A
598	2	10/23/2017	Lower SF Fork Skokomish River	FS2340100 at entrance	2340100	N	1.5	CYSC4, SEJA	0.2							0	NA
333	N/A	9/20/2017	Lilliwaup Creek	FS 2400 MP 1.3 & MP 0.7	2400	N	0.06	GERO	0.06							0	NA

APPENDIX C

ROCK SOURCE SURVEYS AND TREATMENT

2017 Rock Pits Inspected/Treated					
Rock Source	Option A Rock Source Exceeds Requirements	Option B Rock Source Meets Requirements	Option C Rock Source Meets Minimum Requirement	Treatment (Manual)	Treatment (Herbicide)
Cushman Pit (Ref #327)					5/22/2017
V1043 Quarry (Ref #394)					08/01/2017
Brown Creek Quarry (Ref#369)				09/21/2017	07/03/2017
23 RD Deep Patch Borrow Site (Ref #610)					05/24/2017
Hamma Hamma Pit (Ref#355)					06/22/2017

Appendix D

Outreach and Education

Public education and awareness continue to be key elements for the Mason County Noxious Weed Control program. Local events that we participated in this year included:



Oyster Fest 2017
The booth introduced nearly 500 visitors to the differences between bamboo and knotweed.



Matlock Old Timers' Fair



Allyn Days

Appendix E

2017 Forest Service Treatment Priority List

2017 Olympic National Forest Invasive Species List

CLB

Code	Scientific Name	Common Name	Treatment Priority
AEPO	<i>Aegopodium podagraria</i>	Bishop's weed, goutweed	1
ARM12	<i>Arctium minus</i>	lesser burdock	1
BOOF	<i>Borago officinalis</i>	common borage	1
BRTE	<i>Bromus tectorum</i>	cheatgrass	1
BUDA2	<i>Buddleja davidii</i>	butterfly bush	1
CEDE5	<i>Centaurea debeauxii</i>	meadow knapweed	1
CEDI3	<i>Centaurea diffusa</i>	diffuse knapweed	1
CEJA	<i>Centaurea jacea</i>	brownray knapweed	1
CESTM	<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	spotted knapweed	1
DIFU2	<i>Dipsacus fullonum</i>	Fuller's teasel	1
GERO	<i>Geranium robertianum</i>	herb Robert, stinky Bob	1
HIAU	<i>Hieracium aurantiacum</i>	orange hawkweed	1
HICA10	<i>Hieracium caespitosum</i>	meadow (yellow) hawkweed	1
HISA4	<i>Hieracium sabaudum</i>	European hawkweed	1
LAGA2	<i>Lamiastrum galeobdolon</i>	yellow archangel	1
LYP2	<i>Lysimachia punctata</i>	large yellow loosestrife	1
LYVU	<i>Lysimachia vulgaris</i>	garden yellow loosestrife	1
ORVU	<i>Origanum vulgare</i>	oregano	1
POCU6	<i>Polygonum cuspidatum</i>	Japanese knotweed	1
POPO5	<i>Polygonum polystachyum</i>	Himalayan knotweed	1
POSA4	<i>Polygonum sachalinense</i>	giant knotweed	1
POBO10	<i>Polygonum x bohemicum</i>	Bohemian knotweed	1
PORE5	<i>Potentilla recta</i>	sulphur cinquefoil	1
SEJA	<i>Senecio jacobaea</i>	tansy ragwort	1
SILAA3	<i>Silene latifolia</i> ssp. <i>alba</i>	bladder campion	1
SYOF	<i>Symphytum officinale</i>	common comfrey	1
VETH	<i>Verbascum thapsus</i>	common mullein	1
VIMA	<i>Vinca major</i>	bigleaf periwinkle	1
VIMI2	<i>Vinca minor</i>	common periwinkle	1
CIAR4	<i>Cirsium arvense</i>	Canada thistle	2
CIVU	<i>Cirsium vulgare</i>	Bull thistle	2
COAR4	<i>Convolvulus arvensis</i>	field bindweed	2
CYSC4	<i>Cytisus scoparius</i>	Scot's broom	2
DACA6	<i>Daucus carota</i>	Queen Anne's lace	2
HEHE	<i>Hedera helix</i>	English ivy	2
HYPE	<i>Hypericum perforatum</i>	common St. Johnswort	2
ILAQ80	<i>Ilex aquifolium</i>	English holly	2
LALA4	<i>Lathyrus latifolius</i>	everlasting peavine	2
LASY	<i>Lathyrus sylvestris</i>	flat pea	2
PHAR3	<i>Phalaris arundinacea</i>	reed canarygrass (including ribbon grass)	2
PRLA5	<i>Prunus laurocerasus</i>	English laurel	2
RUAR9	<i>Rubus armeniacus</i>	Himalayan blackberry	2
RULA	<i>Rubus laciniatus</i>	cutleaf blackberry	2
TAVU	<i>Tanacetum vulgare</i>	common tansy	2
DIPU	<i>Digitalis purpurea</i>	purple foxglove	Tolerate
HYRA3	<i>Hypochaeris radicata</i>	hairy catsear	Tolerate
LEVU	<i>Leucanthemum vulgare</i>	oxeye daisy	Tolerate
LOPE80	<i>Lotus pedunculatus</i>	big trefoil	Tolerate
PLLA	<i>Plantago lanceolata</i>	narrowleaf plantain	Tolerate
RARER	<i>Ranunculus repens</i> var. <i>repens</i>	creeping buttercup	Tolerate
TAOF	<i>Taraxacum officinale</i>	common dandelion	Tolerate

Appendix F
2017 Washington State Noxious Weed List

Noxious Weeds are non-native plants introduced to Washington State that can be highly destructive, competitive, and difficult to control. These plants invade our croplands, rangeland, forests, parks, rivers, lakes, wetlands, and estuaries causing both ecological and economical damage that affects us all.

Noxious weeds can:

- Lower crop yields
- Reduce forage quality
- Destroy plant and animal habitat
- Displace native plants
- Reduce recreational opportunities (e.g., fishing, hunting, swimming and hiking)
- Clog waterways
- Decrease land values
- Increase erosion and wildfire risk
- And some are toxic to humans and livestock.

2017 Washington State Noxious Weed List

Class A Noxious Weeds - Eradication required

common crupina	<i>Crupina vulgaris</i>
cordgrass, common	<i>Spartina anglica</i>
cordgrass, dense-flowered	<i>Spartina densiflora</i>
cordgrass, saltmeadow	<i>Spartina patens</i>
cordgrass, smooth	<i>Spartina alterniflora</i>
dyer's woad	<i>Isatis tinctoria</i>
eggleaf spurge	<i>Euphorbia oblongata</i>
false brome	<i>Brachypodium sylvaticum</i>
floating primrose-willow	<i>Ludwigia peploides</i>
flowering rush	<i>Butomus umbellatus</i>
French broom	<i>Genista monspessulana</i>
garlic mustard	<i>Alliaria petiolata</i>
giant hogweed	<i>Heracleum mantegazzianum</i>
goatsrue	<i>Galega officinalis</i>
hydrilla	<i>Hydrilla verticillata</i>
Johnsongrass	<i>Sorghum halepense</i>
knapweed, bighead	<i>Centaurea macrocephala</i>
knapweed, Vochin	<i>Centaurea nigrescens</i>
kudzu	<i>Pueraria montana var. lobata</i>
meadow clary	<i>Salvia pratensis</i>

Class B Noxious Weeds-Continued

gorse	<i>Ulex europaeus</i>
grass-leaved arrowhead	<i>Sagittaria graminea</i>
hairy willowherb	<i>Epilobium hirsutum</i>
hawkweed oxtongue	<i>Picnis hieracioides</i>
hawkweed, orange	<i>Hieracium aurantiacum</i>
hawkweeds: All nonnative species and hybrids of the meadow subgenus	<i>Hieracium</i> , subgenus <i>Pilosella</i>
hawkweeds: All nonnative species and hybrids of the wall subgenus	<i>Hieracium</i> , subgenus <i>Hieracium</i>
herb-Robert	<i>Geranium robertianum</i>
hoary alyssum	<i>Berteroa incana</i>
houndstongue	<i>Cynoglossum officinale</i>
indigobush	<i>Amorpha fruticosa</i>
knapweed, black	<i>Centaurea nigra</i>
knapweed, brown	<i>Centaurea jacea</i>
knapweed, diffuse	<i>Centaurea diffusa</i>
knapweed, meadow	<i>Centaurea x moncktonii</i>
knapweed, Russian	<i>Acroptilon repens</i>
knapweed, spotted	<i>Centaurea stoebe</i>
knotweed, Bohemian	<i>Polygonum x bohemicum</i>

Class C Noxious Weeds

absinth wormwood	<i>Artemisia absinthium</i>
Austrian fieldcress	<i>Rorippa austriaca</i>
babysbreath	<i>Gypsophila paniculata</i>
black henbane	<i>Hyoscyamus niger</i>
blackgrass	<i>Alopecurus myosuroides</i>
buffalobur	<i>Solanum rostratum</i>
cereal rye	<i>Secale cereale</i>
common barberry	<i>Berberis vulgaris</i>
common catsear	<i>Hypochaeris radicata</i>
common groundsel	<i>Senecio vulgaris</i>
common St. Johnswort	<i>Hypericum perforatum</i>
common tansy	<i>Tanacetum vulgare</i>
common teasel	<i>Dipsacus fullonum</i>
curlyleaf pondweed	<i>Potamogeton crispus</i>
English hawthorn	<i>Crataegus monogyna</i>
English ivy - four cultivars only	<i>Hedera helix</i> 'Baltica', 'Pittsburgh', and 'Star'; <i>H. hibernica</i> 'Hibernica'
evergreen blackberry	<i>Rubus laciniatus</i>
field bindweed	<i>Convolvulus arvensis</i>
fragrant waterlily	<i>Nymphaea odorata</i>
hairy whitetop	<i>Lepidium appelianum</i>
Himalayan blackberry	<i>Rubus armeniacus</i>
hoary cress	<i>Lepidium draba</i>
Italian arum	<i>Arum italicum</i>

oriental clematis	<i>Clematis orientalis</i>
purple starthistle	<i>Centaurea calcitrapa</i>
reed sweetgrass	<i>Glyceria maxima</i>
ricefield bulrush	<i>Schoenoplectus mucronatus</i>
sage, clary	<i>Salvia sclarea</i>
sage, Mediterranean	<i>Salvia aethiops</i>
silverleaf nightshade	<i>Solanum elaeagnifolium</i>
Spanish broom	<i>Spartium junceum</i>
spurge flax	<i>Thymelaea passerina</i>
Syrian beancaper	<i>Zygophyllum fabago</i>
Texas blueweed	<i>Helianthus ciliaris</i>
thistle, Italian	<i>Carduus pycnocephalus</i>
thistle, milk	<i>Silybum marianum</i>
thistle, slenderflower	<i>Carduus tenuiflorus</i>
variable-leaf milfoil	<i>Myriophyllum heterophyllum</i>
wild four-o'clock	<i>Mirabilis nyctaginea</i>

Class B Noxious Weeds

blueweed	<i>Echium vulgare</i>
Brazilian elodea	<i>Egeria densa</i>
bugloss, annual	<i>Anchusa arvensis</i>
bugloss, common	<i>Anchusa officinalis</i>
butterfly bush	<i>Buddleja davidii</i>
camelthorn	<i>Alhagi maurorum</i>
common fennel, (except bulbous fennel)	<i>Foeniculum vulgare</i> (except <i>F. vulgare</i> var. <i>azonicum</i>)
common reed (nonnative genotypes only)	<i>Phragmites australis</i>
Dalmatian toadflax	<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
fanwort	<i>Cabomba caroliniana</i>

knotweed, giant	<i>Polygonum sachalinense</i>
knotweed, Himalayan	<i>Polygonum polystachyum</i>
knotweed, Japanese	<i>Polygonum cuspidatum</i>
kochia	<i>Kochia scoparia</i>
lesser celandine	<i>Ficaria verna</i>
loosestrife, garden	<i>Lysimachia vulgaris</i>
loosestrife, purple	<i>Lythrum salicaria</i>
loosestrife, wand	<i>Lythrum virgatum</i>
parrotfeather	<i>Myriophyllum aquaticum</i>
perennial pepperweed	<i>Lepidium latifolium</i>
poison hemlock	<i>Conium maculatum</i>
policeman's helmet	<i>Impatiens glandulifera</i>
puncturevine	<i>Tribulus terrestris</i>
Ravenna grass	<i>Saccharum ravennae</i>
rush skeletonweed	<i>Chondrilla juncea</i>
saltcedar	<i>Tamarix ramosissima</i>
Scotch broom	<i>Cytisus scoparius</i>
shiny geranium	<i>Geranium lucidum</i>
spurge laurel	<i>Daphne laureola</i>
spurge, leafy	<i>Euphorbia esula</i>
spurge, myrtle	<i>Euphorbia myrsinites</i>
sulfur cinquefoil	<i>Potentilla recta</i>
tansy ragwort	<i>Senecio jacobaea</i>
thistle, musk	<i>Carduus nutans</i>
thistle, plumeless	<i>Carduus acanthoides</i>
thistle, Scotch	<i>Onopordum acanthium</i>
velvetleaf	<i>Abrutylon theophrasti</i>
water primrose	<i>Ludwigia hexapetala</i>
white bryony	<i>Bryonia alba</i>
wild chervil	<i>Anthriscus sylvestris</i>
yellow archangel	<i>Lamium galeobdolon</i>
yellow floating heart	<i>Nymphoides peltata</i>
yellow nutsedge	<i>Cyperus esculentus</i>
yellow starthistle	<i>Centaurea solstitialis</i>

Japanese eelgrass	<i>Zostera japonica</i>
jointed goatgrass	<i>Aegilops cylindrica</i>
jubata grass	<i>Cortaderia jubata</i>
lawnweed	<i>Soliva sessilis</i>
longspine sandbur	<i>Cenchrus longispinus</i>
medusahead	<i>Taeniatherum caput-medusae</i>
nonnative cattail species and hybrids	<i>Typha</i> spp.
old man's beard	<i>Clematis vitalba</i>
oxeye daisy	<i>Leucanthemum vulgare</i>
Pampas grass	<i>Cortaderia selloana</i>
perennial sowthistle	<i>Sonchus arvensis</i> ssp. <i>arvensis</i>
reed canarygrass	<i>Phalaris arundinacea</i>
Russian olive	<i>Elaeagnus angustifolia</i>
scentless mayweed	<i>Matricaria perforata</i>
smoothseed alfalfa dodder	<i>Cuscuta approximata</i>
spikeweed	<i>Centromedia pungens</i>
spiny cocklebur	<i>Xanthium spinosum</i>
Swainsonpea	<i>Sphaerophysa salsula</i>
thistle, bull	<i>Cirsium vulgare</i>
thistle, Canada	<i>Cirsium arvense</i>
tree-of-heaven	<i>Ailanthus altissima</i>
ventenata	<i>Ventenata dubia</i>
white cockle	<i>Silene latifolia</i> ssp. <i>alba</i>
wild carrot (except where commercially grown)	<i>Daucus carota</i>
yellowflag iris	<i>Iris pseudacorus</i>
yellow toadflax	<i>Linaria vulgaris</i>

Appendix G
Public Notice

NOTICE

The herbicide(s) glyphosate, triclopyr, imazapyr, aminopyralid, sulfometuron methyl and/or clopyralid may be applied to the following roads and surrounding area any time between

_____, 2017
to control weeds, which threaten native vegetation and habitat in this area:

Specific areas to be targeted include roadsides, forested areas, vegetated openings and rock pits.

Targeted Weed Species include, but are not limited to:

Scotch broom, herb Robert, bull thistle, Canada thistle, tansy ragwort, common tansy, meadow hawkweed

NO USE RESTRICTIONS ARE IN PLACE

Avoid contact with treated vegetation until after it has dried; it will take approximately 1 hour to dry after application.

FOR MORE INFORMATION CONTACT:

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Olympic National Forest
1835 Black Lake Blvd., SW Suite A
Olympia, WA 98512
cbartlett02@fs.fed.us
360-956-2283

This sign may be removed no sooner than one month after listed treatment dates.

PUBLIC NOTICE

The Hood Canal Ranger District, Olympic National Forest, may be applying the herbicides glyphosate, clopyralid, triclopyr, aminopyralid, or imazapyr to noxious weeds or other invasive plant species at the following Forest Service sites Mason County on May 1 – November 1, 2016. Applications will be conducted as planned in the Final EIS-Olympic National Forest Site Specific Invasive Plant Treatment Project, which was finalized in 2008. Notices indicating that formulations containing glyphosate, clopyralid, triclopyr, aminopyralid, or imazapyr will be applied will be posted at entrances to the target road systems and/or individuals sites. For questions about applications or to receive a complete list of individual sites contact Pat Grover, Mason County Noxious Weed Control Board at (360)427-9670 ext. 592, or Cheryl Bartlett, Forest Botanist for the Olympic National Forest at (360) 956-2283. Jefferson Creek Watershed 2401,2441,2471 Rds and associated spurs; Jefferson Creek Pit; Lilliwaup Creek Watershed 24,2419,2441 Rds and spurs; Cushman Pit, Mint Meadow; Lower North Fork Skokomish Watershed 2340 Rd and spurs; Dennie Ahl seed orchard; Lower South Fork Skokomish River Watershed 23,2340,2342,2350,2351,2352 Rds and spurs; Boundary TS unit 10; Mainstem Hamma Hamma River Watershed 25,2502 Rds and spurs; Hamma Hamma Pit; Hamma Hamma and Lena campgrounds; Middle Fork Satsop Watershed 23,2350,2352,2356,2366 Rds and spurs; Middle North Fork Skokomish River Watershed 24,2419,2451 Rds and spurs; Big Creek Campground; Lake Cushman Pit; Upper South Fork Skokomish Watershed 23,2340,2353,2354,2355,2356,2360,2361,2363,2364 Rds and spurs; Pine Lake; V1043, Brown Creek, and Brown Creek Flat Pits; Brown Creek and LeBar Horse campgrounds; Upper West Fork Satsop River Watershed 23, 2364 Rds and spurs.

8667 May 12 1t

Appendix H

Project Forms

2017 FACTS Invasive Plant Treatment Data Form

General Activity Fields

Ref #: 348

FS tracks area treated by the Ref #, so if a Ref # is not recorded in the box to the left, we will have no record of that area being treated. You can document one Ref # per FACTS form (easiest for FS), or multiple Ref # on a single FACTS form. If you document multiple Ref # on a single FACTS form, these Ref # must all 1) be in the same 6th Field Watershed and 2) have been treated on consecutive days. *Rock Pits always get their own FACTS form.*

Region	Format	District (circle one)*	6 th Field Watershed Name	Owner	Workforce** (and Number of People in Crew)
06	09	PAC-N (05) HC-N (02) PAC-S (03) <u>HC-S (01)</u>	<u>Lower SF Skokomish River</u>	FS	<u>MONWCB(2)WCC(6) (8)</u> <small># people</small>
Method Code	Equipment Code (circle one)	Job Code:	Treatment Location and Comments:		
<u>700</u> Herbicide	711 hand sprayer <u>712</u> backpack sprayer 713 back & squirt 716 injector	<u>T.H.II</u>	<p>If you are treating a road, record Road number w/ BMP & EMP If you are not treating a road (ex: a campground, rock pit, etc.) record Site Name *Record this information as it appears on the spreadsheet.</p> <p><u>FS Rd. 2300</u> <u>MP.0.00-1.0</u> <u>PAVEMENT ONLY</u></p> <p>Was entire area represented by the Ref# treated for weeds? Yes / <u>No</u> →</p> <p>Comments: <u>WCC-DRINKALL, KIMBAL, HEIDE, MONTGOMERY, MECHOLICK, MOORES</u> <u>LOPPED OUT STUMP LARGE PLANTS</u> <u>TOO DUSTY ALONG GRAVEL.</u></p> <p>If no, describe what part was treated above.</p>		
100 Manual	721 mobile ground sprayer <u>000</u> other				

*District Codes: Pacific North (05) = PAC-N; Pacific South (03) = PAC-S; Hood Canal North (02) = HC-N; Hood Canal South (01) = HC-S
**Workforce: County Name, Contractor Name, WCC, DNR, SCA, ONF, etc.

Site/Inventory Fields Should this area be a high priority for follow-up treatments next year? Yes No (circle one)

Start Date	Stop Date	Acres examined for weeds	Application Site (circle one)	Licensed Applicator: Name and License #
<u>08/28/17</u>	<u>08/28/17</u>	<u>3.0</u>	<u>Road edge/ROW</u> Campground Gravel/rock source Trailhead Forest Riparian Admin Site Other	<u>GROVER, # 74021</u>
Total Manual Infested Area Treated: Do not lump plants together:				<u>0</u> acres

Weeds Treated (Use PLANTS code; include common or scientific name as well if it is an uncommon weed on the ONF)	Infested Area Treated (DO NOT lump plants together)	% cover of species in Infested Area Treated (lump plants together - use cover classes 1 - 9 listed below)	Comments
<u>CYSCH</u>	<u>3.0</u> acres	<u>3</u>	
<u>DACAG</u>	<u>3.0</u> acres	<u>2</u>	
<u>RUAR9</u>	<u>0.01</u> acres	<u>3</u>	
<u>SEJA</u>	<u>0.001</u> acres	<u>1</u>	<u>+1 rosette</u>
<u>TAVU</u>	<u>0.001</u> acres	<u>2</u>	
	acres		
	acres		

Cover Classes: 1 = Trace, 2 = 1-3%, 3 = 3-5%, 4 = 5-10%, 5 = 10-25%, 6 = 25-50%, 7 = 50-75%, 8 = 75-95%, 9 = 95-100%
Note: Cover classes are meant to be approximate/low only. DO NOT spend more than a few moments determining cover class.

Admin Use Only
Activity Unit FACTS ID#: _____ Name: _____
Activity Subunit #: _____ Name: _____

Daily Log Day 1

Application Date	Time Start	Time Stop	Temp (F)	Wind Speed (MPH)	Wind Direction	Cloud Cover	Comments:
08/28/17	0930	1515	92°	1	SW	∅	Smoky & hot!
Total Volume of Mix Applied		UOM	Mix (oz herbicide /1 gallon water)	Dilutant	Applicators Names		
3.6 / 1.5		Gallons	2 oz/ gallon	Water	Grover, Reitz + WCC		
Herbicide Product Name / EPA #	Amount of this herbicide product that was applied	Percent Solution	Adjuvant Product Name	Amount of this adjuvant that was applied	Percent Solution	Total Application Area (Acres):	
Element 3A/62719-37	72 oz	1.5 %	Competitor	48 oz	1.0 %	3.0	
AquaNeat/228-365	94 oz	50 %	BlazOn Blue	12 oz	0.25 %	Area treated in Riparian Reserves: ∅	
	oz	%		oz	%	Area Treated within 5 feet of Standing Water: ∅	

Daily Log Day 2 For use when more than one day is necessary to treat the infestation.

Application Date	Time Start	Time Stop	Temp (F)	Wind Speed (MPH)	Wind Direction	Cloud Cover	Comments:
Total Volume of Mix Applied		UOM	Mix (oz herbicide /1 gallon water)	Dilutant	Applicators Names		
		Gallons	oz/ gallon	Water			
Herbicide Product Name / EPA #	Amount of this herbicide product that was applied	Percent Solution	Adjuvant Product Name	Amount of this adjuvant that was applied	Percent Solution	Total Application Area (Acres):	
	oz	%		oz	%		
	oz	%		oz	%	Area treated in Riparian Reserves:	
	oz	%		oz	%	Area Treated within 5 feet of Standing Water:	

(From front page) Ref #: 348 Start Date: 08/28/17
 2013 FACTS Invasive Plant Treatment Data Form
 Page 2 of 2 modified by clb 03/19/2014

Notes: Mixed 3 gallon @ 50% glyphosate
 Used 1.5 gallons

Appendix I

Calibration Protocol and Results

Calibration Protocol and Results



Backpack and Spot Treatment Calibration Guidelines

How do I make the most of my herbicide spot treatments?

Accurate timing, careful measurements of herbicide and uniform spray motions are essential to proper, economical application. Consistent spray motions can help obtain good coverage of troublesome weeds. Soaking scattered weeds rather than using regular spray motions may result in excessive rates that could injure desirable species.

How much herbicide do I put in my tank?

The mix amount is dependent on your spray volume and your application rate. Therefore, this question cannot be answered until we know the volume that is being applied with your particular spraying style in gallons per acre (GPA). The following step-by-step procedure will allow you to calibrate your spray volume (see answer at end).

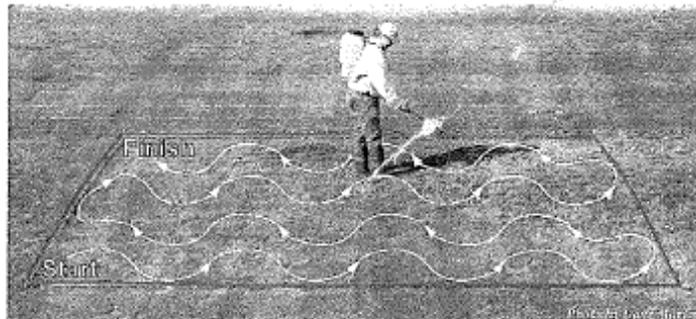
Sprayer Calibration

Six Simple Steps

The following step-by-step method of calibrating a backpack or hand-gun sprayer involves very little math or formulas. It is based on the following principal:

*One gallon = 128 fluid ounces
and your calibration area to be
sprayed is 1/128th of an acre, thus
fluid ounces collected = gallons
per acre.*

1. Clean sprayer and nozzle thoroughly. Then, fill the spray tank with clean water. Spray with water only to check to see that the nozzle forms a uniform spray pattern. If the pattern is uneven, check to make sure the nozzle is clean and replace it



if needed. Adjustable nozzles should be set and marked to permit repeated use of the selected spray pattern. If necessary, add a marker dye to the water to more easily see your spray pattern.

2 Measure an area 18.5 feet by 18.5 feet, which is equal to 1/128th of an acre. If possible, this should be done in the field on which you will be spraying.

3. Time the number of seconds it takes to spray the measured area uniformly with water using gentle side-to-side sweeping motion with the spray wand similar to spray painting a home or automobile. Record the number of seconds required to spray the area. During application be sure to maintain a constant sprayer pressure and cover the entire area uniformly one time.

You should repeat step 3 at least twice and use the average of the two times.

4. Spray into a container for the average time calculated in step 3. Be sure to maintain constant sprayer pressure while you spray into the container.

5. Measure the number of fluid ounces of water in the bucket. The number of fluid ounces collected from the bucket is equal to the number of gallons of water per acre the sprayer is delivering. Volume sprayed in fluid ounces = gallons of water per acre (GPA).

6. Add the proper amount of herbicide to the tank. For backpack sprayers, use Table 1 to determine how much liquid herbicide to add to each gallon of water. For large sprayer, use Table 2 to determine the amount of liquid herbicide to add to your spray tank.

Find your spray volume in gallons per acre (GPA - calculated above) and read across the tables to determine the amount of herbicide to add to each gallon of water based on the recommended herbicide application rate.

Tip Use a syringe to measure herbicide if you are applying a low-rate product like Milestone (e.g., 5 to 7 fl oz/ac).

1 tsp=5cc
1/2 tsp=2.5 cc
1/4 tsp=1.3 cc



*Trademark of Dow AgroSciences LLC
Some states require an individual be licensed if involved in the recommendation, handling or application of any pesticide. Consult your local extension office for information regarding licensing requirements. Always read and follow label directions. State restrictions on the sale and use of Transline apply. Consult the label before purchase or use for full details.

Table 1: Backpack or Other Small-volume Sprayers

The amount of herbicide you need to add to each gallon of water based on the recommended rate for the weed you are treating.

Gallons/Ac (from step 5)	Recommended Herbicide Rate/Acre				
	5 fl oz/ac	7 fl oz/ac	1 pint/ac	1 quart/ac	2 quarts/ac
20	7.5 cc/gal	10.5 cc/gal	5 tsp/gal	10 tsp/gal	3 3/4 fl oz/gal
30	5 cc/gal	7.0 cc/gal	3 tsp/gal	6 tsp/gal	2 fl oz/gal
40	3.8 cc/gal	5.3 cc/gal	2 1/3 tsp/gal	4 1/4 tsp/gal	1 1/3 fl oz/gal
50	3.0 cc/gal	4.2 cc/gal	2 tsp/gal	3 3/4 tsp/gal	1 1/4 fl oz/gal
60	2.5 cc/gal	3.5 cc/gal	1 1/3 tsp/gal	3 1/4 tsp/gal	6 1/3 tsp/gal
70	2.1 cc/gal	3.0 cc/gal	1 1/3 tsp/gal	2 3/4 tsp/gal	5 1/2 tsp/gal
80	1.9 cc/gal	2.6 cc/gal	1 1/4 tsp/gal	2 1/3 tsp/gal	4 1/4 tsp/gal
90	1.7 cc/gal	2.3 cc/gal	1 tsp/gal	2 tsp/gal	4 1/4 tsp/gal
100	1.5 cc/gal	2.1 cc/gal	1 tsp/gal	2 tsp/gal	3 1/4 tsp/gal

Liquid conversions: tsp = teaspoons; TBS = tablespoons; fl oz = fluid ounces; 1 cc = 1 ml; 3 teaspoons = 1 tablespoon; 8 fluid ounces = 1 cup; 2 tablespoons = 1 fluid ounce; 1 cup = 16 tablespoons

Example for Backpack Sprayers: You have completed the calibration procedure and applied 30 fluid ounces in the measured area. Therefore, your spray volume is 30 GPA. Look at Table 1 above for the amount to mix in 1 gallon of water. Assume you want to apply 5 fluid ounces of Milestone® per acre; the amount listed for your volume (GPA) and this application rate is 5 cc in each gallon of water. If you are filling a 3-gallon backpack sprayer take this amount times 3 and you would need to measure 15 cc (with a syringe) or 3 tsp of Milestone® for your 3 gallon mix. It doesn't take much.

Table 2: Larger Hand-gun Sprayers

The amount of herbicide you need to mix in 100 gallons of water based on the recommended rate for the weed you are treating.

Gallons/Ac (from step 5)	Recommended Herbicide Rate/Acre				
	5 fl oz/ac	7 fl oz/ac	1 pint/ac	1 quart/ac	2 quarts/ac
20	25.0 fl oz	35.0 fl oz	5 pints	5 quarts	10 quarts
30	16.7 fl oz	23.3 fl oz	3.3 pints	3.3 quarts	6.6 quarts
40	12.5 fl oz	17.5 fl oz	2.5 pints	2.5 quarts	5 quarts
50	10.0 fl oz	14.0 fl oz	2 pints	2 quarts	4 quarts
60	8.3 fl oz	11.7 fl oz	1.6 pints	1.6 quarts	3.2 quarts
70	7.1 fl oz	10.0 fl oz	1.4 pints	1.4 quarts	2.8 quarts
80	6.3 fl oz	8.8 fl oz	1.25 pints	1.25 quarts	2.5 quarts
90	5.6 fl oz	7.8 fl oz	1.1 pints	1.1 quarts	2.2 quarts
100	5.0 fl oz	7.0 fl oz	1 pints	1 quarts	2 quarts

Conversions: 16 fluid ounces = 1 pint; 32 fluid ounces = 1 quart; 64 fluid ounces = 2 quarts

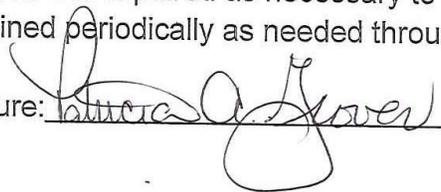
Example for Larger Sprayers: You calibrate your sprayer and the output is 50 GPA, and your sprayer holds 100 gallons. The amount of area you can treat is 2 acres with your full spray tank. The label requires an herbicide application rate of 5 fl oz/acre for the target weed. You would add 10 fl oz of herbicide to your tank since you are treating 2 acres with each full tank mix.

TechNotes | Prairie, Posted June 7, 2010, www.technotesnews.com

Calibration Verification

Agency/Organization: Mason Co. Noxious Weed Date: May 9, 2017

Each piece of equipment listed below has been calibrated using an accepted, appropriate method, and examined and repaired as necessary to ensure it is safe and in good working order. Each unit will be maintained periodically as needed throughout the field season.

Signature:  Position: Coordinator

Equipment ID	Equipment Type	Calibrated GPA	Working Condition?	Comments	Examiner Initials
SFO #1	Backpack Sprayer	61.5	Yes	1 min 36 sec / 55 oz	DAG ↓ ↓ ↓ ↓ ↓ ↓ ↓
SFO #2		52.5	Yes	1 min 40 / 68 oz	
Sprayer Plus		63	Yes	1 min 38 sec / 55 oz	
Solo #1		51.5	Yes	1 min 46 sec / 64 oz	
				1 min 29 sec / 62 oz	
				1 min 42 sec / 47 oz	
Solo #2		50	Yes	1 min 48 sec / 56 oz	
				1 min 51 sec / 52 oz	
				1 min 32 sec / 48 oz.	