

# Integrated Pest Management Plan



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Wherever there's water, there's Clean Water.

CleanWater  Services



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## **1.0 INTRODUCTION**

Clean Water Services (the District) and its co-implementers work together to protect and enhance water quality in the Tualatin River Watershed in support of both the Clean Water and Endangered Species Acts. These guidelines for Integrated Pest Management (IPM) seek to provide an effective and environmentally sensitive approach to pest management based on the life cycles of pests and their interactions with the environment. IPM seeks to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment. While these guidelines are intended for use by the District and its co-implementers, they are appropriate for other Tualatin Basin land managers.

IPM is most effective in conjunction with measures that prevent the introduction or establishment of new invasive species. The approach outlined in this document will be integrated into a regional invasive species Early Detection-Rapid Response (EDRR) program currently under development in the Tualatin Basin.

## **2.0 SELECTION OF MANAGEMENT METHODS**

At a minimum, practitioners shall consider the following factors during the selection of management methods and products.

### **Site characteristics**

- Susceptibility to erosion and potential soil movement through runoff
- Intended use and function
- Feasibility of the method given the area and scope of the problem
- Relative importance of expectations by the public of manicured versus natural areas
- Conditions such as soil type, grade, drainage patterns, and presence of surface water

### **Possible health and safety effects**

- Short and long term toxicological properties and any other potential health effects of the materials or methods, both to the applicator and the public
- Equipment or method safety for both the operator and the public

### **Potential environmental effects**

- Acute and chronic toxicity to non-target aquatic and terrestrial species
- Impacts to non-target organisms
- Impacts to federally listed threatened or endangered species
- Environmental effects from potential bioaccumulation
- Unintentional introduction or establishment of invasive species

### **Pesticide characteristics**

- Possible residual effect, decomposition pathways, rates, and breakdown products
- Volatility and flammability

- Solubility, and surface and soil bonding characteristics of the product
- Ease of equipment cleaning after use
- Positive and negative synergistic effects of product combinations
- Previous pesticide applications to the site and treatment interval
- Possible development of pest resistance to a material

### **Short and long term financial consequences**

- Material or method costs
- Application and labor costs
- Duration and quality of control
- Feasibility of continued use
- Costs associated with not treating, or delaying treatment

## **3.0 VEGETATION MANAGEMENT**

Since 2004, the District and its co-implementers planted and maintained nearly two million native trees and shrubs in the Tualatin basin. These plants have served to expand and protect native plant communities that support the water quality functions of healthy wetlands and riparian areas. Healthy native vegetation also plays an integral role in the proper functioning of the many water quality facilities that intercept runoff from impervious surfaces. The revegetation strategies outlined in *Clean Water Services Design and Construction Standards* promote biological diversity, plant competition and succession. Successful establishment of native vegetation and effective control of non-native, invasive vegetation depend on a range of vegetation management practices.

Plants on the Invasive Species List (Appendix 1) may be removed from Water Quality Sensitive Areas, Vegetated Corridors and Water Quality Facilities without prior approval when their removal follows the IPM framework outlined in this document. Other invasive plants may also be removed, but are not of primary concern at this time. Plants on the Invasive Species List that are already growing in developed landscapes may be replaced through attrition.

Resource managers and citizens are encouraged to report any species they notice in the Basin that should be added to the Invasive Species List.

The characteristics considered for the Invasive Species List include:

- Potential to disrupt or displace native riparian plant communities
- Potential to harm aquatic and riparian resources
- Potential to damage sanitary and storm infrastructure
- Oregon state listing

Proper timing can be critical to the effectiveness of vegetation management practices. The IPM Calendar in Appendix 2 provides recommendations based on local experience and research.

## 4.0 VERTEBRATE PEST MANAGEMENT

Rats, voles, moles, mice, and gophers can cause health and safety problems and may damage buildings, facilities and other infrastructure. Nutria (*Myocastor coypus*) are non-native, invasive rodents that cause extensive damage to stream banks, irrigation ditches and native vegetation. Nutria are classified as unprotected Nongame Wildlife (OAR 635-044-0132) and may be removed without a license. Nutria and any other unprotected rodents may be trapped mechanically as long as traps do not present a safety hazard.

All non-lethal and lethal rodent control methods must comply with local, state and federal laws. The use of chemical rodenticides must follow IPM guidelines. Rodenticides may cause direct or indirect toxicity to non-target organisms and may pose a threat to people with access to baited areas. Users must have appropriate licenses prior to using rodenticides in publicly accessible areas.

For nutria or other rodent trapping services contact Oregon Wildlife Services at (503) 326-2346 or visit [www.aphis.usda.gov/wildlife\\_damage](http://www.aphis.usda.gov/wildlife_damage). A list of State licensed Wildlife Control Operators is available from the Oregon Department of Fish and Wildlife at [http://www.dfw.state.or.us/wildlife/license\\_permits\\_apps/wildlife\\_control\\_operator\\_contacts.asp](http://www.dfw.state.or.us/wildlife/license_permits_apps/wildlife_control_operator_contacts.asp) or at (503) 947-6000.

Beaver (*Castor canadensis*) activity can damage trees and shrubs in wetland and riparian areas. Over time beaver dams change the geomorphic character of stream and wetland environments, but they rarely influence flood elevations<sup>1</sup>. The District's beaver management policy supports the Oregon Plan for Salmon and Watershed guidelines, as follows:

- The construction and maintenance of dams by beaver is a natural process benefiting salmon and other fish and wildlife species by creating beneficial pool and wetland habitat in many stream reaches.
- The goal of management efforts should be to maintain or improve the distribution and amount of beaver pond habitat without creating unacceptable risks of damage to other public and private resources.
- Lethal control is usually only a temporary solution. Beaver populations are at or near carrying capacity and removing a beaver only opens up living space for a new beaver.

If a beaver dam affects drainage pipes or culverts and creates a substantial flood risk to a structure or other significant property damage, the affected property owner may remove or modify the beaver dam to restore flow. The property owner may also request assistance from the Oregon Department of Fish and Wildlife (ODFW), which has the authority to regulate the trapping, hunting, and transportation of beaver. Beaver may be taken during trapping season by a licensed trapper or by the landowner with a landowner

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<sup>1</sup> With the exception of clogging culverts or other infrastructure with debris

trapping license. Lethal control outside the trapping season requires a kill permit issued by ODFW.

For beaver trapping services contact Oregon Wildlife Services at (503) 326-2346 or visit [www.aphis.usda.gov/wildlife\\_damage](http://www.aphis.usda.gov/wildlife_damage). A list of State licensed Wildlife Control Operators is available from the Oregon Department of Fish and Wildlife at (503) 947-6000 or [http://www.dfw.state.or.us/wildlife/license\\_permits\\_apps/wildlife\\_control\\_operator\\_contacts.asp](http://www.dfw.state.or.us/wildlife/license_permits_apps/wildlife_control_operator_contacts.asp).

## **5.0 MOSQUITO MANAGEMENT**

Mosquitoes breed in wetlands, slow moving waterways, drainage ditches and other standing water. Effective control focuses on eliminating standing water where mosquitoes breed. The safest and most useful approach is to eliminate unnecessary pools of water and to maintain swimming pools, catch basins and birdbaths. Because mosquitoes spread some diseases, their presence may concern residents and result in complaints and requests for action from public agencies.

The preferred control method in ponds, water features and catch basins is a biologically derived insecticide, *Bacillus thuringiensis* var. *israelensis* (Bti). Bti is an endospore-forming bacterium that is most effective when ingested by young larvae. Bti is less effective in highly turbid waters. Bti may kill midges, an important food source for fish and waterfowl and should not be used in natural wetlands or streams. Instead, control by other insects, birds and bats should be encouraged through the creation of habitat and the installation of bird or bat houses. For additional information about mosquitoes contact the Washington County Department of Health at (503) 846-8722 or via the county website at [http://www.co.washington.or.us/deptmts/hhs/env\\_hlth/vector/msqt\\_idx.htm](http://www.co.washington.or.us/deptmts/hhs/env_hlth/vector/msqt_idx.htm)

## **6.0 GENERAL CRITERIA FOR PESTICIDE USE**

Pesticides on the IPM Product List may be used according to their labeled uses in Water Quality Sensitive Areas, Vegetated Corridors, Water Quality Facilities, Streamside Recreational Areas, and Developed Landscapes when all of the following criteria are met:

- 1) The activity is part of an IPM strategy that seeks to minimize the application of pesticides;
- 2) Weather conditions are appropriate for the application;
- 3) A non-toxic indicator dye is used in the chemical mix to identify treated vegetation (optional within fenced facilities);
- 4) Applicators adhere to all of the label requirements concerning the safe and effective use of the pesticide(s); and

- 5) Persons applying the pesticide meet Oregon Department of Agriculture license requirements.

## **7.0 SITE-SPECIFIC PESTICIDE USE**

### Water Quality Sensitive Areas

Pesticides may be used only for the control of non-native, invasive species that threaten the health of the habitat. Plants and other pests may be controlled using spot or area application of appropriately labeled chemicals above the water line or within the wetland boundary. Pesticides should not be used more than once per year except for control of invasive species that threaten water quality or habitat value.

### Vegetated Corridors

Pesticide use within Vegetated Corridors (Table 1) is limited to the control of non-native, invasive species that threaten the health of the habitat or hinder the establishment or maintenance of native plant communities. See Table 1 for Vegetated Corridor widths.

### Water Quality Facilities

Pesticide use within Water Quality Facilities is limited to the control of non-native, invasive species that hinder proper facility function or the establishment or maintenance of native plant communities. Plants may be controlled using spot or area application above the water line when such a line is apparent.

### Streamside Recreational Areas

Where regular lawn maintenance must occur (e.g., on golf courses and manicured parks) and there are no Vegetated Corridors, the District and its co-implementers will maintain a minimum 25-foot buffer for streams and wetlands in which neither fertilizers nor pesticides are applied, except for invasive species control.

### Developed Landscapes

Pesticide use within the context of IPM is allowed in Developed Landscapes to control undesired vegetation or other pests. Developed Landscapes exclude Sensitive Areas, Vegetated Corridors and Water Quality Facilities and Streamside Recreational Areas.

**Table 1. Clean Water Services Vegetated Corridor (VC) Widths**

<b>Sensitive Area Type</b>	<b>VC Width on Slopes &lt; 25%</b>	<b>VC Width on Slopes &gt; 25%</b>
<b>Existing or created wetlands:</b>		
< 0.5 acres and isolated*	25 ft.	Variable from 25-200 ft.
< 0.5 acres and not isolated*	50 ft.	Variable from 50-200 ft.
≥ 0.5 acres and isolated*	50 ft.	Variable from 50-200 ft.
Natural lakes, ponds, and in-stream impoundments	50 ft.	Variable from 50-200 ft.
<b>Springs:</b>		
Intermittent flow	0 ft.	15 ft.
Perennial flow	50 ft.	Variable from 50-200 ft.
<b>Intermittent Streams draining:</b>		
< 10 acres	0 ft.	0 ft.
≥ 10 to < 50 acres	15 ft.	Variable from 50-200 ft.
≥ 50 to < 100 acres	25 ft.	Variable from 50-200 ft.
> 100 acres	50 ft.	Variable from 50-200 ft.
<b>Perennial Streams:</b>		
Other than Tualatin River	50 ft.	Variable from 50-200 ft.
Tualatin River	125 ft.	Variable from 125-200 ft.

\*Wetlands not connected to streams or other surface water bodies

## **8.0 NOTIFICATION OF PESTICIDE USE**

Employees and contractors of the District and its co-implementers shall notify the public of pesticide application at publicly accessible sites by posting approved signs in clearly visible locations at all entries and trailheads. The signs must include the name of pesticide(s) applied and a phone number for additional information. See Appendix 4 for the District’s Pesticide Use Notification Sign. The signs should be placed where people will see them before they enter the treated area.

Signs may be removed after the re-entry requirements on the label have been met. If the label does not specify a re-entry interval, applicators may remove the signs after the liquid pesticide has dried..

Schools must be notified in writing or via email not less than 24 hours before an application on or immediately adjacent to school property. Where landscaped facilities are adjacent to schools, the District and its co-implementers shall provide the school with a list of pesticides to be used and a schedule of the approximate frequency of applications instead of 24-hour notification.

## **9.0 PESTICIDE APPLICATION DECISIONS AND PROCEDURES**

Pesticides should be applied by directed, low volume, single wand sprayers, wiping, daubing and painting equipment, or injection systems. Boom application shall be limited to large scale (>5 acres) natural resources enhancement or farming activities. It is important to manage pesticide drift when surface waters or beneficial plants are nearby. Control nozzle size, pressure and droplet size to minimize drift.

Application checklist:

1. Read pesticide label
2. Check and calibrate application equipment for safety and efficiency.
3. Check the weather conditions. Unless otherwise indicated on the product label, avoid pesticide use when air temperature is above 80 degrees Fahrenheit, it is raining or expected to rain within 24 hours, or wind speed is either less than one or greater than five miles per hour.
4. Post notification signs at all entrances to sites associated with pesticide applications.
5. List re-entry specifications on the signs if required by the label.
6. Apply material according to the label and in accordance with State and Federal regulations.
7. Record pesticide application on application forms.
8. Remove signs when the liquid pesticide has dried, unless indicated otherwise on the label.

## **10.0 WORKER PROTECTION STANDARD**

The federal Worker Protection Standard (WPS) is designed to protect employees engaged in pesticide application from occupational exposure to pesticides. WPS contains requirements for notifying employees of applications, the use of personal protective equipment (PPE) and restrictions on entry into treated areas.

Specific PPE information is available on the product label and in the Material Safety Data Sheets. Personnel who have any contact with pesticides shall follow all PPE requirements.

## **11.0 LICENSING**

Contractors working for the District and its co-implementers must be licensed as required by the Oregon Department of Agriculture's *Pesticide Licensing in Oregon*, which is available at <http://www.oregon.gov/ODA/PEST/docs/pdf/licguide.pdf>. Contractors must also have Commercial Operator Licenses and the appropriate Commercial Applicator or Trainee Licenses for each applicator. Responsibility for maintaining a valid license lies with the applicator. Employees of the District and its co-implementers may purchase and apply non-restricted use pesticides without a license if the following conditions are met:

1) application site is under the management or ownership of the employee's jurisdiction or agency; and, 2) application does not involve fuel or electric powered equipment.

## **12.0 PESTICIDE STORAGE AND TRANSPORT**

Pesticides or pesticide containers shall be kept in secure and safe locations in accordance with local, state, and federal laws. This includes keeping them in a locked, well-ventilated, dry area where food and drinks are never stored or prepared. The floor should be made of concrete or lined with plastic or other impermeable surface. Containers shall be labeled with the following information: Contents (ratio of pesticide, surfactant, water, etc.), date mixed, and volume remaining when placed in storage. Areas used for storage shall be labeled. Pesticides shall be safeguarded from environmental damage (freezing, vaporizing, photodecomposition or moisture).

Pesticides shall not be transported in passenger cabs of vehicles, and shall be secured within the truck bed in tightly sealed containers.

## **13.0 PESTICIDE APPLICATION RECORDS**

State law requires written records to be kept for certain types of pesticide applications. Licensed applicators must record the details of pesticide applications and keep these records for no less than three years. These records must be available for review by the Oregon Department of Agriculture and by the District and its co-implementers. A sample Pesticide Application Record is provided as Appendix 5.

## **14.0 USE OF REMAINING SOLUTIONS AND RINSES**

Applicators should conduct pesticide operations so that disposal of excess material is unnecessary. Prior to mixing, applicators should consider weather conditions and predictions, target acreage and likely use of the site by others.

All pesticide solutions and rinses should be applied to target areas according to label requirements. If this is not possible, these solutions and rinses must be disposed of at an authorized pesticide disposal site.

## **15.0 DISPOSAL OF EMPTY CONTAINERS AND UNUSABLE HERIBICIDE**

Agencies involved in the regulation of pesticide disposal include the Oregon State Department of Agriculture, Department of Environmental Quality (DEQ), Environmental Protection Agency, and State and Federal OSHA programs. The District, its co-implementers and their contractors shall dispose of pesticides and empty pesticide containers in accordance with all State and Federal regulations and label

recommendations. The disposal of these materials requires care in handling and use of all necessary protective equipment.

Unusable pesticides are ones that: 1) are damaged through vaporization, freezing, infiltration of moisture to containers, or photo decomposition; 2) have exceeded their shelf life; or 3) have visually changed their composition or structure in some manner.

Pesticide disposal records should be maintained for three years along with other spray records. It is illegal to transfer damaged or altered pesticides to another party for use. It may be necessary to arrange for disposal of the pesticide in a manner recommended by DEQ.

## **16.0 ACCIDENTAL PESTICIDE EXPOSURE**

Employees and contractors of the District and its co-implementers who apply pesticide must remain informed of proper procedures in case of pesticide exposure. Material Safety Data Sheet information must be available to all applicators. This information includes symptoms and procedures for handling overexposure to individual pesticides.

Anyone who inquires about pesticide exposure should be referred to his or her personal physician, the Oregon Poison Center (OPC), and the Pesticide and Analytical Response Center (PARC). In the event of employee exposure to a pesticide, a report should also be filed with the employer.

Procedures in the case of a medical emergency:

- Call 911 for emergency assistance.
- Contact the Oregon Poison Center at 800-222-1222
- Take a label for reference for medical personnel if it is necessary to leave the site.
- Inform employee supervisor as soon as possible
- File a report with appropriate personnel

## **17.0 REVISIONS PROCESS**

The District and its co-implementers maintain an IPM Product List (Appendix 3), which includes all pesticides approved for use. To be included on the IPM Product List a pesticide is reviewed for efficacy, public health and safety concerns, potential impacts to water resources and wildlife, and tendency to move or persist in the environment.

A review body consisting of a representative from the District's Field Operations, Treatment Plant Services, Capital Engineering and Watershed Management Departments and an appointed representative from each of two or more of the District's co-implementers shall oversee changes to the Invasive Species List, IPM Calendar, IPM Product List and other practices and procedures identified in this document. Changes shall be approved by a majority vote by February 15th of each year.

Pesticides deleted from the IPM Product List but placed on the Do Not Restock List may be approved for use until current supplies are exhausted or disposed of in a legal manner. Deletion of a pesticide due to a legal ban will be upheld without prior approval per the schedule set by law.

## **18.0 DISCLAIMER**

The use of pesticide trade names in this document does not constitute an endorsement by Clean Water Services or its co-implementers. Trade names have been used specifically for reader familiarity and no discrimination is intended.

## **19.0 REFERENCES AND RESOURCES**

Bobbitt, Van M. et al. Pacific Northwest Landscape Integrated Pest Management Manual. Washington State University, 1999.

Bragg, Dave, et al. Pacific Northwest Insect Control Handbook, revised annually. Extension Services of Oregon State University, Washington State University, and University of Idaho.

Fisher, Glenn, et al. Pacific Northwest Insect Control Handbook, March, 2004. Agricultural Communications, Oregon State University, Washington State University, and University of Idaho.

Koepsell, Paul A., Pscheidt, Jay W., Plant Disease Control Handbook, 2004. Agricultural Communications, Oregon State University, Washington State University, and University of Idaho.

McDonald, Sally A. Applying Pesticides Correctly. North Carolina State University, US Department of Agriculture, and US Environmental Protection Agency.

Miller, Terry L. Oregon Pesticide Applicator Manual. 2004. Agricultural Communications, Oregon State University, Washington State University, and University of Idaho.

Pscheidt, Jay W. et al. Pacific Northwest Plant Disease Control Handbook, revised annually. Extension Services of Oregon State University, Washington State University, and University of Idaho.

Sasha Shaw and Roy Brunskill, King County Noxious Weed Control Program. Western Washington Invasive Weed Management Calendar.

Shenk, Myron. Oregon Pesticide Safety Education Manual, January, 2004. Agricultural Communications, Oregon State University, Washington State University, and University of Idaho.

...

Williams Ray D. et al. Pacific Northwest Weed Management Handbook, revised annually, Extension Services of Oregon State University, Washington State University, and University of Idaho.

### **Online IPM Resources**

Integrated Plant Protection Center (IPPC) Oregon State University:

<http://ipmnet.org/>

IPM & Related Sites in Oregon and Pacific Northwest

[http://ipmnet.org/IPM\\_in\\_USA.htm#1](http://ipmnet.org/IPM_in_USA.htm#1)

NSF Center for Integrated Pest Management Network

<http://www.cipm.info/index.cfm>

OSU Pacific Northwest Nursery IPM

<http://oregonstate.edu/Dept/nurspest/index.htm>

PNW Weed Management Handbook

<http://pnwpest.org/pnw/weeds>

Portland Parks and Recreation IPM Program

<http://www.portlandonline.com/parks/index.cfm?c=38296>

The Nature Conservancy Invasive Species Initiative

<http://tncinvasives.ucdavis.edu/>

Washington State Pest Management Resource Service

<http://wsprs.wsu.edu/IPM.html>

### **Online Pesticide Resources**

California Department of Pesticide Regulation

<http://www.cdpr.ca.gov>

CDMS Label and MSDS site

<http://www.cdms.net/manuf/manuf.asp>

EPA Pesticides Program

<http://www.epa.gov/pesticides/>

EXTOXNET

<http://extoxnet.orst.edu/>

National Pesticide Information Center

<http://npic.orst.edu/index.html>

Oregon Dept. of Agriculture Pesticides Division

<http://www.oregon.gov/ODA/PEST/>

## APPENDIX 1 INVASIVE SPECIES LIST

### Local Designation

A = most invasive, still controllable on a regional or local scale or limited spread

B = most invasive, locally abundant

C = most invasive, widespread

D = less aggressive, natural area invaders, less impact on natural systems

E = aggressive primarily in horticultural/agricultural situations

### ODA Designation

A = a weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent

B = a weed of economic importance which is regionally abundant, but which may have limited distribution in some counties

T = a priority noxious weed designated by the Oregon State Weed Board as a target for which the ODA will develop and implement a statewide management plan

N= not listed

Species Type	Common Name	Latin Name	Designation	
			Local	ODA
Amphibian	Bullfrog	<i>Rana catesbeiana</i>	C	N
Reptile	Eastern snapping turtle	<i>Chelydra serpentina serpentina</i>	A	N
Rodent	Nutria	<i>Myocaster coypus</i>	A	N
Forb	[" <i>Crepis virens</i> "]. Smooth hawksbeard	<i>Crepis capillaris</i>	D	N
Forb	[" <i>Erigeron canadensis</i> "]. Canada fleabane	<i>Conyza canadensis</i>	D	N
Forb	[" <i>Euphorbia peplodes</i> "]	<i>Euphorbia peplus</i>	E	N
Forb	[" <i>Myosotis palustris</i> "]. Forget-me-not	<i>Myosotis scorpioides</i>	D	N
Forb	[" <i>Myosotis versicolor</i> "]. Varied scorpion-grass	<i>Myosotis discolor</i>	D	N
Forb	Alfalfa	<i>Medicago sativa</i>	D	N
Forb	Alsike clover	<i>Trifolium hybridum</i>	E	N
Forb	Annual knawel	<i>Scleranthus annuus</i>	D	N
Forb	Asparagus	<i>Asparagus officinalis</i>	E	N
Forb	Bachelor's button	<i>Centaurea cyanus</i>	C	N
Forb	Barestem teasdalia	<i>Teesdalia nudicaulis</i>	D	N
Forb	Bird's foot trefoil	<i>Lotus corniculatus</i>	C	N
Forb	Birdeye speedwell	<i>Veronica persica</i>	D	N
Forb	Bittersweet nightshade	<i>Solanum dulcamara</i>	C	N
Forb	Black mustard	<i>Brassica nigra</i>	D	N
Forb	Blessed milk thistle	<i>Silybum marianum</i>	A	B list
Forb	Blue vervain	<i>Verbena hastata</i>	D	N
Forb	Bog bulrush	<i>Schoenoplectus mucronatus</i>	D	N
Forb	Borage	<i>Borago officinalis</i>	D	N
Forb	Brass buttons	<i>Cotula coronopifolia</i>	D	N
Forb	Bristly hawksbeard	<i>Crepis setosa</i>	D	N
Forb	Broad leaved dock	<i>Rumex obtusifolius</i>	D	N

Species Type	Common Name	Latin Name	Designation	
			Local	ODA
Forb	Buffalobur	<i>Solanum rostratum</i>	D	B list
Forb	Bull mallow	<i>Malva parviflora</i>	D	N
Forb	Bull thistle	<i>Cirsium vulgare</i>	C	B list
Forb	Bur chervil	<i>Anthriscus caucalis [Anthriscus scandinavica]</i>	B	N
Forb	Bur clover	<i>Medicago polymorpha [Medicago hispida]</i>	D	N
Forb	Canada thistle	<i>Cirsium arvense</i>	C	B list
Forb	Canadian pondweed	<i>Elodea canadensis</i>	E	B list
Forb	Chameleon plant	<i>Houttuynia cordata</i>	D	N
Forb	Chickweed	<i>Stellaria media</i>	D	N
Forb	Chicory	<i>Cichorium intybus</i>	D	N
Forb	Clammy goosefoot	<i>Chenopodium pumilio</i>	D	N
Forb	Coastal burnweed	<i>Erechtites minima</i>	D	N
Forb	Cocklebur	<i>Xanthium spinosum</i>	D	B list
Forb	Common bladderwort	<i>Utricularia vulgaris</i>	D	N
Forb	Common burdock	<i>Arctium minus</i>	B	N
Forb	Common comfrey	<i>Symphytum officinale</i>	D	N
Forb	Common dandelion	<i>Taraxacum officinale</i>	D	N
Forb	Common groundsel	<i>Senecio vulgaris</i>	D	N
Forb	Common gypsyweed	<i>Veronica officinalis var. tournefortii [Veronica officinalis]</i>	D	N
Forb	Common horsetail	<i>Equisetum arvense</i>	E	N
Forb	Common mallow	<i>Malva neglecta</i>	D	N
Forb	Common meadow-rue	<i>Thalictrum flavum</i>	E	N
Forb	Common plantain	<i>Plantago major</i>	C	N
Forb	Common sow-thistle	<i>Sonchus oleraceus</i>	B	N
Forb	Common tansy	<i>Tanacetum vulgare</i>	C	N
Forb	Common teasel	<i>Dipsacus fullonum</i>	C	N
Forb	Common vetch	<i>Vicia sativa</i>	C	N
Forb	Confetti	<i>Geranium yoshinoi</i>	E	N
Forb	Coontail	<i>Ceratophyllum demersum</i>	E	N
Forb	Corn salad	<i>Valerianella locusta</i>	D	N
Forb	Corn speedwell	<i>Veronica arvensis</i>	D	N
Forb	Corn spurry	<i>Spergula arvensis</i>	D	N
Forb	Cranes-bill	<i>Erodium cicutarium</i>	D	N
Forb	Creeping jenny	<i>Lysimachia nummularia</i>	B	N
Forb	Curly dock	<i>Rumex crispus</i>	C	N
Forb	Cut-leaved geranium	<i>Geranium dissectum</i>	C	N
Forb	Daisy fleabane	<i>Erigeron annuus</i>	D	N
Forb	Dame's rocket	<i>Hesperis matronalis</i>	D	N
Forb	Diffuse knapweed	<i>Centaurea diffusa</i>	B	B list
Forb	Dill	<i>Anethum graveolens</i>	B	N
Forb	Dog-fennel	<i>Anthemis cotula</i>	D	N
Forb	Donkeytail spurge	<i>Euphorbia myrsinites</i>	E	B list
Forb	Dovefoot geranium	<i>Geranium molle</i>	C	N

Species Type	Common Name	Latin Name	Designation	
			Local	ODA
Forb	Duckweed, water lentil	<i>Lemna minor</i>	E	N
Forb	Dwarf plantain	<i>Plantago pusilla</i>	D	N
Forb	Early forget-me-not	<i>Myosotis stricta [Myosotis micrantha]</i>	D	N
Forb	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	C	B list
Forb	European avens	<i>Geum urbanum</i>	C	N
Forb	European chickweed	<i>Cerastium pumilum</i>	D	N
Forb	European cornsalad	<i>Valerianella carinata</i>	D	N
Forb	European cranberrybush	<i>Viburnum opulus var. opulus</i>	D	N
Forb	European speedwell	<i>Veronica beccabunga</i>	D	N
Forb	Evening primrose	<i>Oenothera glazioviana [Oenothera erythrosepala]</i>	D	N
Forb	Everlasting pea	<i>Lathyrus latifolius</i>	B	N
Forb	False dandelion	<i>Leontodon autumnalis</i>	C	N
Forb	False diamondflower	<i>Ionopsidium acaule</i>	D	N
Forb	Fennel	<i>Foeniculum vulgare</i>	C	N
Forb	Field chamomile	<i>Anthemis arvensis</i>	D	N
Forb	Field madder	<i>Sherardia arvensis</i>	D	N
Forb	Field penny cress, Frenchweed	<i>Thlaspi arvense</i>	D	N
Forb	Field pepperweed	<i>Lepidium campestre</i>	D	N
Forb	Field sow-thistle	<i>Sonchus arvensis</i>	D	N
Forb	Fivestamen chickweed	<i>Cerastium semidecandrum</i>	D	N
Forb	Flowering flax	<i>Linum grandiflorum</i>	D	N
Forb	Fragrant water lily	<i>Nymphaea odorata</i>	D	N
Forb	Garden centaury	<i>Centaurium erythraea [Centaurium umbellatum]</i>	D	N
Forb	Garden nightshade	<i>Solanum nigrum</i>	B	N
Forb	Garden phlox	<i>Phlox paniculata</i>	D	N
Forb	Garden yellowrocket	<i>Barbarea vulgaris</i>	D	N
Forb	Garlic mustard	<i>Alliaria petiolata</i>	A	N
Forb	Giant hogweed	<i>Heracleum mantegazzianum</i>	A	A and T lists
Forb	Giant horsetail	<i>Equisetum telmateia</i>	E	B list
Forb	Gorse	<i>Ulex europaeus</i>	A	B and T lists
Forb	Goutweed	<i>Aegopodium podagraria and variegated varieties</i>	D	N
Forb	Grasslike starwort	<i>Stellaria graminea</i>	D	N
Forb	Ground ivy	<i>Glechoma hederacea</i>	D	N
Forb	Hairy hawkbit	<i>Leontodon taraxacoides [Leontodon nudicaulis ssp. taraxacoides]</i>	C	N
Forb	Hairy nightshade	<i>Solanum physalifolium [Solanum sarrachoides]</i>	D	N
Forb	Hairy vetch	<i>Vicia hirsuta</i>	C	N
Forb	Hairy vetch	<i>Vicia villosa</i>	C	N
Forb	Hardy geranium	<i>Geranium nodosum</i>	E	N

Species Type	Common Name	Latin Name	Designation	
			Local	ODA
Forb	Hare's foot clover	<i>Trifolium arvense</i>	C	N
Forb	Hedge bindweed	<i>Calystegia sepium ssp. angulata</i> [ <i>Convolvulus sepium</i> ]	C	N
Forb	Hedge mustard	<i>Sisyrinchium officinale</i>	B	N
Forb	Hellroot	<i>Orobanche minor</i>	D	B list
Forb	Henbit	<i>Lamium amplexicaule</i>	D	N
Forb	Herb Robert	<i>Geranium robertianum</i>	C	N
Forb	High mallow	<i>Malva sylvestris</i>	D	N
Forb	Hoary cress	<i>Cardaria draba</i>	A	B list
Forb	Hop clover	<i>Trifolium aureum</i>	D	N
Forb	Hop clover, black	<i>Medicago lupulina</i>	E	N
Forb	Houndstongue	<i>Cynoglossum officinale</i>	D	B list
Forb	Husk tomato. Not listed by Gorman or Nelson.	<i>Physalis pubescens</i>	D	N
Forb	Hydrilla	<i>Hydrilla verticillata</i>	A	A list
Forb	Indigo Bush	<i>Amorpha fruticosa</i>	A	N
Forb	Italian thistle	<i>Carduus pycnocephalus</i>	D	N
Forb	Ivyleaf speedwell	<i>Veronica hederifolia</i> [ <i>Veronica hederifolia</i> ]	D	N
Forb	Jack-go-to-bed-at-noon.	<i>Tragopogon pratensis</i>	D	N
Forb	Japanese anemone	<i>Anemone x hybrida</i>	E	N
Forb	Japanese mazus	<i>Mazus pumilus</i> [ <i>Mazus japonicus</i> ]	D	N
Forb	Japanese oxalis	<i>Oxalis japonica</i>	D	N
Forb	Jerusalem oak	<i>Chenopodium botrys</i>	D	N
Forb	Jupiters rocket	<i>Centranthus ruber</i>	E	N
Forb	Kenilworth ivy	<i>Cymbalaria muralis</i>	D	N
Forb	Knotted hedge parsley	<i>Torilis nodosa</i>	D	N
Forb	Labradorian violet	<i>Viola labradorica</i>	E	N
Forb	Lamb's quarters	<i>Chenopodium album</i>	C	N
Forb	Lanceleaf water plantain	<i>Alisma lanceolatum</i>	B	N
Forb	Large mouse-ear chickweed	<i>Cerastium fontanum ssp. vulgare</i> [ <i>Cerastium vulgatum</i> ]	D	N
Forb	Lawn bedstraw	<i>Galium parisiense</i>	C	N
Forb	Least hop clover	<i>Trifolium dubium</i>	E	N
Forb	Lemon balm	<i>Melissa officianalis</i>	B	N
Forb	Lentil vetch	<i>Vicia tetrasperma</i>	C	N
Forb	Lesser wart cress	<i>Coronopus didymus</i>	D	N
Forb	Linearleaf snapdragon	<i>Misopates orontium</i> [ <i>Antirrhinum orontium</i> ]	D	N
Forb	Long-horned poppy	<i>Glacium flavum</i>	E	N
Forb	Longstalk cranesbill	<i>Geranium columbinum</i>	D	N
Forb	Low hop clover	<i>Trifolium campestre</i> [ <i>Trifolium procumbens</i> ]	D	N
Forb	Maiden pink	<i>Dianthus deltoides</i>	E	N
Forb	Maidenstears	<i>Silene vulgaris</i> [ <i>Silene cucubalus</i> ]	E	N

Species Type	Common Name	Latin Name	Designation	
			Local	ODA
Forb	Marsh cudweed	<i>Gnaphalium uliginosum</i>	C	N
Forb	Meadow knapweed	<i>Centaurea debeauzii</i> ssp. <i>Thuillieri</i> [ <i>Centaurea pratensis</i> ]	B	B and T lists
Forb	Mole plant	<i>Euphorbia lathyris</i>	D	N
Forb	Money plant	<i>Lunaria annua</i>	D	N
Forb	Moth mullein	<i>Verbascum blattaria</i>	D	N
Forb	Mouse-ear chickweed	<i>Cerastium glomeratum</i> [ <i>Cerastium viscosum</i> ]	D	N
Forb	Mouse-ear cress	<i>Arabidopsis thaliana</i>	D	N
Forb	Mouse-ear hawkweed	<i>Hieracium pilosella</i>	D	A list
Forb	Mullein	<i>Verbascum thapsus</i>	D	N
Forb	Mullein pink	<i>Lychnis coronaria</i>	D	N
Forb	Musk mallow	<i>Malva moschata</i>	D	N
Forb	Musk thistle	<i>Carduus nutans</i>	E	N
Forb	Nettle-leaved goosefoot	<i>Chenopodium murale</i>	D	N
Forb	Nipplewort	<i>Lapsana communis</i>	C	N
Forb	Orange hawkweed	<i>Hieracium aurantiacum</i>	A	A list
Forb	Oxeye daisy	<i>Leucanthemum vulgare</i>	C	N
Forb	Parrots feather	<i>Myriophyllum aquaticum</i>	B	N
Forb	Peachleaf bellflower	<i>Campanula persicifolia</i>	E	N
Forb	Penny royal	<i>Mentha pulegium</i>	C	N
Forb	Peppermint	<i>Mentha x piperita</i> [ <i>Mentha piperita</i> ]	D	N
Forb	Perennial sowthistle	<i>Sonchus asper</i>	D	N
Forb	Periwinkle (large leaf)	<i>Vinca major</i>	B	N
Forb	Periwinkle (small leaf)	<i>Vinca minor</i>	B	N
Forb	Pineappleweed	<i>Matricaria discoidea</i>	E	N
Forb	Poison-hemlock	<i>Conium maculatum</i>	C	B list
Forb	Pokeweed	<i>Phytolacca americana</i>	A	N
Forb	Policemen's helmet	<i>Impatiens glandulifera</i>	A	N
Forb	Pond water starwort	<i>Callitriche stagnalis</i>	D	N
Forb	Prairie Mallow "Elsie Heugh"	<i>Sidalcea cultorum</i>	E	N
Forb	Prickly lettuce	<i>Lactuca serriola</i>	C	N
Forb	Purple loosestrife	<i>Lythrum salicaria</i>	B	B and T lists
Forb	Purple salsify	<i>Tragopogon porrifolius</i>	D	N
Forb	Purpleanther field pepperweed	<i>Lepidium heterophyllum</i>	D	N
Forb	Purslane speedwell	<i>Veronica peregrina</i> var. <i>peregrina</i>	D	N
Forb	Queen Anne's lace	<i>Daucus carota</i>	C	N
Forb	Red clover	<i>Trifolium pratense</i>	D	N
Forb	Red dead nettle	<i>Lamium purpureum</i>	C	N
Forb	Red pimpernel	<i>Anagallis arvensis</i>	D	N
Forb	Red sorrel	<i>Rumex acetosella</i>	C	N
Forb	Rib-grass, English plantain, Fool's timothy	<i>Plantago lanceolata</i>	D	N
Forb	Rough hedge parsley	<i>Torilis scabra</i>	D	N

Species Type	Common Name	Latin Name	Designation	
			Local	ODA
Forb	Rough pigweed	<i>Amaranthus retroflexus</i>	C	N
Forb	Rush skeletonweed	<i>Chondrilla juncea</i>	B	B and T lists
Forb	Russian knapweed	<i>Acroptilon repens</i>	A	B list
Forb	Safflower	<i>Carthamus tinctorius</i>	D	N
Forb	Sand plantain. Not listed by Gorman or Nelson.	<i>Plantago psyllium</i>	D	N
Forb	Sand spurry	<i>Spergularia rubra</i>	D	N
Forb	Scentless false mayweed	<i>Tripleurospermum perforata</i> [ <i>Matricaria maritima</i> in part]	D	N
Forb	Scotch thistle	<i>Onopordum acanthium</i>	A	B list
Forb	Scouring rush	<i>Equisetum hyemale</i>	E	N
Forb	Sharppoint flugel	<i>Kickxia elantine</i>	E	N
Forb	Shepherd's purse	<i>Capsella bursa-pastoris</i>	D	N
Forb	Shining geranium	<i>Geranium lucidum</i>	B	N
Forb	Slender flowered thistle	<i>Carduus tenuifolius</i>	D	N
Forb	Small cranesbill	<i>Geranium pusillum</i>	D	N
Forb	Smooth catsear	<i>Hypochaeris glabra</i>	D	N
Forb	Smooth hawkweed	<i>Hieracium laevigatum</i>	D	N
Forb	Soapwort	<i>Saponaria officinalis</i>	D	N
Forb	South American waterweed	<i>Egeria densa</i>	B	N
Forb	Spatula leaf purslane	<i>Lythrum portula</i>	B	N
Forb	Spearmint	<i>Mentha spicata</i>	D	N
Forb	Spotted cat's ear	<i>Hypochaeris radicata</i>	C	N
Forb	Spotted knapweed	<i>Centaurea biebersteinii</i>	B	B and T lists
Forb	St. John's wort	<i>Hypericum perforatum</i>	C	B list
Forb	Strawwort	<i>Corrigiola litoralis</i>	D	N
Forb	Subterranean clover	<i>Trifolium subterraneum</i>	C	N
Forb	Sweet alyssum	<i>Lobularia maritima</i>	D	N
Forb	Sweet vernalgrass	<i>Anthoxanthum odoratum</i>	C	N
Forb	Sweet violet	<i>Viola odorata</i>	D	N
Forb	Sweet William silene	<i>Silene armeria</i>	D	N
Forb	Sweet woodruff	<i>Galium odoratum</i>	E	N
Forb	Sweetclover	<i>Melilotus alba</i>	C	N
Forb	Swollen bladderwort	<i>Utricularia inflata</i>	A	N
Forb	Tall verbena	<i>Verbena bonariensis</i>	A	N
Forb	Tansy ragwort	<i>Senecio jacobaea</i>	C	B and T lists
Forb	Thyme leaved sandwort	<i>Arenaria serpyllifolia</i>	D	N
Forb	Thyme-leaved speedwell	<i>Veronica serpyllifolia</i>	D	N
Forb	Toothed dock	<i>Rumex dentatus</i> [ <i>Rumex dentatus</i> ssp. <i>klotzschianus</i> ]	D	N
Forb	Tufted	<i>Vicia cracca</i>	C	N
Forb	Tumbling mustard, Jim Hill mustard	<i>Sisymbrium altissimum</i>	B	N
Forb	Uruguay water primrose	<i>Ludwigia uruguayensis</i>	A	N

Species Type	Common Name	Latin Name	Designation	
			Local	ODA
		<i>[Ludwigia hexapetala]</i>		
Forb	Velvet leaf	<i>Abutilon theophrasti</i>	D	B list
Forb	Wall lettuce	<i>Lactuca muralis</i>	C	N
Forb	Water speedwell	<i>Veronica anagallis-aquatica</i>	C	N
Forb	White campion	<i>Lychnis alba</i>	D	N
Forb	White campion	<i>Silene alba</i>	D	N
Forb	White clover	<i>Trifolium repens</i>	C	N
Forb	White hoarhound	<i>Marrubium vulgare</i>	D	N
Forb	White Nancy	<i>Lamium maculatum</i>	E	N
Forb	White thorn-apple, Jimson-weed	<i>Datura stramonium</i>	D	N
Forb	Wild chamomile	<i>Matricaria recutita [Matricaria chamomilla]</i>	C	N
Forb	Wild sweet william	<i>Phlox maculata</i>	D	N
Forb	Wild turnip	<i>Brassica rapa [Brassica campestris]</i>	B	N
Forb	yellow archangel	<i>Lamiastrum galeobdolon</i>	D	N
Forb	Yellow flag	<i>Iris pseudacorus</i>	B	N
Forb	Yellow floating heart	<i>Nymphoides peltata</i>	A	A list
Forb	Yellow hawkweed	<i>Hieracium cespitosum</i>	D	N
Forb	Yellow sweetclover	<i>Melilotus officinalis</i>	E	N
Forb	Yellow toadflax	<i>Linaria vulgaris</i>	D	B list
Grass	["Chaetochloa viridis"]. Green foxtail	<i>Setaria viridis</i>	D	N
Grass	["Persicaria hydropiper"]. Smartweed	<i>Polygonum hydropiper</i>	B	N
Grass	["Persicaria lapathifolia"] Pale knotweed	<i>Polygonum lapathifolium</i>	D	N
Grass	["Persicaria persicaria"] Lady's thumb	<i>Polygonum persicaria</i>	C	N
Grass	["Poa triflora"]. Fowl meadow grass	<i>Poa palustris</i>	B	N
Grass	Annual bluegrass	<i>Poa annua</i>	D	N
Grass	Annual ryegrass	<i>Lolium multiflorum</i>	D	N
Grass	Barnyard grass	<i>Echinochloa crus-galli [Echinochloa crusgalli]</i>	C	N
Grass	Beard grass	<i>Polypogon monspeliensis</i>	D	N
Grass	Bermudagrass	<i>Cynodon dactylon</i>	D	N
Grass	Bristly dogstail grass	<i>Cynosurus echinatus</i>	D	N
Grass	Brome fescue	<i>Vulpia bromoides [Festuca bromoides]</i>	D	N
Grass	Broomcorn millet	<i>Panicum miliaceum</i>	D	N
Grass	Bulbous bluegrass	<i>Poa bulbosa</i>	D	N
Grass	Canada blue grass	<i>Poa compressa</i>	B	N
Grass	Cheatgrass	<i>Bromus tectorum</i>	D	N
Grass	Chess	<i>Bromus secalinus</i>	C	N
Grass	Chewings fescue	<i>Festuca rubra ssp. fallax</i>	D	N

Species Type	Common Name	Latin Name	Designation	
			Local	ODA
		<i>[Festuca rubra ssp. commutata]</i>		
Grass	Climbing bindweed	<i>Polygonum convolvulus</i>	B	N
Grass	Colonial bentgrass	<i>Agrostis capillaris [A. tenuis]</i>	C	N
Grass	Common oat	<i>Avena sativa</i>	E	N
Grass	Creeping bentgrass	<i>Agrostis stolonifera [A. alba]</i>	C	N
Grass	Creeping buttercup	<i>Ranunculus repens</i>	C	N
Grass	Creeping velvet grass	<i>Holcus mollis</i>	C	N
Grass	Cultivated rye	<i>Secale cereale</i>	D	N
Grass	Curly leaf pondweed	<i>Potamogeton crispus</i>	C	N
Grass	Doorweed	<i>Polygonum aviculare</i>	D	N
Grass	European watercress	<i>Rorippa nasturtium-aquaticum</i>	C	N
Grass	False brome	<i>Brachypodium sylvaticum</i>	A	B list
Grass	Foxglove	<i>Digitalis purpurea</i>	D	N
Grass	Giant knotweed	<i>Polygonum sachalinense</i>	B	B list
Grass	Hairy buttercup	<i>Ranunculus sardous</i>	D	N
Grass	Hairy crabgrass	<i>Digitaria sanguinalis</i>	D	N
Grass	Harding grass	<i>Phalaris aquatica</i>	A	N
Grass	Heal-all	<i>Prunella vulgaris ssp. vulgaris [Prunella vulgaris var. vulgaris]</i>	D	N
Grass	Himalayan knotweed	<i>Polygonum polystachyum</i>	A	B list
Grass	Hybrid giant knotweed	<i>Polygonum cuspidatum x sachalinense</i>	B	N
Grass	Hybrid Japanese knotweed, Bohemian knotweed	<i>Polygonum x bohemicum [P. sachalinense x P. cuspidatum]</i>	E	B list
Grass	Japanese brome-grass	<i>Bromus japonicus</i>	C	N
Grass	Japanese knotweed	<i>Polygonum cuspidatum</i>	B	B list
Grass	Johnson grass	<i>Sorghum halepense</i>	E	B list
Grass	Kentucky bluegrass	<i>Poa pratensis</i>	D	N
Grass	Kudzu	<i>Pueraria lobata</i>	A	A and T lists
Grass	Leporinum barley	<i>Hordeum murinum ssp. leporinum [Hordeum leporinum]</i>	D	N
Grass	Lesser celandine	<i>Ranunculus ficaria</i>	B	N
Grass	Little quakinggrass	<i>Briza minor</i>	D	N
Grass	Meadow fescue	<i>Festuca pratensis</i>	C	N
Grass	Meadow foxtail	<i>Alopecurus pratensis</i>	C	N
Grass	Mediterranean barley	<i>Hordeum marinum ssp. gussonianum [Hordeum geniculatum]</i>	D	N
Grass	Medusahead	<i>Taeniatherum caput-medusa</i>	C	N
Grass	Mexican lovegrass	<i>Eragrostis mexicana ssp. virescens [Eragrostis orcuttiana]</i>	D	N
Grass	Orchard grass	<i>Dactylis glomerata</i>	C	N
Grass	Oval-leaf knotweed	<i>Polygonum arenastrum</i>	D	N
Grass	Parentucellia	<i>Parentucellia viscosa</i>	D	N
Grass	Perennial ryegrass	<i>Lolium perenne</i>	C	N

Species Type	Common Name	Latin Name	Designation	
			Local	ODA
Grass	Perennial ryegrass	<i>Lolium perenne</i>	C	N
Grass	Poverty grass	<i>Bromus sterilis</i>	D	N
Grass	Purslane	<i>Portulaca oleracea</i>	D	N
Grass	Quackgrass	<i>Elymus repens [Agropyron repens]</i>	C	N
Grass	Radish	<i>Raphanus sativus</i>	E	N
Grass	Rat-tailed fescue	<i>Vulpia myoris [Festuca myorus]</i>	C	N
Grass	Reed canary grass	<i>Phalaris arundinacea</i>	C	N
Grass	Ripgut	<i>Bromus diandrus [Bromus rigidus]</i>	C	N
Grass	Rock fumewort	<i>Pseudofumaria lutea [Corydalis lutea]</i>	D	N
Grass	Rough bluegrass	<i>Poa trivialis</i>	B	N
Grass	Silvery hair grass	<i>Aira caryophyllea</i>	D	N
Grass	Slender meadow foxtail	<i>Alopecurus myosuroides</i>	D	N
Grass	Smallflower buttercup	<i>Ranunculus parviflorus</i>	D	N
Grass	Smooth barley	<i>Hordeum murinum ssp. glaucum [Hordeum glaucum]</i>	D	N
Grass	Smooth brome-grasses	<i>Bromus inermis</i>	C	N
Grass	soft chess (brome)	<i>Bromus hordeaceus [Bromus mollis]</i>	C	N
Grass	Spiny fruited buttercup	<i>Ranunculus muricatus</i>	D	N
Grass	Tall fescue	<i>Festuca arundinacea</i>	C	N
Grass	Tall oatgrass	<i>Arrhenatherum elatius</i>	C	N
Grass	Timothy	<i>Phleum pratensis</i>	D	N
Grass	Velvet grass	<i>Holcus lanatus</i>	C	N
Grass	Water smartweed	<i>Polygonum coccineum</i>	B	N
Grass	Weeping lovegrass	<i>Eragrostis curvula</i>	D	N
Grass	Wild oats	<i>Avena fatua</i>	E	N
Grass	Witchgrass	<i>Panicum capillare</i>	D	N
Grass	Yellow hairgrass	<i>Aira praecox</i>	D	N
Rush	European soft rush	<i>Juncus effusus v. effusus</i>	C	N
Sedge	Blunt broom sedge	<i>Carex tribuloides var. tribuloides</i>	D	N
Sedge	Eggbract sedge	<i>Carex ovalis [Carex leporina]</i>	D	N
Sedge	Flatsedge	<i>Cyperus eragrostis</i>	B	N
Sedge	Pale sedge	<i>Carex pallescens</i>	D	N
Sedge	Yellow nutsedge	<i>Cyperus esculentus</i>	B	B list
Shrub	Absinth wormwood	<i>Artemisia absinthium</i>	B	N
Shrub	Armenian blackberry	<i>Rubus armeniacus (R. discolor, misapplied)</i>	C	B
Shrub	Butterfly bush	<i>Buddleia davidii</i>	C	N
Shrub	Common filbert	<i>Corylus avellana</i>	C	N
Shrub	Common wormwood	<i>Artemisia vulgaris</i>	D	N
Shrub	Daphne	<i>Daphne laureola</i>	B	N
Shrub	Dog rose	<i>Rosa canina</i>	D	N
Shrub	Evergreen blackberry	<i>Rubus laciniatus</i>	C	N

Species Type	Common Name	Latin Name	Designation	
			Local	ODA
Shrub	Japanese privet	<i>Ligustrum japonicum</i>	D	N
Shrub	Milkflower cotoneaster	<i>Cotoneaster lacteus</i>	D	N
Shrub	Multiflora rose	<i>Rosa multiflora</i>	B	N
Shrub	Parney's Red Clusterberry	<i>Cotoneaster parneyi</i>	D	N
Shrub	Privet	<i>Ligustrum vulgare</i>	E	N
Shrub	Scot's broom	<i>Cytisus scoparius</i>	C	B list
Shrub	Simon's cotoneaster	<i>Cotoneaster simonsii</i>	D	N
Shrub	Swedish cotoneaster	<i>Cotoneaster suecicus</i>	D	N
Shrub	Sweet briar	<i>Rosa eglanteria</i>	B	N
Shrub	White spanishbroom	<i>Cytisus multiflorus</i>	D	N
Tree	Black locust	<i>Robinia pseudoacacia</i>	C	N
Tree	English hawthorne	<i>Crataegus monogyna</i>	C	N
Tree	English holly	<i>Ilex aquifolium</i>	C	N
Tree	English laurel	<i>Prunus laurocerasus</i>	C	N
Tree	English oak	<i>Quercus robur</i>	D	N
Tree	European birch	<i>Betula pendula</i>	D	N
Tree	European mountain ash	<i>Sorbus aucuparia</i>	D	N
Tree	European plum	<i>Prunus domestica</i>	D	N
Tree	Horse chestnut	<i>Aesculus hippocastanum</i>	D	N
Tree	Norway maple	<i>Acer platanoides</i>	C	N
Tree	Portugal laurel	<i>Prunus lusitanica</i>	C	N
Tree	Princess tree	<i>Paulownia tomentosa</i>	E	N
Tree	Siberian elm	<i>Ulmus pumila</i>	B	N
Tree	Sweet cherry	<i>Prunus avium</i>	C	N
Tree	Sycamore maple	<i>Acer pseudoplatanus</i>	B	N
Tree	Tree-of-heaven	<i>Ailanthus altissima</i>	B	N
Tree	White poplar	<i>Populus alba</i>	B	N
Vine	English ivy/Atlantic ivy	<i>Hedera helix, Hedera hibernica</i>	C	B list
Vine	Field morning-glory	<i>Convolvulus arvensis</i>	C	B list
Vine	Grannyvine	<i>Ipomoea tricolor</i>	E	N
Vine	Porcelain berry	<i>Ampelopsis brevipedunculata</i>	A	N
Vine	Traveler's joy	<i>Clematis vitalba</i>	C	B list

## APPENDIX 2 IPM CALENDAR

Note: This weed management calendar is meant as a summary of general guidelines for use by restoration or vegetation management professionals who are working to limit the impact of invasives on natural area restoration projects. For each species, each row represents one management approach. When using herbicides, always follow the label of the product being used. Herbicide suggestions in this document should not be followed if they contradict the label on the product being used. Make sure to follow all local, state or federal regulations that apply to the particular project site. It is most effective to use an integrated vegetation management strategy. Always make sure that the benefits of the activity outweigh the impacts.

LATIN NAME	COMMON NAME	PLANT TYPE/ TREATMENT TYPE(S)	MINIMUM TREATMENT DURATION	WINTER			SPRING			SUMMER			FALL		
				December	January	February	March	April	May	June	July	August	September	October	November
<i>Alliaria petiolata</i>	Garlic Mustard	Herbaceous Biennial	Seeds last 7+ years	Rosettes	Rosettes/2nd year rosettes re-emerge		Rosettes bolt, 1st year seedlings develop to rosettes	Flower/ Seed pods emerge	Seed pods green/ Seeds develop	Seed pods mature/ Seeds Mature	Seed pods release		Rosettes		
		Manual	>5 years					Pull and bag bolting, flowering and seeding plants. Dispose of bagged material in trash. Revisit sites every few weeks to pull plants sprouting from left behind root fragments.							
		Chemical	>5 years					Foliar (Glyphosate)			Re-visit sprayed sites to hand pull missed plants.		Rosettes (Glyphosate)		
<i>Buddleia davidii</i>	Butterfly Bush	Deciduous Shrub					Leaf Out			Flower		Flower/Seed			
		Manual		Dig up or weed wrench and get entire root											
		Chemical (option 1)								Foliar spray (Triclopyr)					
		Chemical (option 2)								Foliar spray (Glyphosate)					
		Mechanical + Chemical								Basal or cut stump application (Triclopyr or Glyphosate)					
<i>Calystegia sepium</i> or <i>Convolvulus arvensis</i>	Bindweed or Morning Glory	Herbaceous Perennial		Emerge			Flower			Seed					
		Manual or Mechanical	>2 years	Cut or pull; remove fragments						Heavily mulch infested area					
		Shade	3 to 5 years	Cover infested area with landscape fabric or cardboard/woodchips - need to maintain cover so plants get no light over whole population; watch surrounding area for plants (at least 5-10 feet from infested area)											
		Chemical	>2 years					Foliar spray (Aminopyralid at bud stage or Triclopyr at full flower). Unwind from desirable vegetation before spraying.			Foliar spray or wipe on (Glyphosate at full bloom to early seed or Triclopyr or Aminopyralid at post bloom-follow up in spring); when re-treating, wait until stems are > 12 inch long				
		Mechanical + Chemical								Cut plants and spray/wipe on when regrowth > 12 inches (Glyphosate)					
<i>Centaurea biebersteinii</i>	Spotted Knapweed	Herbaceous Perennial		Rosettes			Flower			Flower/Seed					
		Manual or Mechanical		Pull/dig up; in compacted soils will need to use fork tool or digging knife; most effective when soil is moist											
		Chemical					Foliar spray (Triclopyr)		Foliar spray (Triclopyr or Glyphosate)						
<i>Cirsium arvense</i>	Canada Thistle	Herbaceous Perennial		Germinate & Growth			Rosettes	Bolt	Flower		Flower/Seed	Seed	Germinate/Rosettes		
		Manual or Mechanical	>2 years	Pull/mow every 3-4 weeks											
		Shade		Cut and Sheet Mulch						Cut and Sheet Mulch					
		Chemical		Foliar spot spray (Triclopyr or Aminopyralid)						Foliar spot spray (Glyphosate)					
		Mechanical + Chemical								Cut late July		Spray regrowth late August (Glyphosate)			

LATIN NAME	COMMON NAME	PLANT TYPE/ TREATMENT TYPE(S)	MINIMUM TREATMENT DURATION	WINTER			SPRING			SUMMER			FALL		
				December	January	February	March	April	May	June	July	August	September	October	November
<i>Cirsium vulgare</i>	Bull Thistle	Herbaceous Biennial					Emerge	Flower	Flower/Seed	Seed/Emerge					
		Manual or Mechanical					Cut below crown, mow, or dig up shortly before flowering								
		Chemical					Foliar spot spray (Triclopyr or Glyphosate)	Foliar spray before flower (Glyphosate)		Foliar spot spray (Triclopyr or Glyphosate)					
<i>Clematis vitalba</i>	Old Man's Beard	Deciduous Vine				Emerge	Flower	Seed							
		Manual or Mechanical				Pull young plants up/cut mature stems at ground; dig up roots									
		Mechanical + Chemical (option)	about 2 years				Cut stems and wipe on (Glyphosate, Triclopyr or Metsulfuron concentrate)								
		Mechanical + Chemical (option)	about 2 years				Apply herbicide to regrowth in spring			Cut stems in fall					
<i>Conium maculatum</i>	Poison-hemlock	Herbaceous Biennial		Germinate	Rosettes	Bolt	Flower	Seed	Germinate						
		Manual or Mechanical		Pull plants by hand or dig up roots when soil is moist			Cut to below crown (1-3 inches)								
		Mechanical				Mow to 3-4 inches									
		Chemical				Foliar spray before flowering (Aminopyralid, Triclopyr, or Glyphosate)									
<i>Cytisus scoparius</i>	Scotch Broom	Deciduous Shrub		Growth	Buds/Leaf Out	Flower	Seed	Growth							
		Manual		Pull small plants; weed wrench large plants											
		Mechanical				Cut mature stands down to ground									
		Chemical				Foliar spray (Triclopyr, Aminopyralid, Glyphosate)									
<i>Geranium robertianum</i>	Herb Robert	Herbaceous Annual		Rosettes	Seedlings/Rosettes	Flowering/Seed	Seed	Rosettes							
		Manual		Pull plants and mulch bare areas											
		Chemical			Foliar spray large patches of small seedlings (Glyphosate)		Foliar spray large patches of small seedlings (Glyphosate)		Foliar spray large patches of small seedlings (Glyphosate)						
<i>Hedera hibernica, H. helix</i>	English Ivy	Evergreen Woody Vine	2 years	Berry/Seed	Vegetative	Flower	Berry/Seed								
		Manual or Mechanical		Dig up or pull up roots of accessible plants; Cut off vines (girdle) from base of trees											
		Cultural			Mulch to depth of 8 inches										
		Chemical (option 1)		Foliar spray on sunny day, temp >50 degrees F (Glyphosate or mix of Glyphosate and Triclopyr)	Foliar spray young plants with 2-4 newly expanded leaves (Glyphosate)			Spray regrowth (Glyphosate or Triclopyr); hand pull option							
		Chemical (option 2)					Foliar spray (Triclopyr & surfactant); more effective right after string trimming								
		Chemical (option 3)					Foliar spray-Aminopyralid	Foliar spray on regrowth-Aminopyralid							
<i>Hieracium sp.</i>	Hawkweed	Herbaceous Perennial		Emerge	Bud/Flower	Flower/Seed									
		Manual or Mechanical		Dig up including roots and runners											
		Shading			Cover with landscape fabric or black plastic			Remove and discard flowers							
		Chemical			Foliar spray before flowers open (Triclopyr)										

LATIN NAME	COMMON NAME	PLANT TYPE/ TREATMENT TYPE(S)	MINIMUM TREATMENT DURATION	WINTER			SPRING			SUMMER			FALL		
				December	January	February	March	April	May	June	July	August	September	October	November
<i>Ilex aquifolium</i>	English Holly	Evergreen Shrub/Tree				Growth				Flower				Berry/Seed	
		Manual		Pull or dig up small plants; use weed wrench on large plants											
		Mechanical + Chemical		Cut trunk as close to the ground as possible and apply concentrated herbicide within 20-30 seconds (Triclopyr or Glyphosate). On large trunks only the outer edge needs to be cut and treated.											
<i>Impatiens glandulifera</i>	Policeman's Helmet	Herbaceous Annual					Emerge			Flower		Flower/Seed			
		Manual or Mechanical		Pull or weed whack before seeds mature, compost on tarps											
		Chemical		Foliar spray young plants (Glyphosate)											
<i>Lepidium latifolium</i>	Perennial pepperweed	Herbaceous Perennial					Emerge			Flower		Flower/Seed			
		Manual		Pull or dig plants growing in sand or loose soil											
		Chemical		Foliar spray up through bloom stage (Glyphosate with surfactant)											
		Mechanical + Chemical		Mowing followed by foliar applications to resprouts (Glyphosate with appropriate surfactant)											
<i>Lysimachia vulgaris</i>	Garden Loosestrife	Herbaceous Perennial							Emerge		Flower	Flower/Seed			
		Manual or Mechanical		Cut at base/dig up where possible											
		Chemical		Foliar spray (Triclopyr or Glyphosate, aquatic formulation with suitable surfactant)											
<i>Lythrum salicaria</i>	Purple Loosestrife	Herbaceous Perennial							Emerge		Flower	Flower/Seed	Seed		
		Manual or Mechanical	> 5 years	Pull small plants; cut large plants at base											
		Chemical	2-3 years	Foliar spray (Glyphosate or Triclopyr, aquatic formulation)											
		Biocontrol	Up to 5 years before significant decrease in plant density	Release galerucella beetles on large stands											
<i>Phalaris arundinacea</i>	Reed Canary Grass	Perennial grass					Emerge			Flower	Flower/Seed	Seed/Growth			
		Manual	at least 5 yrs	Hand pull/dig over whole population											
		Mechanical	5 to 10 years	Mow											
		Mechanical + Shade	at least 1 year	Mow and cover with a combination of several layers of cardboard covered with 4-6 inches woodchips											
		Flooding	1 to 3 yrs	Inundation for whole growing season											
		Mechanical + Chemical	1 to 2 years	Mow fields before seeds mature											
		Chemical	1 year for small patches; 2 or more years for large infestations	Foliar spray regrowth (Glyphosate); till 2-3 weeks after spray for improved control											
				Foliar spray before summer dormancy (Glyphosate)											

LATIN NAME	COMMON NAME	PLANT TYPE/ TREATMENT TYPE(S)	MINIMUM TREATMENT DURATION	WINTER			SPRING			SUMMER			FALL		
				December	January	February	March	April	May	June	July	August	September	October	November
<i>Polygonum cuspidatum</i> , <i>P. bohemicum</i> , <i>P. sachalinense</i>	Japanese Knotweed and others	Tall Rhizomatous Perennial					Emerge	Growth	Flower	Seed			Die back		
		Mechanical	at least 5 years, not very effective on established patches				Cut twice each month						Cut once; then cover area with cardboard and deep mulch		
		Mechanical + Shade	5 years; can plant in area after 3 years				Cut to ground and cover with landscape fabric; stake down and monitor for growth at the edges								
		Mechanical + Chemical								Cut once	Foliar spray when about 3ft (Glyphosate, Triclopyr or Aminopyralid)				
		Chemical alone	at least 2 years							Inject stems >1/2 inch (Glyphosate); foliar spray or wipe on smaller plants and large upland patches (Glyphosate, Aminopyralid)					
<i>Prunus laurocerasus</i>	English Laurel	Evergreen Shrub or Tree					Flower			Seed					
		Manual		Pull or dig up small plants; use weed wrench on large plants						Pull or dig up small plants; use weed wrench on large plants					
		Mechanical + Chemical					Cut trunk as close to the ground as possible and apply concentrated herbicide within 20-30 seconds (Triclopyr or Glyphosate)								
<i>Rubus armeniacus</i> , <i>R. discolor</i> , <i>R. laciniatus</i>	Blackberry (Himalayan and Cutleaf)	Cane-Producing Shrub		Growth			Flower			Berry/Seed					
		Mechanical	> 2 years	Clear mechanically			Clear mechanically (if only once: when flowering)			Clear mechanically					
		Manual or Mechanical	at least 2 yrs	Cut canes/grub out crowns when soil is moist						Dig or cut regrowth			Grub out roots when soil is moist		
		Cultural											Mulch area after blackberries are cleared to prevent erosion and re-invasion		
		Chemical (option 1)					Foliar spray when plants are actively growing (Triclopyr)			Foliar spray when canes are actively growing and after berries are formed (Glyphosate); NOTE: post sprayed areas or control access to sprayed bushes			Clear dead canes, stabilize area to prevent possible erosion		
		Chemical (option 2)					Cut large canes and spot spray immediately after cutting (Glyphosate or Triclopyr)			Check area and repeat if necessary					
		Mechanical + Chemical					Clear mechanically			Foliar spray regrowth (Triclopyr, Aminopyralid or Glyphosate)					
<i>Senecio jacobaea</i>	Tansy Ragwort	Herbaceous biennial		Rosettes			Bud/Flower	Flower	Flower/Seed	Seed/Rosettes	Rosettes				
		Manual or Mechanical		Dig up rosettes if soil is moist			Pull and bag flowering stems			Dig up rosettes if soil is moist					
		Chemical		Foliar spray rosettes and flowering plants (Aminopyralid or Triclopyr)						Foliar spray rosettes (Aminopyralid or Triclopyr)					

LATIN NAME	COMMON NAME	PLANT TYPE/ TREATMENT TYPE(S)	MINIMUM TREATMENT DURATION	WINTER			SPRING			SUMMER			FALL		
				December	January	February	March	April	May	June	July	August	September	October	November
<i>Solanum dulcamara</i>	Bittersweet Nightshade	Semi-Woody Vine						Growth	Flower				Seed		
		Manual or Mechanical		Dig up plants in winter when possible to avoid damaging other plants			Dig, cut, pull or mow several times / season								
		Chemical					Information limited. Foliar spray or wipe on, late bud to early flower (Glyphosate, Triclopyr or Aminopyralid); plan to spray any regrowth								
<i>Sonchus arvensis</i>	Perennial Sowthistle	Herbaceous Perennial						Seedlings/Rosettes	Flower			Seed			
		Manual or Mechanical		Dig up including roots and runners			Remove and discard flowers								
		Shading		Cover with landscape fabric or black plastic											
		Chemical		Foliar spray actively growing plants before bud stage and at bud stage before flowers open (Aminopyralid). Plan to spray regrowth and beware of permit/license restrictions in coastal and wet areas											
<i>Tanacetum vulgare</i>	Common Tansy	Herbaceous Perennial						Emerge	Flower			Flower/Seed			
		Manual		Dig up						Dig up, cut & bag seed head					
		Mechanical					Mow/cut before bud stage	Cut regrowth as needed							
		Chemical	>1 yr				Spot spray actively growing plants (Metsulfuron)			Wipe on during flower/seed set (Glyphosate); not as effective as metsulfuron - cut & bag flower/seed heads					

## APPENDIX 3 IPM PRODUCT LIST

Product Type	Active Ingredient(s)	Example Product Names	Approved Use <sup>2</sup>	Approved Locations <sup>1</sup>				
				SA	VC	WQ	SR	DL
Post-emergent non-selective herbicide	Glyphosate without surfactant	Accord <sup>®</sup> Concentrate, Rodeo <sup>®</sup> , Aquamaster <sup>®</sup>	Spot, ring or broadcast spray applications with or without approved surfactant	•	•	•	•	•
	Pelargonic fatty acid	Scythe <sup>®</sup>	Top-kill of early-stage, easily killed weeds	•	•	•	•	•
Post-emergent broadleaf selective herbicide	Triclopyr (amine)	Garlon 3A <sup>®</sup> , LM Blackberry <sup>®</sup> , Brush <sup>®</sup>	Woody plants and difficult to control perennials. Used in spot spray and cut-stem applications with or without surfactant	•	•	•	•	•
	Metsulfuron methyl	Escort <sup>®</sup>	Broadleaf control in native prairie restoration	•	•			•
	Aminopyralid <sup>3</sup> Aminopyralid + Triclopyr (amine)	Milestone VM <sup>®</sup> Milestone VM Plus <sup>®</sup>	Woody plants and difficult to control perennials. Used in broadcast and spot spray with approved surfactant	•	•	•	•	•
Post-emergent grass selective herbicide	Sethoxydim	Poast <sup>®</sup>	Grass control in native habitat restoration	•	•			•
Pre-emergent non-selective herbicide	Trifluralin and Isoxaben	Snapshot <sup>®</sup>	Broadleaf and grass control in developed landscapes					•
	Pendimethalin	Pendulum <sup>®</sup> 2G	Broadleaf and grass control in developed landscapes					•
Surfactant/ Adjuvant	Methylated Seed Oil	MSO, Super Spread MSO <sup>®</sup>	0.16-.32 fluid ounce/gallon	•	•	•	•	•
	Ethylated Seed Oil and Non-Ionic Surfactant	Hasten <sup>®</sup>	0.16-.48 fluid ounce/gallon	•	•	•	•	•
Indicator dye	Food grade colorant	Dynamark <sup>™</sup> U.V.	0.1 fluid ounce/gallon	•	•	•	•	•
Insecticide	Pyrethroids		Directed jet sprays used for individual wasp and hornet nest treatments posing human safety threat		•	•	•	•
	<i>Bacillus thuringiensis</i> var. <i>israelensis</i>		Mosquito control in ponds, water features and catch basins. Not for use in streams and wetlands				•	•
Herbicide	Metam-sodium	Vapo-Rooter <sup>®</sup>	Root killer for use in sanitary lines, only					
	Diquat	Razorooter <sup>®</sup>	Root killer for use in sanitary lines, only					
	Ferrous Sulfate		Moss control in lawns					•
	Zinc or Zinc-Copper		Moss control on roofs					•
	Potassium salts of fatty acids		Moss control on roofs					•

<sup>1</sup>SA = Sensitive Area, VC = Clean Water Services Vegetated Corridor, WQ = Water Quality Facility, SR= Streamside Recreational Area, DL = Developed Landscape

<sup>2</sup>Always read and abide by the most current information

<sup>3</sup>Applications should be outside of the drip line of non-target trees and shrubs. Treated material should not be composted.

APPENDIX 4  
PESTICIDE USE NOTIFICATION SIGN

# CAUTION

Herbicides are being applied by state licensed applicators to control target weeds. Application methods are designed to protect water quality.

Materials Used: \_\_\_\_\_

Please keep pets on leash and refrain from contact with work area until sprayed surfaces (indicated by blue dye) have dried.

For more information, please call:


\_\_\_\_\_

or (503) 681-3600

Wherever there's water,  
there's Clean Water.

CleanWater  Services

**APPENDIX 5  
SAMPLE PESTICIDE APPLICATION RECORD**

		<b>PESTICIDE APPLICATION RECORD</b> 2550 SW Hillsboro Hwy Hillsboro, OR 97123 (503) 681-3600 www.cleanwaterservices.org		
<b>Applicator's full name:</b>		<b>Applicator company name:</b>		<b>License number:</b>
<b>Helper's full name:</b>		<b>Applicator company address:</b>		<b>Business license number:</b>
<b><u>APPLICATION 1</u></b>		<b>Location</b>		<b>Pesticide names, formulations, EPA registration numbers</b>
Date:	Site:	Label names:		(e.g., 3g/100g or 3%)
Time in:				
Time out:	Specific area treated:	Total amount of dilute pesticide applied:		
Temp:				
Wind:	Target species:	Coverage rate (e.g., 6lbs/1000 sq ft):		
Equipment used:				
Is area within Vegetated Corridor?				
Comments:				
Pesticide supplier:				
<b><u>APPLICATION 2</u></b>		<b>Location</b>		<b>Pesticide names, formulations, EPA registration numbers</b>
Date:	Site:	Label names:		(e.g., 3g/100g or 3%)
Time in:				
Time out:	Specific area treated:	Total amount of dilute pesticide applied:		
Temp:				
Wind:	Target species:	Coverage rate (e.g., 6lbs/1000 sq ft):		
Equipment used:				
Is area within Vegetated Corridor?				
Comments:				
Pesticide supplier:				