Appendix IV-B1:

Residential Pollution Source Control Program Template

Pollution Source Control Program

A Pollution Prevention Manual For Residents of

[Plat or Neighborhood Name]

Date: ***[Date the program was prepared]***

Legal Description: ***[abbreviated form; include lot numbers, blocks, etc.; may use assessor's tax parcel number if not part of a plat, such as a single lot]***

Program Operator: ***[The person or group, such as a Home Owner Association, responsible for administering the program]***

Watershed: ***[Enter the Watershed or Basin the property is located within]***

Program Document Prepared by: ***[person or company preparing this plan]***

Table of Contents

Cover Sheet – Program Information

1.0 Introduction

About this Manual

Best Management Practices…What are they?

- Source Control BMPs
- Treatment BMPs

What's in this manual?

2.0 Stormwater Facilities in Your Neighborhood and on Your Lot

3.0 General Principles of Pollution Prevention

4.0 Best Management Practices for Single Family Residences

1. Automobile Washing
2. Automobile Maintenance
3. Storage of Solid Waste and Food Wastes
4. Composting
5. Yard Maintenance and Gardening
6. Swimming Pool and Spa Cleaning and Maintenance
7. Household Hazardous Material Use, Storage and Disposal
8. Pet Waste Management
9. Activities in Wetlands and Wetland Buffers
10. Illicit Discharge Detection and Elimination
11. Pests and Noxious Weeds

1.0 Introduction

About this Manual

Thurston County's water resources – its streams, lakes, wetlands, groundwater, and Puget Sound – play an important role in the quality of life we enjoy. They provide us with recreation, drinking water, support tourism and salmon, and are used by industry. These waters, however, are vulnerable to pollution from a wide variety of human activities.

This manual applies to those residential properties and activities within the City of Olympia and its Urban Growth Area (UGA) that have the potential to contribute pollutants to stormwater runoff or directly to receiving waters. Stormwater runoff may seep into the ground, empty into a storm drain or a drainage ditch, or flow over the ground surface. Regardless of the way runoff leaves your site, it ends up in a stream river, lake, wetland, groundwater, or Puget Sound.

Contaminated stormwater can negatively affect every water body it enters. Therefore, this manual provides detailed information on what you can do to reduce the contamination of surface water, groundwater, and stormwater from your property.

Many of our water pollution problems are due in large part to pollutants washed off the land surface by storms. The quality of "stormwater" from residential properties is an increasing concern nationwide. Many people believe that stormwater is "clean" and does not harm water quality. This perception is understandable since the amount of pollution from any one place is not usually significant by itself. However, when all these small amounts are combined, they can cause significant pollution problems.

The federal Clean Water Act mandates that cities and counties control the quality of stormwater runoff. One way to achieve this is to implement pollution prevention measures on individual properties. By following the "Best Management Practices" described in this manual you can do your part to protect our streams, groundwater, and Puget Sound.

Best Management Practices … What are They?

Best Management Practices (BMPs) are a set of activities designed to reduce stormwater pollution. BMPs are separated into two broad categories: ***source control*** and ***treatment****.*

Source Control BMPs

Source control **BMPs** prevent contaminants from entering stormwater runoff by controlling them at the source. Some source control BMPs are operational, such as checking regularly for leaks and drips from equipment and vehicles, covering materials that have potential to add pollutants to surface water if rainwater comes in contact with the materials, cleaning up pet waste, and minimizing use of pesticides, fertilizers, and insecticides. Other source control BMPs require use of a structure to prevent rainwater from contacting materials that will contaminate stormwater runoff such as provide a covered area or berm to prevent clean stormwater from entering work or storage areas.

Treatment BMPs

In contrast, ***treatment*** **BMPs** are structures that treat stormwater to remove contaminants. Treatment BMPs typically require elaborate planning, engineering design, and construction. A stormwater pond for your subdivision is an example of a *treatment BMP.* No treatment BMP is capable of removing 100

percent of the contaminants in stormwater; the less contaminant in stormwater prior to the treatment BMP, the more effective the BMP is.

Also remember that, just because there is a stormwater collection system where you live, it does not necessarily mean that the stormwater is treated. Many developments were created prior to requirements to treat stormwater. The runoff from your property may go directly or indirectly to a stream or wetland without any treatment.

This manual will focus on *source control* BMPs applicable to the routine practices of most owners of a single-family residence.

What is in This Manual?

This manual has been developed for the owners of single-family residences. If you are trying to get a building permit to construct a new home you may be required to submit a copy of this manual, or its equivalent, as part of your permit application and then record it with the Thurston County Auditor's office prior to receiving final approval of your project.

The manual is divided into three sections as follows:

- **Introduction**
- **General Principles of Pollution Prevention**
- **Best Management Practices for Single-Family Residences**

The general principles and best management practices described are based on the requirements of the *City of Olympia Drainage Design and Erosion Control Manual*, Volume IV.

This plan focuses on *source control* BMPs applicable to the routine practices and activities expected for a typical single-family residence.

2.0 Stormwater Facilities in Your Neighborhood and on Your Lot

[Use this section to provide a description of the site/plat/lot and the stormwater structures and facilities found in the subdivision or on individual lots (such as rain gardens or LID features). This description should include the areas that the program covers and locations of the permanent stormwater structures and inlets should be identified. The ultimate destination of stormwater runoff, the tributary watershed, or potential pollutants should be clearly described. The location of natural and/or man-made drainage paths where pollutants may potentially leave the site shall be included here. Provide maps, drawings, or figures of the site as an attachment to this program if necessary. If applicable, include a sample plot plan for individual residences/lots. This plot plan is especially important for lots with LID stormwater features such as rain gardens, dispersal areas, and downspout infiltration, as these features are part of the overall stormwater management system and design for the site.]

3.0 General Principles of Pollution Prevention

This section describes simple pollution prevention principles that every homeowner should consider. Most of these are common sense, "housekeeping" types of solutions. With collective action by individuals throughout the City of Olympia implementing these principles, the improvement in water quality can be substantial. There are 15 general principles of pollution prevention.

1. Avoid the activity or reduce its occurrence

Avoid potentially polluting activity or do it less frequently, especially if it takes place outdoors. Apply lawn care chemicals following directions and only as needed. Do not apply herbicides right before it rains.

2. Move the activity indoors

Move a potentially polluting activity indoors out of the weather. This prevents runoff contamination and provides more control for a cleanup if a spill occurs. For example, unload and store chemicals inside a garage area or shed instead of outside. Be safe and ensure any storage area is well ventilated and required building and fire code requirements are met.

3. Cleanup spills quickly

Promptly contain and cleanup solid and liquid pollutant leaks and spills on any exposed soil, vegetation, or paved area. Use readily available absorbents such as kitty litter to absorb spills and then sweep up the material and dispose of it in the garbage. Promptly repair or replace leaking connections, pipes, hoses, valves, etc. on vehicles and equipment you own.

4. Use less material

Do not buy or use more material than you really need. Not only does this help keep potential disposal, storage, and pollution problems to a minimum, but may save money too.

5. Use the least toxic materials available

Investigate the use of materials that are less toxic. For example, replace a caustic-type detergent or solvent with a more environmentally friendly product. Even if you do switch to a biodegradable product, remember that only uncontaminated water is allowed to enter the stormwater drainage system.

6. Create and maintain vegetated areas near activity locations

Vegetation can filter pollutants out of stormwater. Route stormwater from parking and work areas through vegetated areas. Remember that wastewater other than stormwater runoff, such as wash water, must be discharged to a wastewater collection system (sewer or septic system), and may not be discharged to a storm drainage system.

7. Locate activities as far as possible from surface drainage paths

Activities located as far as possible from known drainage paths such as ditches, streams, other water bodies, and storm drains will be less likely to pollute, since it will take longer for material to reach the drainage features. This give more time to react to a spill, or if it is a "housekeeping" issue, may protect the local waters long enough for you to clean up the area around the activity. Do not forget that groundwater protection is important throughout the City of Olympia and Thurston County, no matter where the activity is located, so the actions you take on a day-to-day basis area are always important, even in dry weather.

8. Maintain stormwater drainage systems

Pollutants can concentrate over time in storm drainage facilities such as catch basins, ditches, and storm drains. When a large storm event occurs, turbulent runoff can mobilize these pollutants and carry them to receiving waters. By performing regular maintenance on stormwater facilities located on your property, you can prevent this from occurring. Also, repair or replace cracked or otherwise damaged pavement in parking areas and any other drainage areas that are subject to pollutant material leaks or spills.

9. Reduce, reuse, and recycle as much as possible

Look for ways to recycle instead of just disposing. This saves money and keeps hazardous and non-hazardous materials out of landfills. Contact City of Olympia Waste Resources for more information on recycling and organic disposal opportunities.

10. Be an advocate for stormwater pollution prevention

Help friends, neighbors, and business associates find ways to reduce stormwater pollution in their activities. Most people want clean water and do not pollute intentionally. Share your ideas and the BMPs in this manual to get them thinking about how their everyday activities affect water quality.

11. Report problems

We all must do our part to protect water, fish, wildlife, and our own health by implementing proper BMPs, and reporting water quality problems that we observe. In the City of Olympia, call the Water Resources Division of the Public Works Department at (360)753-8333 to report dumping to storm drains or ditches.

12. Provide oversight and training

Talk to the members of your family, or if you are a landlord talk to your tenants, to ensure they understand the pollution prevention source control measures and BMPs described in this manual. If you are a landlord monitor the activities of your tenants to ensure that they are carrying out the principles of this manual.

13. Dust control

Sweep paved parking and storage areas regularly to collect and dispose of dust and debris that could contaminate stormwater. Do not hose down pollutants from any area to the ground, storm drain, conveyance ditch or any receiving water (stream, wetland, lake, etc.). Do not use used oils or other petroleum products for dust control. Volumes of water used for light watering for dust control of dirt driveways or gravel roads should be conducted to prevent any runoff of stormwater from the surface.

14. Eliminate illicit connections

A common problem with the stormwater drainage system for most communities is the existence of illicit connections of wastewater to the storm drainage system. Many businesses and residences have internal building drains, sump overflows, sump pumps, garage and outdoor sinks and showers, and even sanitary sewer and septic system pipes that were inadvertently connected to the nearby storm drainage system in the past.

Examine the plumbing system for your home to determine if illicit connections exist. Any time it is found that toilets, sinks, appliances, showers and bathtubs, floor drains, industrial process waters, and/or other indoor activities are connected to the stormwater drainage system; these connections must be immediately rerouted to the sanitary or septic system, holding tanks, or process treatment system. For

assistance in methods to detect and eliminate illicit connections contact the City of Olympia Public Works - Water Resources Division at (360)753-8333.

15. Dispose of waste properly

Every business and residence in City of Olympia must dispose of solid and liquid wastes and contaminated stormwater properly. There are generally four options for disposal depending on the type of materials. These options include:

- Sanitary sewer
- Recycling facilities
- Municipal solid waste disposal facilities
- Hazardous waste treatment, storage and disposal facilities.

Prior to disposing of any wastes to the City of Olympia sanitary sewer system, you should verify the material is not listed as a Prohibited Discharge under Olympia Municipal Code, Section 13.20.050.

4.0 Best Management Practices for Single Family Residences

The actions we take each day in and around our homes have a profound effect on surface water quality and fish habitat. Stormwater goes directly to our groundwater, lakes, streams, and Puget Sound. It does not go to the wastewater treatment plant – any pollutants that get into stormwater can go directly to surface or ground water. Small amounts of pollution from many different sources can significantly affect our waterways.

Stormwater BMPs discussed in this section are practical ways to keep stormwater from becoming polluted in the first place. It is recommended that all residents in the City of Olympia use these BMPs. **Please note that some of these procedures are required by various state, county, or city laws, and are noted as required BMPs.**

This section provides a general list of activities typically conducted by homeowners and describes the BMPs that may be required or recommended to prevent stormwater pollution. The list includes brief information on applicability. More detailed information for the BMPs described in this section can be found in the City of Olympia Drainage Design and Erosion Control Manual, Volume IV or by contacting the City of Olympia Water Resources section of Public Works at (360)753-8333. BMPs for the following activities are described in this section:

1. Automobile Washing
2. Automobile Maintenance
3. Storage of Solid Wastes and Food Wastes
4. Composting
5. Yard Maintenance and Gardening
6. Swimming Pool and Spa Cleaning and Maintenance
7. Household Hazardous Material use, Storage, and Disposal
8. Pet Waste Management
9. Activities in Streams, Wetlands, and Wetlands Buffers
10. Illicit Discharge Detection and Elimination
11. Pest Management and Noxious Weeds

1. Automobile Washing

Many residents wash their cars in the driveway or on the street. Wash waters typically flow to a storm drain or ditch, which discharges stormwater directly to the underlying groundwater or to the nearest stream, lake, or Puget Sound. Soaps and detergents, even the biodegradable ones, can have immediate and long-term effects on aquatic life in water bodies. The grime washed off the car also contains a variety of pollutants that can harm fish and wildlife.

Suggested BMPs

At Home:

- Wash your car directly over your lawn or make sure the wash water drains to a vegetated area. This allows the water and soap to soak into the ground instead of running off into a local water body.
- Ideally, no soaps or detergents should be used, but if you do use one, select one without phosphates.
- Commercial products are available that allow you to clean a vehicle without water. These were developed for areas where water is scarce, so a water saving benefit is realized, as well as reduced pollution.
- Use a hose nozzle with a shut-off valve to save water.
- Do not wash your car if rain is expected.
- Pour the bucket of soapy, dirty wash water down your sink. This way the water does not pollute surface water. Instead, it is treated at the wastewater treatment plant or by your septic system.

Away from Home:

- Consider not washing your car at home. Take it to a commercial car wash that has a recycle system and discharges wastewater to the sanitary sewer for treatment.

2. Automobile Maintenance

Many of us are “weekend mechanics”. We enjoy the cost savings of changing our own oil and antifreeze, topping off the battery with water, and generally making our car perform its best. There is a lot of potential for stormwater pollution associated with these activities; however, the following BMPs will help you minimize pollution while servicing your car, truck, van, or RV.

Required BMPs

- Recycle all oils, antifreeze, solvents, and batteries. Many local car parts dealers and gas stations accept used oil and oil filters. The Household Hazardous Waste facilities at the Thurston County Waste and Recovery Center accept oil, oil filters, antifreeze, and solvents.
- Never dump new or used automotive fluids or solvents on the ground, in a storm drain or street gutter, or in a water body. Eventually, it will make its way to local surface waters or groundwater, including the water we drink.
- Do not mix wastes. The chlorinated solvents in some carburetor cleaners can contaminate a huge tank of used oil, rendering it unsuitable for recycling. Always keep your wastes in separate containers that are properly labeled and store them out of the weather.

Suggested BMPs

- Fix all leaks, to keep the leaky material off streets and out of surface water.
- To dispose of oil filters, punch a hole in the top and let drain for 24 hours. This is where a large funnel in the top of your oil storage container will come in handy. After draining, wrap in two layers of plastic and dispose of in your regular garbage or recycle by taking it to the Thurston County Waste and Waste and Recovery Center. Call the City of Olympia Department of Public Works at (360) 753-8333 for up-to-date information on the appropriate disposal of consumer products.
- Use care in draining and collecting antifreeze to prevent accidental spills. Spilled antifreeze tastes sweet and can be deadly to animals they ingest it.
- Perform your service activities on concrete or asphalt or over a plastic tarpaulin to make spill cleanup easier. Keep a bag of kitty litter on hand to absorb spills. If there is a spill, sprinkle a good layer on the spill, let it absorb for a little while and then sweep it up. Place the contaminated litter in a plastic bag, tie it up, and dispose of it in your regular garbage. Take care not to leave kitty litter out in the rain; it will form a sticky goop that is hard to clean up.
- If you are doing body work outside, be sure to use a tarpaulin to catch material resulting from grinding, sanding, and painting. Dispose of this waste by double bagging in plastic and placing in your garbage.

3. Storage of Solid Wastes and Food Wastes

Improper storage of food and solid waste at residences can lead to not only water pollution problems, but problems with neighborhood pets and vermin as well. Following the BMPs listed below can help keep your property a clean and healthy place to live.

Suggested BMPs

- Recycle as much as you can. City of Olympia residents have access to curbside pickup for yard waste and recyclable materials. Also, look under “recycling” in the phone book for firms that take other recyclables.
- All waste containers kept outside should have lids. If your lid is damaged, please call the City of Olympia Waste Resources department at (360) 753-8340
- Leaking waste containers should be replaced. If your container is damaged, please call your local solid waste hauler.
- Store waste containers under cover if possible, or on grassy areas.
- Inspect the storage area regularly to pick up loose scraps of material and dispose of them properly.
- Purchase products which have the least amount of packaging materials.
- Compost biodegradable materials such as grass clippings and vegetable scraps instead of throwing them away. Call City of Olympia Waste ReSources department at (360)753-8340 for more information on composting or information on yard waste collections. See the section on composting for BMPs relating to that activity.
- A fun alternative to traditional composting is worm composting. You can let worms do all the work for you by keeping a small vermiculture box just outside your kitchen. For more information on getting started with worms, call the number listed above.

4. Composting

Composting is an earth-friendly activity as long as some common sense rules outlined below are followed. If you choose to compost, the following BMPs should be utilized.

Suggested BMPs

- Compost piles must be located on an unpaved area where runoff can soak into the ground or be filtered by grass and other vegetation. Compost piles should be located in an area of your yard not prone to water ponding during storms, and should be kept well away from wetlands, streams, lakes, and other drainage paths.
- Compost piles must be maintained and turned over regularly to work properly. Large piles of unattended compost may create odor and vermin problems.
- Avoid putting hazardous, inorganic, plastics or metal waste in the compost pile.
- Cover the compost pile (See Figure) for two reasons:
  - To keep stormwater from washing nutrients into waterways.
  - To keep excess water from cooling the pile. This slows down the rate of decomposition.
- Build bins of wood, chicken wire, or fencing material to contain compost so it can't be washed away. Visit the City of Olympia website olympiawa.gov or contact Olympia Public Works at (360) 753-8333 to get free composter designs and materials lists.
- Building a small earthen dike around your compost pile is an effective means of preventing nutrient-rich compost drainage from reaching stormwater paths.

5. Yard Maintenance and Gardening

This section deals with the normal yard maintenance activities we all perform at our homes. Over watering, over fertilizing, improper herbicide application, and improper disposal of trimmings and clippings can all contribute to serious water pollution problems. Following the BMPs listed below will help alleviate pollutant runoff.

Required BMPs

- Follow the manufacturer's directions exactly for mixing and applying herbicides, fungicides, and pesticides, and use them sparingly. Never apply when it is windy or when rain is expected. Never apply over water, within 100 feet of a well-head, or adjacent to streams, wetlands, or other water bodies. Triple-rinse empty containers, using the rinsate for mixing your next batch of spray, and then double-bag and dispose of the empty container in your regular garbage. Never dispose of grass clippings or other vegetation in or near storm drains, streams, lakes, or Puget Sound.

Suggested BMPs

- Use natural, organic soil amendments when possible. The excellent soil conditioning properties of the organic matter aid water retention in lighter soils and help to break up and aerate heavier soils, so roots can grow better and less watering is needed. It contains both readily available and long term nitrogen and other nutrients commonly lacking in Northwest soils. The slow release of nitrogen better matches the needs of plants. Thus, there is much less potential for nitrates to leach into surface or groundwater due both to less “excess nitrogen” and less water use. Better vegetative growth can also reduce erosion and runoff.

- Follow manufacturer's directions when applying fertilizers. Consider using only organic, slow release, or 50% water insoluble forms of fertilizers and no more than 4 pounds of nitrate as Nitrogen annually and no more than 1 pound per application for every 1,000 square feet of turf grass. (Water insoluble forms of nitrogen include sulfur and/or polymer-coated fertilizers, Isobutylidene Diurea (IBDU), Methylene Urea and Ureaform, and organic fertilizers.) More is not better, either for your lawn or for local water bodies. Never apply fertilizers over water or adjacent to ditches, streams, or other water bodies. Remember that organic fertilizers have a slow release of nitrogen, and less potential to pollute than synthetic fertilizers.
- Save water and prevent pollution problems by watering your lawn sensibly. Lawns and gardens typically need the equivalent of 1 inch of rainfall per week. You can check on how you're doing by putting a wide mouth jar out where you're sprinkling, and measure the water with a small plastic ruler. Overwatering to the point of runoff can carry polluting nutrients to the nearest water body.
- Consider planting a vegetated buffer zone adjacent to streams or other water bodies on your property. Call the City of Olympia Water Resources - Environmental Services section for advice and assistance in developing a planting plan.
- Reduce the need for pesticides and fertilizers on lawns by improving the health of the soil. Aerating, thatching, and topdressing with compost will improve soil health and help desired grasses compete with weeds and moss. Contact the City of Olympia Water Resources - Environmental Services section for more information about the City's Go Green lawn care program.
- Make sure all fertilizers and pesticides are stored in a covered location. Rain can wash the labels off bottles and convert 50 pounds of boxed fertilizer into either a solid lump or a river of nutrients.
- Use a mulching mower and mow higher to improve soil/grass health and reduce or eliminate fertilizer and pesticide use.
- Compost all yard clippings, or use them as mulch to save water and keep down weeds in your garden. See Composting section for more information.
- Practice organic gardening and virtually eliminate the need to use pesticides and fertilizers.
- Pull weeds instead of spraying and get some healthy exercise, too. If you must spray, use the least toxic formulations that will get the job done.
- Work fertilizers into the soil instead of letting them lie on the ground surface, exposed to the next rainstorm.
- Plant native vegetation that is suited to Northwest conditions, they require less water and little to no fertilizers and pesticides.
- Contact your local waste disposal company for curbside pickup and recycling of yard waste.
- Invasive weeds and insect pests are a common nuisance to for yards. Consider generating an Integrated Pest Management Plan to control weeds and pests with the least amount of pollution potential. See BMP #10 of this manual for more guidance.

6. Swimming Pool and Spa Cleaning and Maintenance

Despite the fact that we immerse ourselves in it, the water from pools and spas is far from chemically clean. Nutrients, pH, and chlorine can adversely affect fish and wildlife in water bodies. Following these BMPs will ensure the cleanliness of your pool and the environment.

Required BMPs

- Pool and spa water must be dechlorinated to 0.1 mg/L if it is to be emptied into a ditch or to the stormwater drainage system. Contact your pool chemical supplier to obtain the neutralizing chemicals you will need. The rate of flow into the ditch or drainage system must be regulated so that it does not cause problems such as erosion, surcharging, or flooding. Water discharged to the ground or a lawn must not cross property lines and must not produce runoff.
- If pool and spa water cannot be dechlorinated, it must be discharged to the sanitary sewer. Prior to draining, your local sewer provider must be notified to ensure they are aware of the volume of discharge and the potential effects of chlorine levels. A pool service company can help you determine the frequency of cleaning and backwash of filters.
- Diatomaceous earth used in pool filters cannot be disposed of in surface waters, on the ground, or into stormwater drainage systems or septic systems. Dry it out as much as possible, bag it in plastic, and dispose of at the landfill.

Suggested BMPs

- Hire a professional pool service company to collect all pool water for proper disposal. Make sure to ask them where they will dispose of it and the kind of permits they hold to do so.

7. Household Hazardous Material Use, Storage and Disposal

Once we really start looking around our houses, the amount of hazardous materials we have on site is a real eye-opener. Oil-based paints and stains, paint thinner, gasoline, charcoal starter fluid, cleaners, waxes, pesticides, fingernail polish remover, and wood preservatives are just a few hazardous materials that most of us have around the house.

When products such as these are dumped on the ground or in a storm drain, they can be washed directly to receiving waters where they can harm fish and wildlife. They can also infiltrate into the ground and contaminate drinking water supplies. The same problem can occur if they are disposed of with your regular garbage; the containers can leak at the landfill and contaminate groundwater. The same type of contamination can also occur if hazardous products are poured down a sink or toilet into a septic system. Don't pour them down the drain if you're on municipal sewers, either. Many compounds can “pass through” the wastewater treatment plant without treatment and contaminate receiving waters, or they can harm the biological process used at the treatment plant, reducing overall treatment efficiency.

With such a diversity of hazardous products present in all homes in City of Olympia, a large potential for serious environmental harm exists if improper methods of storage, usage, and disposal are employed. Using the following BMPs will help keep these materials out of our soils, sediments, and waters.

Required BMPs

- Hazardous Materials must be used in accordance with the manufacturer recommendation or guidelines as shown on the label.
- Always store hazardous materials in properly labeled containers, never in food or beverage containers which could be misinterpreted by a child as something to eat or drink.
- Dispose of hazardous materials and their containers properly. Never dump products labeled as poisonous, corrosive, caustic, flammable, inflammable, volatile, explosive danger, warning, caution,

or dangerous outdoors, in a storm drain, or into sinks, toilets or drains. Call the City of Olympia Department of Public Works at (360) 753-8333 for information on disposal methods, collection events, and alternative products. Household hazardous wastes from City of Olympia residents and non-residents are accepted at the HazoHouse, at the Thurston County Waste and Recovery Center in Hawks Prairie at 2418 Hogum Bay Road NE.

Suggested BMPs

- Check hazardous material containers frequently for signs of leakage. If a container is rusty and has the potential of leaking soon, place it in a secondary container before the leak occurs and prevent a cleanup problem.
- Hazardous materials should be stored out of the reach of children.
- Store hazardous materials containers under cover and off the ground. Keep them out of the weather to avoid rusting, freezing, cracking, labels being washed off, etc.
- Keep appropriate spill cleanup materials on hand. Kitty litter is good for many oil-based spills.
- Ground cloths and drip pans must be used under any work outdoors which involves hazardous materials such as oil-based paints, stains, rust removers, masonry cleaners, and others bearing label warnings as outlined above (See Figure).
- Latex paints are not a hazardous waste, but are not accepted in liquid form at the landfill. To dispose of, leave uncovered in a protected place until dry, then place in the garbage. If your can is at least half full, you can take it to the HazoHouse to be placed in Swap Shop area. If you wish to dry waste paint quickly, mix kitty litter or sawdust in the can to absorb the paint. Once paint is dry, leave the lid off when you place it in the garbage so your garbage collector can see that it is no longer liquid.
- Use less toxic products whenever possible. Ecology maintains a hotline at 1-800- RECYCLE, or see information online at https://fortress.wa.gov/ecy/recycle/
- If an activity involving the use of a hazardous material can be moved indoors out of the weather, then do so. Make sure you can provide proper ventilation, however.
- Follow manufacturers' directions in the use of all materials. Over-application of yard chemicals, for instance, can result in the washing of these compounds into receiving water bodies. Never apply pesticides when rain is expected.
- When hazardous materials are in use, place the container inside a tub or bucket to minimize spills and store materials above the local base flood elevation (BFE).

8. Pet Waste Management

Pet waste that washes into lakes, streams or Puget Sound begins to decay, using up oxygen and releasing ammonia. Low oxygen levels and ammonia combined with warm water can kill fish. Pet waste also contains nutrients that encourage weed and algae growth in waters we use for swimming, boating and fishing. Most importantly, in many urban areas, pet and animal waste is the largest source of bacterial loading to streams. It can carry diseases that could make water unsafe for contact and lead to beach closures or affect shellfish harvest. These include:

- Campylobacteriosis—bacterial infection
- Salmonellosis—bacterial infection
- Toxocariasis—roundworm infection

- Toxoplasmosis—protozoan parasite infection
- Giardiasis—protozoan parasite infection
- Fecal Coliform—bacteria in feces, indicates contamination
- *E. coli*—bacteria in feces, may cause disease.

Cleaning up after your pet can be as simple as taking a plastic bag or pooper-scooper along on your next walk. Then choose one of the following.

Suggested BMPs

- **Bag it** – Put waste in a securely closed bag and deposit it in the trash. Do not put it in your yard waste container because pet waste may carry diseases, and yard waste treatment may not kill disease organisms.
- **Bury it** – Bury waste at least 1 foot deep and cover with soil in your yard or garden (not in food-growing areas).
- **Flush it** – Only flush pet wastes if your home is served by a sanitary sewer which goes to a sewage treatment plant. Water from your toilet goes through a treatment process that removes pollutants before it is discharged into the environment. To prevent plumbing problems, don't flush debris or cat litter. Cat feces may be flushed, but used litter should be put in a securely closed bag in the trash. Septic systems are not designed to accommodate the high pollutant load of pet waste. To prevent premature failure or excessive maintenance costs do not flush pet wastes to your septic system.
- **Compost it** – waste from small animals **other than dogs and cats** (rabbits, rodents, etc.), can be put in your compost bin.

9. Activities in Wetlands and Wetland Buffers

Wetlands and associated buffers are vegetated ecosystems through which water passes. These areas usually have a high water table and are often subject to periodic flooding. Wetlands can be very effective in removing sediments, nutrients and other pollutants from stormwater.

Maintaining wetlands and associated buffers helps to slow stormwater runoff, trap sediments and other pollutants and reduce the volume of runoff by allowing infiltration to occur. Reducing the velocity of runoff reduces soil erosion and increases contact time with soil and vegetation. Increasing contact of stormwater with soils and vegetation in a wetland or riparian area can be effective in removing sediments, nutrients and other pollutants from stormwater runoff.

Buffer areas are important to both the wetland and the upland areas as habitat for aquatic wetland-dependent wildlife and as buffers during extreme weather events. Other functions of buffer areas that contribute to water quality include shading, flood attenuation and shoreline stabilization.

Persons responsible for maintenance of wetland areas are encouraged to call City of Olympia Community Planning & Development (360)753-8314 prior to performing work in wetlands or their buffers.

Required BMPs

- Removal by hand of manmade litter and control of noxious weeds that are included on the state noxious weed list (Washington Administrative Code [WAC] 16-750) or invasive plant species as identified by City of Olympia. Control may be conducted by clipping, pulling, over-shading with native tree and shrub species, or non-mechanized digging. Alternative methods such as mechanical excavation, barrier installation, or herbicide use may be allowed, but may require special permits with the City of Olympia.
- Check with City of Olympia Community Planning & Development on guidelines for vegetation and hazardous tree removal in critical areas.

Suggested BMPs

- To prevent possible contamination, limit fertilizer and herbicide use around wetlands and their buffers.
- Limit access to wetlands and their buffers. To avoid compaction do not establish trails within the wetland areas.

10. Illicit Discharge Detection and Elimination

A common problem with City of Olympia's stormwater drainage system is illegal hook-ups to the system. Many businesses and residences hooked internal building drains, sump overflows, and even sanitary sewer and septic system piped to the storm drain in the past, allowing a variety of pollutants to flow directly to receiving waters instead of the sanitary sewer or septic system. Frequently, these connections are unknown to the current owner, and do not appear on any plans for the site. Because of the pollution potential these connections represent, the Environmental Protection Agency, under the mandate of the NPDES stormwater permits, has made elimination of illegal connections a top priority.

All businesses and residences in City of Olympia must examine their plumbing systems to determine if illegal connections exist. We recommend starting with site plans to better understand what piping systems were initially installed, making piping that does not appear on the plan a priority for investigation. Wherever toilets, sinks, appliances, showers and bathtubs, floor drains, or other indoor activities are connected to the stormwater drainage system, immediately reroute them to the sanitary or septic system or holding tanks.

If sanitary facilities (such as toilets) are connected to the stormwater drainage system, you must obtain a permit from the City of Olympia and reroute them to the sanitary sewer. Contact City of Olympia Community Planning & Development for permit and connection information.

Dye Testing

Dye testing with a non-toxic dye is one way to determine where a pipe or structure drains if not obvious by observations or on plans. The dye is put into the structure and flushed with some water. Observations are then made at ends-of-pipes, drainage ditches, catch basins, and manholes to look for the color coming through. Contact City of Olympia Public Works - Wastewater Operations if you need assistance in locating structures adjacent to your property.

Smoke Testing

Smoke testing can also help detect illegal connections and is best done by qualified personnel. To conduct smoke testing, shut off all indoor discharges, place a smoke bomb or other smoke-generating device in a storm drain manhole, and force air in after it. Station personnel at each suspect drain location to observe if smoke is coming out. Identify smoking drains for future rerouting.

Plugging or Rerouting Illicit Discharges

Drains that are found to connect to the stormwater drainage system must either be permanently plugged or disconnected and rerouted as soon as possible. Plug unused drains with concrete or similar permanent materials. If a drainpipe is to be rerouted and a sanitary sewer services the property, then the local sewer provider must be contacted. It is the responsibility of the property owner to follow through on rerouting illicit storm drainage connections to the sanitary sewer.

If the property is not served by a sanitary sewer, alternate measures will be necessary. If the discharge is simply domestic waste, a septic system may be feasible. If it is necessary to install a septic system, the proper permits will need to be obtained from the City of Olympia Community Planning and Development. If the discharge is anything other than domestic waste, then a holding tank or onsite treatment will be necessary.

11. Pests and Noxious Weeds

Invasive weeds and insect pests are a common problem for many yards and gardens in Thurston County. Effective management of these pests in the least toxic method requires careful planning and implementation. Developing an *Integrated Pest Management Plan* is often the best solution for managing pests and reducing pollution of ground and surface water bodies.

Introduction

Integrated Pest and Vegetation Management (IPM) is a natural, long-term, ecologically-based systems approach to controlling pest populations. IPM is used to reduce pest populations, maintain them at levels below those causing health concerns or economic damage. The goals of IPM are to both encourage optimal selective pesticide use (away from prophylactic, broad spectrum use), and to maximize natural controls to minimize environmental side effects.

True integrated pest and vegetation management is a powerful approach that anticipates and prevents most problems through appropriate cultural practices and careful observation. Knowledge of the life cycles of host plants and both beneficial and pest organisms is also important. The integrated pest management section of this guidance is adapted from *Least Toxic Pest Management for Lawns* by Sheila Daar. Following the integrated pest management process gives you the information you need to minimize damage by weeds, diseases, and pests and to treat those problems with the least toxic approaches.

The IPM Process

Step One: *Correctly identify problem pests and understand their life cycle.*

Learn more about the pest. Observe it and pay attention to any damage that may be occurring. Learn about the life cycle. Many pests are only a problem during certain seasons, or can only be treated effectively in certain phases of the life cycle.

Step Two: *Establish tolerance thresholds for pests.*

Every landscape has a population of some pest insects, weeds, and diseases. This is good because it supports a population of beneficial species that keep pest numbers in check. Beneficial organisms may compete with, eat, or parasitize disease or pest organisms. Decide on the level of infestation that must be exceeded before treatment needs to be considered. Pest populations under this threshold should be monitored but don't need treatment. For instance, European crane flies usually don't do serious damage to a lawn unless there are 25 to 40 larvae per square foot feeding on the turf in February (in normal weather years). Also, most people consider a lawn healthy and well maintained even with up to 20 percent weed cover, so treatment, other than continuing good maintenance practices, is generally unnecessary.

Step Three: *Monitor to detect and prevent pest problems.*

Regular monitoring is a key practice to anticipate and prevent major pest outbreaks. It begins with a visual evaluation of the lawn or landscape's condition. Take a few minutes before mowing to walk around and look for problems. Keep a notebook, record when and where a problem occurs, then monitor for it at about the same time in future years. Specific monitoring techniques can be used in the appropriate season for some potential problem pests, such as European crane fly.

Step Four: *Modify the maintenance program to promote healthy plants and discourage pests.*

A healthy landscape is resistant to most pest problems. Lawn aeration and over-seeding along with proper mowing height, fertilization, and irrigation will help the grass out-compete weeds. Correcting drainage problems and letting soil dry out between waterings in the summer may reduce the number of crane-fly larvae that survive.

Step Five: *If pests exceed the tolerance thresholds.*

Use cultural, physical, mechanical, or biological controls first. If those prove insufficient, use the chemical controls described below that have the least non-target impact. When a pest outbreak strikes (or monitoring shows one is imminent), implement integrated pest management then consider control options that are the least toxic, or have the least non-target impact. Here are two examples of an integrated pest management approach:

1. **Red thread disease** is most likely under low nitrogen fertility conditions and most severe during slow growth conditions. Mow and bag the clippings to remove diseased blades. Fertilize lightly to help the grass recover, then begin grasscycling and change to fall fertilization with a slow-release or natural-organic fertilizer to provide an even supply of nutrients. Chemical fungicides are not recommended because red thread cannot kill the lawn.
2. **Crane fly damage** is most prevalent on lawns that stay wet in the winter and are irrigated in the summer. Correct the winter drainage and/or allow the soil to dry between irrigation cycles; larvae are susceptible to drying out, so these changes can reduce their numbers. It may also be possible to reduce crane fly larvae numbers by using a power de-thatcher on a cool, cloudy day when feeding is occurring close to the surface. Studies are being conducted using beneficial nematodes that parasitize the crane fly larvae; this type of treatment may eventually be a reasonable alternative.

Only after trying suitable non-chemical control methods or determining that the pest outbreak is causing too much serious damage, should chemical controls be considered. If chemical controls prove necessary, determine what products are available and choose a product that is the least toxic and has

the least non-target impact. Refer to the operational BMPs for the use of pesticides below for guidelines on choosing, storing, and using lawn and garden chemicals.

Step Six: *Evaluate and record the effectiveness of the control, and modify maintenance practices to support lawn or landscape recovery and prevent recurrence.*

Keep records! Note when, where, and what symptoms occurred, or when monitoring revealed a potential pest problem. Note what controls were applied and when, and the effectiveness of the control. Monitor next year for the same problems. Review your landscape maintenance and cultural practices to see if they can be modified to prevent or reduce the problem.

A comprehensive integrated pest management program should also include the proper use of pesticides as a last resort, and vegetation/fertilizer management to eliminate or minimize the contamination of stormwater.