Stormwater Pollution Prevention Manual: Best Management Practices for Commercial, Multifamily and Residential Properties

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King County

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Foreword

The King County *Stormwater Pollution Prevention Manual* (SPPM) was developed to comply with requirements of the Federal Clean Water Act–National Pollutant Discharge Elimination System (NPDES) Program and the State Puget Sound Water Quality Management Plan–Stormwater Program. The intent of these programs is to maintain and improve the quality and beneficial uses of our water resources. The widespread implementation of best management practices (BMPs) is regarded as one of the best solutions to achieving this goal. This manual provides detailed information for businesses, residents, managers, and owners of property in unincorporated King County, and describes the actions we are all required to take to reduce the contamination of stormwater, surface water (e.g., streams and lakes), and groundwater.

Note: This manual replaces the King County *Stormwater Pollution Prevention Manual*, Best Management Practices for Businesses, dated April 2016.

Acknowledgements

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Clarification of Manuals

The *Stormwater Pollution Prevention Manual* (www.kingcounty.gov/sppm) presents pollution prevention practices for all property owners in unincorporated King County. Use the *King County Surface Water Design Manual* (www.kingcounty.gov/swdm) for construction projects that require King County permits and have stormwater quantity and quality control requirements. Redevelopment or property improvements on existing sites may require structural BMPs. Structural BMPs are found in this manual as well as the KCSWDM.

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1.0 OVERVIEW

1.1 About This Manual

King 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 and drinking water, support tourism, salmon and multiple other fish species, and are used extensively in industry. These waters, however, are vulnerable to pollution from a wide variety of human activities.

Many of our water pollution problems are due in large part to pollutants washed off of land by storms. The quality of "stormwater" from residential properties, public facilities, commercial and industrial businesses, and agricultural lands is an increasing concern nationwide. The amount of pollution from any one place may not be significant by itself, but cumulative effects to water quality can be significant.

The federal Clean Water Act mandates that cities and counties control the quality of stormwater runoff through implementation of pollution prevention measures. To meet the requirements of the Clean Water Act and to sustain our quality of life, the King County Council passed King County Water Quality Code (KCC 9.12) in November 1992.

This manual applies to all activities in unincorporated King County that have the potential to contribute pollutants to stormwater runoff or to receiving waters directly. Stormwater runoff may seep into the ground, drain to a storm drain or a drainage ditch, or flow over the ground. Regardless of the way runoff leaves the site, it can end up in a stream, river, lake, wetland, groundwater, or Puget Sound.

King County Water Quality Code (KCC 9.12) requires the use of best management practices (BMPs) described in this manual. The manual includes:

- Stormwater BMPs for commercial, industrial, public, and multifamily residential activities (Chapter 3).
- Stormwater BMPs for single family residential properties (Chapter 4).
- Information on how to implement many stormwater BMPs (Chapter 5).
- Additional resources (Chapter 6)

1.2 Best Management Practices (BMPs)

The methods of protecting the quality of stormwater, surface water (e.g., streams and lakes) and groundwater, are called best management practices (BMPs). BMPs encompass a variety of managerial, operational, and structural measures that will reduce the amount of contaminants in stormwater and improve the quality of our water resources.

BMPs are separated into two broad categories: source control and treatment. **Source control BMPs** prevent contaminants from entering water bodies or stormwater runoff. Some source control BMPs are operational, such as checking regularly for leaks and drips from equipment or vehicles, covering materials that have the potential to add pollutants to surface water, and educating employees about site clean–up procedures. Other source control BMPs are structural, including roofs, berms, and fueling pads.

Treatment BMPs are activities that treat stormwater to remove pollutants although no treatment BMP can remove 100 percent of the contaminants.

It is more efficient, effective, and economical to prevent the contamination of stormwater than to treat it.

1.3 Exemptions

You are exempt from implementing equivalent BMPs in this manual if you:

- Have obtained and are complying with a permit under the National Pollutant Discharge Elimination System (NPDES) Stormwater Permit Program.
- Implement and maintain a farm management plan developed by the King Conservation District (KCD) and approved by King County Department of Natural Resources and Parks.
- Implement BMPs in compliance with KCC 21A.30, which addresses animal and livestock keeping practices.
- Engage in forest practices, with the exception of Class IV general forest practices.

These exemptions are only from the requirements of this manual. If you are exempted for one or more of the reasons listed above, King County assumes that you are implementing the appropriate BMPs. If you have not implemented BMPs, or they are not effectively addressing the discharge of contaminants, then you will be required to comply with this manual. The following is a step–by–step approach to BMP compliance.

1.4 Step by Step Approach

1. **Determine Your Status** - If you are not exempt due to an above listed reason, then you must comply with the BMPs in this manual.
2. **Evaluate Existing Conditions** - Determine which activities in this manual are applicable to your property using the BMP Identification Worksheet. Review the applicable BMP activity sheets which can be found in Chapter 3 of this manual and on our website at www.kingcounty.gov/sppm.

   You will need to be familiar with the stormwater drainage system on your site.
3. **Seek Assistance** - You can have a free on–site consultation with a staff member from King County Stormwater Services who will walk through your site, discuss conditions and necessary BMPs, and provide assistance with implementation. To

request an on–site consultation, call King County Stormwater Services at 206–477–4811.

4. **Check Your Internal Floor Drains and Plumbing System Connections** - Discharges from internal floor drains, appliances, industrial processes, and sinks and toilets that are connected to the nearby stormwater drainage system can cause significant stormwater pollution. These discharges must go to the sanitary sewer system, a holding tank, an on–site process water treatment system or a septic system.

   For information on how to check for illicit connections refer to BMP activity sheet A-1: Required BMPs for All Properties with Commercial Activities. You can also get help from your local sewer utility. If you find out that your internal drains are improperly connected to the stormwater drainage system, they will need to be removed, permanently plugged, or connected to the sanitary sewer, septic system, on–site treatment system under certain conditions, or a holding tank.

   Note: Only residential strength wastewater (or domestic wastewater) from sinks, toilets, washing machines, dishwashers, bathtubs, and showers can legally be discharged to a septic system. Non–domestic wastewater (or commercial, industrial, or non–residential wastewater) should never enter the septic system; it cannot be treated. Non–domestic wastewater may also kill beneficial microorganisms that treat sewage, and can contaminate soil and groundwater. Only put things down the drain that the septic system is designed to handle organic waste and septic system friendly paper products. Floor drains directly connected to septic systems may pose health and fire hazards due to septic gases.

5. **Develop and Implementation Strategy** - Look at the property as a whole to determine how the BMPs you implement will work together. There may be acceptable BMPs that are not listed in the manual. Be creative in assessing your own needs and the constraints that you may face on your property.

6. **Implement the Nonstructural Source Control BMPs** - First, implement the BMPs that do not require extensive construction. Examples include having spill control and cleanup materials on site, using drip pans or drop cloths when conducting day to day activities, and sweeping instead of hosing down an area to a storm drain.

7. **Implement Structural Control BMPs if Necessary** - Second, implement the structural source control BMPs that may require a building permit or require larger capital expenditures. Examples include constructing a building to enclose a work activity that is currently in the open, or building a containment area.

8. **Implement a Treatment BMP** - If a treatment BMP is determined to be necessary for your site, you must have an acceptable design prepared and approved by King County Water and Land Resources Division (WLRD). You may be required to use the *King County Surface Water Design Manual* (KCSWDM) when designing and receiving approval of treatment BMPs. Once the design has been approved by WLRD and a permit issued (if necessary) from the King County Department of Local Services, Permitting Division (Permitting), construction may begin.

9. **Keep Records** - Keep copies of the activity sheets and other documentation on implementing BMPs. Records may be used to illustrate compliance with this manual.
10. **Maintain Your BMPs** - Business owners and property managers must ensure employees are maintaining all applicable BMPs in Chapter 3. Employee education should be a continuous process for effective BMP implementation. Single family residential properties are also required to maintain all applicable BMPs in Chapter 4.

1.5 Activities That May Result in Structural Improvements

There are a number of activities that may require structures and/or specific drainage configurations in order to protect stormwater and maintain compliance with King County Water Quality Code 9.12. Roof structures, wheel washes, cement pads, shutoff valves, containment berms and indoor mop sinks are all examples of things that need to be in place prior to commencing the activity. These may require building permits and other approvals prior to construction. For information contact Permitting at 206-296-6600 or DPERWebInquiries@kingcounty.gov.

Below are some highlighted activities and BMP activity sheets that provide more detail:

Commercial Composting
Structural improvements: paved composting and storage pads, leachate collection system, lined collection ponds, contaminated stormwater collection and treatment, and wheel wash system

- BMP activity sheet A-24: Commercial Composting

Food and Beverage Manufacturing and Storage
Structural improvements: roofed enclosures, containment, wastewater collection, storage, and disposal system

- BMP activity sheet A-7: Food and Beverage Manufacturing and Storage

Fueling of equipment and vehicles
Structural improvements: Portland cement pads, roofs, spill control devices, trench drains, and oil/water separators

- BMP activity sheet A-17: Stationary Fueling Operations
- BMP activity sheet A-47: Older Stationary Fueling Operations

Greenhouses and plant nurseries
Structural improvements: berms, covering and erosion control measures

- BMP activity sheet A-4: Outdoor Storage of Soil, Sand and Other Erodible Materials
- BMP activity sheet A-49: Nurseries and Greenhouses

Horse stables
Structural improvements: wash racks connected to sanitary sewer or separate infiltration area, and manure containment areas

- BMP activity sheet A- 35: Keeping Livestock in Stables, Pens, Pastures or Fields

Mining of sand or gravel
Structural improvements: wheel wash system and track–out control, and catch basin inserts

- BMP activity sheet A-41: Wheel Wash and Tire Bath Track Out Control

Outdoor storage of erodible materials (e.g. compost, bark, sand)
Structural improvements: wheel wash system and track–out control, berms, containment areas, covering, paving, catch basin inserts, and treatment systems

- BMP activity sheet A-41: Wheel Wash and Tire Bath Track Out Control

Outdoor storage or processing of galvanized materials
Structural improvements: roofs or other covering, and stormwater collection and treatment system

- BMP activity sheet A-21: Manufacturing and Post–Processing of Metal Products

Painting, Finishing and Coating of Vehicles and Equipment
Structural improvements: permitted and enclosed paint booths

- BMP activity sheet A-22: Painting, Finishing and Coating of Vehicles, Products, and Equipment

Restaurants and food trucks
Structural improvements: indoor sinks for mat and rack washing, and mop and wastewater disposal

- BMP activity sheet A-8: Storage of Solid and Food Wastes (Including Cooking Grease)
- BMP activity sheet A-12: Cleaning or Washing of Food Service Areas and Equipment

Storage of liquid materials
Structural improvements: secondary containment, roofed structures, and spill control devices

- BMP activity sheet A-2: Storage of Liquid Materials in Stationary Tanks
- BMP activity sheet A-3: Storage of Any Liquid Materials in Portable Containers

Utility Corridor Maintenance
Structural improvements: road stabilization

- BMP activity sheet A-45: Maintenance of Public and Private Utility Corridors and Facilities

Washing of cars, trucks, and equipment (not just commercial car washes)
Structural improvements: dedicated wash pads, sewer connection, holding tanks and catch basin inserts

- BMP activity sheet A-11: Cleaning or Washing of Tools and Equipment
- BMP activity sheet A-13: Vehicle Washing and Steam Cleaning

Wood Treatment & Preserving
Structural improvements: paved, contained, and covered storage and processing areas

- BMP activity sheet A-23: Wood Treatment and Preserving

1.6 Other Agency Requirements

Please note that other federal, state, and local agencies enforce regulations that may relate to your implementation of BMPs. Consult the following entities for guidance on the listed activities:

King County Surface Water Design Manual

- Drainage requirements, and construction BMPs for erosion and sediment control for new development and redevelopment

King County Critical Areas and Clearing and Grading Ordinances

- Land use regulations protecting environmentally sensitive areas and public health and safety

King County Fire Code

- Storage and handling of flammable, combustible, and hazardous materials

King County Animal Regulations (Livestock Ordinance)

- Raising and keeping of livestock

King County Wastewater Treatment Division - Industrial Waste Section, and Local Sewer Authorities

- Acceptance of process water or contaminated stormwater to sanitary sewers

King County Solid Waste Division – Hazardous Waste Management Program

- Acceptance of household hazardous waste from residents and qualifying small quantity generators

Public Health – Seattle and King County

- Solid waste

- Septic systems (on–site septic systems)
- Structural pesticide applicators

Washington State Department of Ecology
- National Pollutant Discharge Elimination System (NPDES) permits
- Discharge of process wastewater to surface water
- Underground storage tanks
- Spill prevention and control plans
- Dangerous waste generators
- Groundwater quality protection
- Oil spill prevention and cleanup plans (with U.S. Environmental Protection Agency)

Washington State Department of Agriculture
- Pesticide applications
- Nutrient management plans

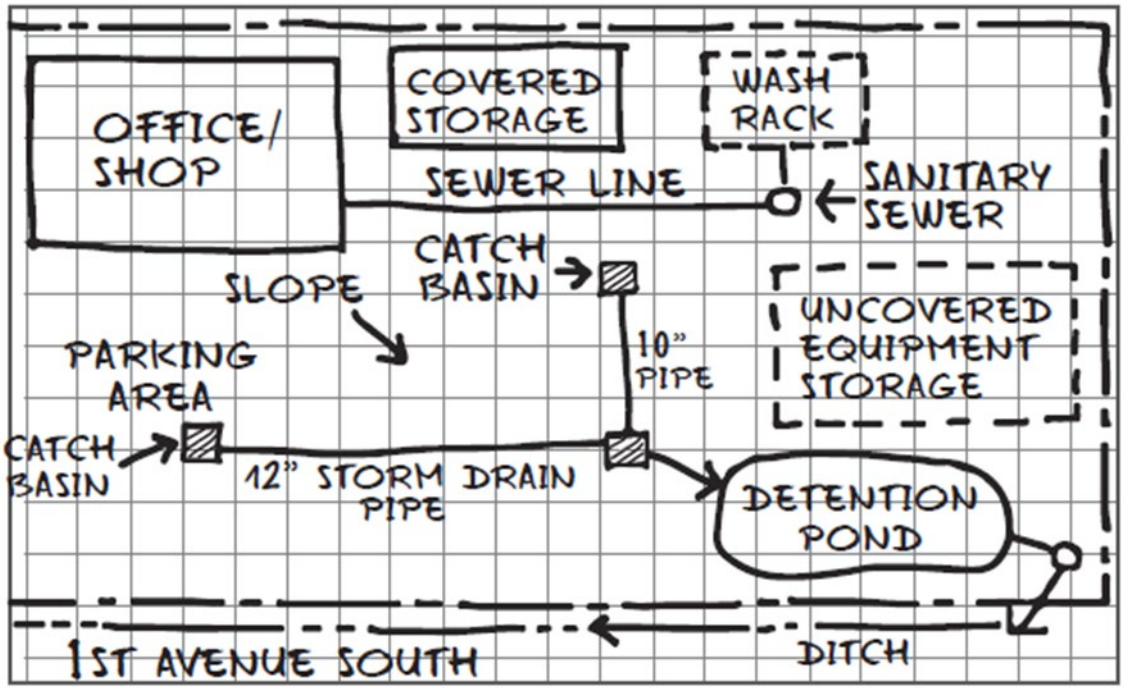
Puget Sound Clean Air Agency
- Fugitive dust
- Outside painting
- Spray booths

U.S. Coast Guard
- Transfer of petroleum products on Puget Sound

1.7 Your Stormwater Drainage System

If you have a set of plans/blueprints of your site and the associated stormwater drainage system, familiarize yourself and your employees with drainage patterns and drainage structure location. If you do NOT have a set of plans for the property, prepare a rough sketch to familiarize yourself and your employees with your on–site stormwater drainage system to aid in the implementation of BMPs. See the following page for an example. The sketch should include the following:

- Drainage structures—such as storm drains/catch basins, pipes, ditches, ponds, and vaults
- Buildings
- Storage structures/sheds
- Storage areas
- Places/points where stormwater leaves your site



Example of a stormwater drainage system sketch with additional site elements (e.g., buildings, storage areas, stormwater drainage flow and exits)

If you have any questions call King County Stormwater Services at 206–477–4811.

2.0 STORMWATER PROBLEMS

2.1 Stormwater Runoff

In vegetated areas (e.g., forests, fields, and wetlands) rainwater seeps slowly into the ground. However, when rain falls on paved and other hard, impervious surfaces it runs off quickly and is conveyed by pipes and ditches directly to water bodies (e.g., lakes, wetlands, and streams). This water, including snowmelt, that flows across the land is called stormwater runoff. Stormwater runoff collects pollutants when it hits the ground and carries it to stormwater drainage systems, surface waters and ultimately to Puget Sound. For example, stormwater runoff from parking lots picks up oil and grease dripped from cars, asbestos from worn brake linings and zinc from tires. Pesticides, herbicides, and fertilizers are washed off from landscaped areas, and soils are washed away from construction sites. Any substance found on the ground can contaminate stormwater runoff.

2.2 Storm Drains That Lead to Lakes and Streams

Stormwater drainage systems are designed to decrease the chance of flooding in developed areas. The stormwater drainage system collects stormwater runoff from catch basins (storm drains), roof downspouts, footing drains, and other inlets. The stormwater is then conveyed to the nearest surface water—such as a wetland, lake, stream or to Puget Sound. In urban areas, the stormwater drainage system consists primarily of drains and underground pipes. In rural areas, the stormwater drainage system may be in the form of ditches. Drainage systems are meant to carry only unpolluted stormwater to the nearest natural body of water.

In areas that are served by sanitary sewer, interior drains—including toilets, floor drains and process water—lead to the sanitary sewer system and end up at a wastewater treatment plant where the wastewater is treated before being discharged into Puget Sound. In areas that do not have sanitary sewer the interior drains go to an on-site sewage treatment system, known as an on–site septic system (OSS). The wastewater is treated naturally and infiltrates on site.

2.3 Polluting is Against the Law

The Washington State Water Pollution Control Law (RCW 90.48) and the King County Water Quality Code (KCC 9.12) prohibit the discharge of pollutants to stormwater drainage systems, surface waters, and groundwater. Pollution can cause harmful algal blooms, lesions and tumors in fish and other animals, destruction of fish spawning areas, damage habitat for plants and animals, and impairment of recreational activities.

2.4 Ways You May Be Polluting

Many people know that it is illegal to dump toxic chemicals or other material directly down a storm drain but some of the more common pollution generating activities include:

- Washing tools and equipment outside
- Hosing down your work area, driveway, or sidewalk
- Blowing leaf litter and sediment into the street
- Spilling oil or grease on pavement without cleaning it up
- Not repairing leaking vehicles
- Digging without taking steps to prevent erosion
- Washing vehicles even with "environmentally safe" or "green" cleaners

2.5 Pollutants

Any substance that can render water harmful to people, fish, or wildlife or impair recreation or other beneficial uses of water is considered a pollutant. The broad categories of pollutants and their effects on fish and wildlife are described below.

2.5.1 Oils, Greases, and Fuels

Oils and greases have many common sources: driveways, streets, highways, parking lots, food waste storage areas, heavy equipment and machinery storage areas, and places where pesticides have been applied. The familiar sight of a rainbow–colored puddle or stream of water in parking lots, driveways, and street gutters is a reminder of the presence of oils and greases in stormwater runoff. Oils and greases can be petroleum– based (motor oil) or food–related (cooking oils). Oil and grease are known to be toxic to aquatic organisms even at relatively low concentrations. They can coat fish gills, prevent oxygen from entering the water, and clog drainage facilities.

2.5.2 Metals

Many metals, including lead, copper, zinc, and cadmium, are commonly found in urban runoff. Metals can contaminate surface water and groundwater, and can accumulate in sediments causing health problems for fish and animals that eat from the bottom of lakes, streams, and Puget Sound. This in turn harms the people who consume the fish caught in contaminated areas. Industrial areas, scrap yards, paints, pesticides, and fallout from automobile emissions are typical sources of metals in runoff.

2.5.3 Sediments

Sediment, often originating as soil particles, sand, and clay, is the most common pollutant in stormwater runoff by volume and weight. Excess sediment turns stream and lake water cloudy, making them less suitable for recreation, fish life, and plant growth. Sediment is of particular concern in fish–bearing streams where it can smother fish eggs, destroy habitat for insects (a food source for fish), and cover prime spawning areas. Sediment can also clog storm drains, leading to increased private and public maintenance costs and flooding problems.

Sediment is also of concern because many other pollutants—including polychlorinated biphenyls (PCBs), oils, metals, bacteria, and nutrients—tend to attach to soil particles. Construction sites and exposed earth are generally the greatest contributors of sediment in surface waters. Other sources include erosion from agricultural lands, pressure washing and sandblasting operations, loose dirt and debris tracked out to roads by equipment and vehicles, and dirt and grit from parking lots, driveways, and sidewalks.

2.5.4 Oxygen–Demanding Substances

Plant debris, yard waste, food waste, compost, sawdust, and some chemical wastes fall into a category of water pollutants known as oxygen–demanding substances. Such substances use dissolved oxygen in water when they decay or chemically react. If dissolved oxygen levels in water become too low, aquatic animals become stressed or die. Salmon and trout are particularly at risk because they need high dissolved oxygen levels to live.

Animal wastes, food wastes, yard waste and other miscellaneous organic matter carried by stormwater runoff into surface water can lead to reduced oxygen levels. Slow–moving waters are particularly susceptible to oxygen depletion because there is little aeration of the water by turbulence. Therefore, oxygen that is depleted in slow– moving waters is not replaced.

2.5.5 Nutrients

Plants need nutrients (e.g., phosphorus and nitrogen) to grow but high levels can be harmful to water quality. Excess nutrient levels can over–stimulate the growth of algae and other aquatic plants, resulting in unpleasant odors, unsightly surface scum, and lowered dissolved oxygen levels from plant decay. Nutrients are most likely to pose a problem in slow moving water such as lakes or sluggish streams.

Some forms of algae are toxic to fish and other aquatic organisms and may even cause death in animals that drink affected water. Algae can also cause taste and odor problems in drinking water, foul–smelling odor in ponds and lakes, and problems with clogged water intakes, drains, and pipes. Forms of nitrogen (ammonium), in combination with pH and temperature variations, can cause water quality problems and be toxic to fish.

Fertilizers, animal wastes, failing septic systems, detergents, road deicing chemicals, automobile emissions, eroded soils, and organic matter such as yard waste are all contributors to excessive nutrient levels in urban, rural, and agricultural stormwater runoff.

2.5.6 Toxic Organic Compounds

Excessive application of toxic organic compounds—such as insecticides, herbicides, fungicides, and rodenticides (all referred to as pesticides)—or the application of any of these shortly before or during rainfall can result in the pesticide being carried from agricultural lands, construction sites, parks, golf courses, and residential lawns and gardens

to receiving waters. Many pesticide compounds are extremely toxic to aquatic organisms and can cause fish kills.

Other toxic organic compounds—such as phenols, glycol ethers, esters, nitrosamines, and other nitrogen compounds—also affect receiving waters. Common sources of these compounds include wood preservatives, antifreeze, dry cleaning chemicals, cleansers, and a variety of other chemical products. Like pesticides, these toxic organic compounds can be lethal to aquatic organisms.

2.5.7 Fecal Bacteria

Fecal bacteria in water may indicate the presence of pathogenic (disease–causing) bacteria and viruses. Pet and other animal wastes, failing septic systems, livestock waste, and fertilizers can all contribute fecal coliform bacteria. Bacterial contamination has led to closures of numerous shellfish harvesting areas and swimming beaches in the Puget Sound region.

2.5.8 pH

The pH value of water is an indication of its relative acidity. The pH value can range from 0 to 14, with 6 to 8 being desirable for most bodies of water. A pH level outside this range will adversely affect plant and animal life. Waters with very high (basic) or very low (acidic) pH are corrosive to metal surfaces. There are several sources that can contribute to change of pH in stormwater runoff, including industrial processes that discharge acidic wastewater, solutions used in metal plating operations, acidic chemicals used in printing and graphic art businesses, cement used in concrete products and concrete pavement, and chemical cleaners used in homes and businesses.

3.0 COMMERCIAL AND MULTIFAMILY BMPS

3.1 Pollution Prevention Practices

The eight pollution prevention practices listed below are measures that should be considered at all times for improving pollution control. They are not required but should be incorporated in your BMP implementation plan. Application of these pollution prevention practices may reduce or eliminate the need for more complicated or costly BMPs.

1. Locate activities as far as possible from surface drainage paths
2. Avoid the activity or reduce its occurrence
3. Use less material
4. Use the least toxic materials available
5. Create and/or maintain vegetated areas near activity locations
6. Recycle as much as possible
7. Educate others about stormwater pollution prevention
8. Implement treatment BMPs

Complete a BMP Identification Worksheet to identify activities you conduct. Interpret the categories broadly. Activity sheet numbers correspond to BMP Activity Sheets in Chapter 3.

BMP IDENTIFICATION WORKSHEET			
Activity Sheet #	**Type of activity**	**Do you conduct this activity? If so, where?**	
		Indoors	**Outdoors**
Storage			
A-1	Required BMPs for All Properties with Commercial Activities		
A-2	Outdoor Storage of Liquid Materials in Stationary Tanks		
A-3	Storage of Liquid Materials in Portable Containers		
A-4	Outdoor Storage of Soil, Sand and Other Erodible Materials		
A-5	Storage and Use of Pesticides and Fertilizers		
A-6	Storage of Contaminated Soils		
A-7	Food and Beverage Manufacturing and Storage		
A-8	Storage of Solid Wastes and Food Wastes (Including Cooking Grease)		
A-9	Storage of Scrap and Recycling Materials (Including Auto Recycling Facilities)		
A-10	Treatment, Storage or Disposal of Dangerous Wastes		
A-31	Parking Lots, Driveways and Outside Storage Areas		
Washing			
A-11	Cleaning or Washing of Tools and Equipment		
A-12	Cleaning or Washing of Food Service Areas and Equipment		
A-13	Vehicle Washing and Steam Cleaning		
A-14	Interior Washing Operations (Including Mobile Contractors)		
A-15	Washing of Buildings, Rooftops and Other Large Objects		
A-32	Sidewalk Maintenance		
A-41	Wheel Wash and Tire Bath Track Out Control		
Transfer of Liquid Materials			
A-16	Truck or Rail Loading and Unloading of Liquid or Solid Materials		
A-17	Stationary Fueling Operations		
A-18	Vehicle and Equipment Repair and Maintenance		

A-47	Older Stationary Fueling Operations		
A-48	Mobile Fueling of Vehicles and Heavy Equipment		
Production and Application			
A-19	Concrete and Asphalt Production and Recycling		
A-20	Concrete and Asphalt Application		
A-21	Manufacturing and Post–Processing of Metal Products		
A-22	Painting, Finishing and Coating of Vehicles, Products, and Equipment		
A-23	Wood Treatment and Preserving		
A-24	Commercial Composting		
A-25	Chemical Applications–Other Than Landscaping		
A-37	Mining and Quarrying of Sand, Gravel, and Other Materials		
A-39	Roof Vents and Fugitive Emissions		
A-44	Dust Control for Commercial Operations		
Landscaping			
A-26	Landscaping Activities, Vegetation Management, and Irrigation		
Construction			
A-27	Clearing and Grading of Land for Small Construction Projects		
A-28	Demolition of Buildings		
A-29	Building Repair, Remodeling and Construction		
A-30	Marine Activities		
Other			
A-33	Swimming Pool and Spa Cleaning and Maintenance		
A-34	Animal Waste		
A-35	Keeping Livestock in Stables, Pens, Pastures or Fields		
A-36	Logging and Log Yards		
A-38	Well, Utility, Directional and Geotechnical Drilling		
A-40	Street Deicing Operations		
A-42	Potable Water Line Flushing, Water Tank Maintenance and Hydrant Flushing		
A-45	Maintenance of Public and Private Utility Corridors and Facilities		
A-46	Color Events		
A-49	Nurseries and Greenhouses		

3.2 BMP Activity Sheets

The BMPs in this chapter are required for commercial, industrial, agricultural, public, and multifamily residential activities conducted in unincorporated King County.

King County's goal is to reduce pollution through education and prevention efforts, emphasizing source control BMPs before treatment. If the implemented BMPs are not enough to prevent contamination of stormwater, additional measures will be required.

Every property in the county has unique characteristics and drainage systems. The BMPs used on each property depend on the type of stormwater drainage system, slope, ground cover and pollution generating activities occurring on site. The activity sheets offer flexibility in BMP selection and recognize the wide variety of site conditions that may be encountered. For manufacturing and commercial activities not addressed in these activity sheets refer to the Washington State Department of Ecology *Stormwater Management Manual for Western Washington*, Volume IV (https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Stormwater-manuals) for the required Operational and Structural Source Control BMPs.

A-1: Required BMPs for All Properties with Commercial Activities

The following best management practices (BMPs) are required for all commercial, industrial, agricultural, public, and residential properties with commercial activities in unincorporated King County.

In addition to implementing required BMPs listed herein, property owners must maintain drainage facilities to meet King County Standards, as required by King County Code 9.04.120.

BMPs are required by King County Water Quality Code 9.12. If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

Clean and Maintain Stormwater Drainage System

- Evaluate the condition of the catch basin by checking the amount of sediment in the bottom of the catch basin (sump). Catch basins must be cleaned out when the solids, trash and debris in the sump reaches one–half of the depth between the bottom of the sump and the bottom of the lowest inflow or outflow pipe connected to the catch basin or is at least 6 inches below this point.
- Clean and maintain catch basins annually. Sites with activities generating sediments and other debris will have to inspect and clean out their catch basins more often. Frequent sweeping of paved parking and storage areas will save time and money in maintaining the stormwater drainage system.
- Hire a professional drainage contractor to inspect and maintain your stormwater drainage system or clean the system yourself. If there is sediment or other debris in the drainage pipes, then a professional contractor must be hired to flush or jet out the pipes. Confined space entry should only be conducted by individuals trained to do so. For information on confined spaces refer to www.osha.gov/confined-spaces
- Soak up small amounts of floating oil with absorbent pads. The pads and nonhazardous sediments can be bagged up and disposed of as solid waste. Up to one cubic yard of nonhazardous solid material may be disposed of as solid waste in your regular garbage. For additional information please call King County Solid Waste Division at 206-477-4466. If you exceed this threshold hire a professional drainage contractor. For information on how to use absorbent pads please watch Seattle Public Utility's video *How to Use Your Spill Kit* (https://www.youtube.com/watch?v=NeH98Rx7dOE).
- All of the solids and stagnant water collected from catch basin sumps must be disposed of properly. None of the sump contents can be flushed into the catch basin outflow pipe. Contractors who perform catch basin clean-out services are required to follow appropriate disposal requirements.

- Other components of the stormwater drainage system (e.g., ponds, tanks, and bioswales) must also be maintained. If this maintenance is beyond your ability, contractors are available to complete this work.

Label All Storm Drain Inlets on Your Property

- Stencil or apply catch basin/storm drain markers adjacent to storm drains to help prevent the improper disposal of pollutants. If the catch basin grate is stamped with warnings against polluting, then additional marking may not be required if there is no evidence of pollutants being dumped or washed into the storm drain.
- When painting stencils or installing markers, temporarily block the storm drain inlet so that no pollutants are discharged from labelling activities.
- Maintain the legibility of markers and signs.
- Contact King County Stormwater Services at 206-477-4811 for a free stencil or catch basin marker.

Eliminate Illicit Connections to the Storm Drainage System

- Connections to the stormwater drainage system that convey substances other than stormwater are prohibited.
- Illicit connections must be removed immediately, permanently plugged or re–plumbed.
- If the connection is re-plumbed, the line must discharge to the proper receiver, such as the sanitary sewer, a septic system, an on–site treatment system, or a holding tank for off–site disposal. There are restrictions on what can be disposed of to the sanitary sewer and septic systems. Contact your sewer authority or Public Health – Seattle and King County.
- Unknown connections may require additional investigation to determine where all stormwater and non–stormwater discharges go. This may include smoke, dye or chemical testing, or closed-circuit television inspection. Contact King County Stormwater Services at 206-477-4811 for further assistance.

Maintain Drainage Facilities

- Drainage facilities must meet the standards and requirements set forth in King County's Surface Water Design Manual for continual performance, operation, and maintenance.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
  - Catch Basin Inserts
  - Disposal
  - Drainage Maintenance Contractors
  - Oil/Water Separator

*Contact King County Stormwater Services at 206-477-4811 or visit **kingcounty.gov/stormwater** for stencils, catch basin markers, assistance with determining if you have an illicit connection or any further questions.*

A-2: Outdoor Storage of Liquid Materials in Stationary Tanks

The following best management practices (BMPs) apply to the outdoor storage of liquid materials in stationary containers and indoor storage where the potential exists to flow outside.

This does not apply to underground storage tanks or to businesses permitted by the Washington State Department of Ecology to treat, store or dispose of dangerous wastes. Storage of reactive, combustibles or flammable liquids must comply with the King County Fire Code (KCC 17).

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, and other pollutants.

BMPs are required by King County Water Quality Code 9.12. If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Store and contain liquid materials so if the tank leaks, the contents will not get into the stormwater drainage system, surface waters or groundwater. This requires secondary containment or using a double–walled tank.
- Place small, gravity–fed farm fuel tanks without secondary containment on flat and open ground so that a spill or leak will not run downhill toward creeks, ditches, floor drains or drain tiles before it can be contained and cleaned up.
- Place tanks securely on stable ground.
- Label all containers with the product name and associated hazards (e.g., flammable, corrosive, toxic or reactive).
- Install a spill control device (e.g., an oil/water separator or down–turned elbow) in the catch basins that collect runoff from the tank storage area if the liquid is oil, gas, or other material that separates from and floats on water.
- Place drip pans or absorbent materials under taps and at all potential drip and spill locations during filling and unloading of tanks. Properly dispose of collected liquids and absorbent materials. Turn over empty drip pans when not in use of move under cover.
- Have spill cleanup materials/spill kit near the tanks and any liquid transfer areas.
- Post a spill plan and keep contact information current.
- Train all employees on spill response methods and procedures.

Required Routine Maintenance

- Sweep and clean paved storage areas as needed. Do not hose down the area to a storm drain.

- Check tanks and sumps/catch basins regularly for leaks and spills. Collect and dispose of all spilled liquids.
- Inspect spill control devices regularly and remove floating oil and debris.
- Collect and properly dispose of stormwater that collects in containment areas.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Containment
    - Disposal
    - Oil/Water Separator
    - Spill Response and Cleanup Plan

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-3: Storage of Liquid Materials in Portable Containers

The following best management practices (BMPs) apply to the outdoor storage of liquid materials in portable containers and indoor storage where the potential exists to flow outside.

Storage of reactive, combustibles or flammable liquids must comply with the King County Fire Code (KCC 17). The local fire district must be consulted for limitations on clearance of roof covers over containers used to store flammable materials.

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, and other pollutants.

BMPs are required by King County Water Quality Code 9.12. If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Place tight–fitting lids on all containers.
- Enclose or cover the containers.
- Raise containers off the ground with a spill containment pallet or similar method to contain the material in the event of a spill or accident.
- Place drip pans or absorbent materials under all potential drip and spill locations during filling and unloading of containers. Properly dispose of collected liquids and used absorbent materials. Turn over empty drip pans when not in use or move under cover.
- Do not use metal drums for liquid chemicals that are corrosive.
- Label all containers with the product name and associated hazards (e.g., flammable, corrosive, toxic or reactive).
- Have spill cleanup materials/spill kit located nearby.
- Have a spill plan with current contact information.
- Train all employees on spill response methods and procedures.

Required Routine Maintenance

- Sweep and clean the container storage areas as needed. Do not hose down the area to the stormwater drainage system.
- Routinely check containers and replace any compromised ones. Check nearby catch basins to ensure nothing spilled into them. Dispose of all spilled liquids properly.
- Inspect spill control devices routinely and properly remove and dispose of accumulated oil and debris.

- Storage of reactive, combustible, or flammable liquids must comply with the King County Fire Code. The local fire district must be consulted for limitations on clearance of roof covers over containers used to store flammable materials.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
  - Containment
  - Disposal
  - Spill Response and Cleanup Plan

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-4: Outdoor Storage of Soil, Sand, and Other Erodible Materials

The following best management practices (BMPs) apply to both permanent and temporary sites. Contact between outside bulk materials and stormwater can cause leaching and erosion of stored materials.

Potential pollutants can include but are not limited to fecal coliform bacteria, metals, nutrients, oxygen demanding substances, and sediment.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Cover and contain the stockpiled materials unless the material cannot wash into the stormwater drainage system or surface waters and cannot be blown away by the wind.
- Covers must be in place at all times when the stockpile is not in active use.
- Do not hose down the contained stockpile area to the stormwater drainage system.
- For stockpiles greater than 5 cubic yards of erodible or water-soluble materials—such as soil, road deicing salts, compost, unwashed sand and gravel, sawdust, and bark—and for outside storage areas for solid leachable materials—such as freshly treated lumber and metal products (excluding aluminum)—choose one or more of the following BMPs:
    - Store in a building or paved and bermed covered area;
    - Place temporary plastic sheeting (e.g., polyethylene, polypropylene, Hypalon, or equivalent) over the material;
    - Pave the area and install a drainage system. Place curbs or berms along the perimeter of the area to prevent the run-on of uncontaminated stormwater and to collect and convey all the runoff to treatment. Slope the paved area in a manner that minimizes the contact between stormwater and leachable materials (e.g., compost, logs, bark, wood chips);
    - For large uncovered stockpiles, implement containment practices at the perimeter of the site and at any storm drains as needed to prevent erosion and discharge from the stockpiled material off-site or to a storm drain. Ensure that no direct discharge of contaminated stormwater to storm drains exists without conveying runoff through an appropriate treatment BMP. Catch basin inserts are not appropriate treatment for compost or road de-icing salts.

Required Routine Maintenance

- Sweep paved surfaces to collect solid materials. Do not hose down area to the stormwater drainage system.
- Check covers over the stockpiles to ensure they are still functioning properly.
- Inspect and maintain catch basin inserts.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
  - Catch Basin Insert
  - Containment
  - Covering
- *King County Surface Water Design Manual*, Appendix D: Construction Stormwater Pollution Prevention Standards (Erosion Control Practices)

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-5: Storage and Use of Pesticides and Fertilizers

The following best management practices (BMPs) apply to the storage and use of pesticides and fertilizers. Pesticides include herbicides, rodenticides, insecticides, and fungicides. Washington pesticide law requires most businesses that commercially apply pesticides to the property of another to be licensed as a Commercial Applicator from the Washington State Department of Agriculture.

For irrigation, landscaping, and vegetation maintenance, please refer to activity sheet A-26: Landscaping Activities, Vegetation Maintenance, and Irrigation.

Potential pollutants can include but are not limited to fecal coliform bacteria, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs: Storage

- Store pesticides and fertilizers in impervious containment areas that prevent water from coming into contact with the product.
- Containment areas must be secured to prevent unauthorized personnel from coming into contact with the materials.
- Containers and bags must be covered, intact, and off the ground. If a container or bag has been opened (including tears and punctures) or is showing signs of leakage, secondary containment is also required.
- Immediately clean up any spilled fertilizer or pesticides. Sweep paved storage areas as needed. Collect and dispose of spilled materials. Do not hose down the area.
- Keep pesticide and fertilizer contaminated waste materials in designated covered and contained areas.
- Dispose of contaminated pesticide and fertilizer waste materials properly.
- Store and maintain spill cleanup materials near the storage area.
- Do not discharge spills, leaks or stormwater containing pesticides or fertilizers to the stormwater drainage systems or to the sanitary sewer. Unused product, stormwater contaminated with pesticides and/or fertilizers, and spilled material must be collected and disposed of properly, according to the product label.

Required BMPs: Fertilizer Application

- Never apply fertilizers if it is raining or about to rain. The longer the period between fertilizer application and either rainfall or irrigation, the less fertilizer runoff occurs.
- Determine the proper fertilizer application for the types of soil and vegetation involved.

- Follow manufacturers' recommendations and label directions.
- Train employees on the proper use and application of fertilizers.
- Keep fertilizer granules off of impervious surfaces. Clean up any spills immediately. Do not hose down any spilled pesticide or fertilizer to a storm drain, conveyance ditch, or surface waters.
- If possible, do not fertilize areas within 100 feet of water bodies including wetlands, ponds, and streams.
- Avoid fertilizer applications in stormwater drainage systems, including ditches ponds and swales.
- Unless approved by the local jurisdiction, do not apply fertilizer at commercial and industrial facilities, to grass swales, buffer areas or filter strips if the area drains to sensitive water bodies.
- Apply fertilizers in amounts appropriate for the target vegetation and at the time of year that minimizes losses to surface and ground waters.

Supplemental BMPs: Fertilizer Application

- Apply the minimum amount of slow-release fertilizer necessary to achieve successful plant establishment.
- Do not fertilize when the soil is dry or during a drought.
- Test soils to determine the correct fertilizer application rates.
- Evaluation of soil nutrient levels through regular testing ensures the best possible efficiency and economy of fertilization.
- Fertilization needs vary by site depending on plant, soil, and climatic conditions.
- Choose organic fertilizers when possible.
- Use slow-release fertilizers such as methylene urea, isobutylidene, or resin coated fertilizers when appropriate, generally in the spring. Use of slow-release fertilizers is especially important in areas with sandy or gravelly soils.
- Time the fertilizer application to periods of maximum plant uptake. Washington State Department of Ecology generally recommends application in the fall and spring, although Washington State University turf specialists recommend four fertilizer applications per year.
- Do not use turf fertilizers containing phosphorous unless a soil sample analysis taken within the past 36 months that indicates the soil of the established lawn is deficient in phosphorus. For more information about restrictions on turf fertilizers containing phosphorus, visit the Washington State Department of Agriculture's website https://agr.wa.gov/departments/pesticides-and-fertilizers/fertilizers/fertilizers-containing-phosphorus

Required BMPs: Pesticide Application

- All procedures shall conform to the requirements of Chapter 17.21 RCW and Chapter 16-228 WAC.

- Train employees on proper application of pesticides and disposal practices.
- Follow manufacturers' application guidelines and label requirements.
- Avoid excessive application of chemicals. Do not apply pesticides in quantities that exceed the limits on the product's Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) label.
- Conduct spray applications during weather conditions as specified on the label requirements and applicable local and state regulations. Do not apply during rain or immediately before expected rain (unless the label directs such timing).
- Clean up any spilled pesticides immediately. Do not hose down to a storm drain, conveyance ditch, or surface water.
- Flag all sensitive areas including wells, creeks, and wetlands prior to spraying.
- Post notices and delineate the spray area prior to the application, as required by the local jurisdiction, or by the Washington State Department of Ecology.
- Mix pesticides and clean the application equipment under cover in an area where accidental spills will not enter surface or ground waters, and will not contaminate the soil.
- Follow the FIFRA label requirements for disposal. If the FIFRA label does not have disposal requirements, the rinseate from equipment cleaning and/or triple-rinsing of pesticide containers should be used as product or recycled into product.
- Collect the equipment wash water (rinseate) and store it in a labelled leakproof container with a lid. Reuse the wash water when making another spray mixture of the same pesticide. Do not mix different pesticide wash waters. Do not dump the wash water down a storm drain, to a conveyance ditch, surface water or to the ground. Unused wash water will most likely be a regulated hazardous waste, requiring special disposal.
- The pesticide application equipment must be capable of immediate shutoff in the event of an emergency.

Supplemental BMPs: Pesticide Application

- Use manual pest control strategies, such as physically scraping moss from rooftops and using rodent traps.
- Remove weeds/vegetation in stormwater ditches, detention ponds and drainage swales by hand or other mechanical means.
- Use pesticides only as a last resort. Consider alternatives to the use of pesticides such as:
    - Covering or harvesting weeds, substitute vegetative growth, and manual weed control/moss removal.
    - Soil amendments, such as compost, that are known to control some common diseases in plants, such as Pythium root rot, ashy stem blight, and parasitic nematodes.
- Implement a pest-use plan which should include at a minimum:

  - A list of selected pesticides and their specific uses.
  - Brands and formulations of the pesticides.
  - Application methods and quantities to be used.
  - Equipment use and maintenance procedures.
  - Safety, storage, and disposal methods.
  - Monitoring, record keeping, and public notice procedures.
- Develop and implement an Integrated Pest Management (IPM) program if pests are present. The following steps are adapted from *Least Toxic Pest Management for Lawns*, written by Sheila Daar.
  - 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.
    - 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.
  - Step Three: Monitor to detect and prevent pest problems.
    - Monitor regularly to anticipate and prevent major pest outbreaks.
    - Conduct 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 dis-courage pests.
    - Review your landscape maintenance practices to see if they can be modified to prevent or reduce the problem.
    - 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:

        - Consider the most effective management options concurrent with reducing impacts to the environment. This may mean chemical pesticides are the best option in some circumstances.
        - Consider the use of physical, mechanical, or biological controls.
        - Study to determine what products are available and choose a product that is the least toxic and has the least non-target impact.
    - 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.
- Conduct any pest control activity at the life stage when the pest is most vulnerable. For example, if it is necessary to use a Bacillus thuringiens application to control tent caterpillars, apply it to the material before the caterpillars cocoon or it will be ineffective. Any method used should be site-specific and not used wholesale over a wide area.
- Choose pesticides categorized by the EPA as reduced risk, such as the herbicide imazamox, and choose the least toxic pesticide available that is capable of reducing the infestation to acceptable levels. The pesticide should readily degrade in the environment and/or have properties that strongly bind it to the soil.
- When possible, apply pesticides during the dry season so that the pesticide residue is degraded prior to the next rain event.
- If possible, do not spray pesticides within 100 feet of water bodies. Spraying pesticides within 100 feet of water bodies including any drainage ditch or channel that leads to open water may have additional regulatory requirements beyond just following the pesticide product label. Additional requirements may include:
    - Obtaining a discharge permit from the Washington State Department of Ecology.
    - Obtaining a permit from the local jurisdiction.
    - Using an aquatic labeled pesticide and adjuvant.
- Once a pesticide is applied, evaluate its effectiveness for possible improvement. Records should be kept showing the effectiveness of the pesticides applied.
- Develop an adaptive management plan and annual evaluation procedure including: (adapted from Daar's *Least Toxic Pest Management for Lawns*)
    - A review of the effectiveness of pesticide applications.

- Impact on buffers and sensitive areas, including potable wells. If individual or public potable wells are located in the proximity of commercial pesticide applications, contact the regional Ecology hydrogeologist to determine if additional pesticide application control measures are necessary.
- Public concerns.
- Recent toxicological information on pesticides used/proposed for use.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
  - A-2: Outdoor Storage of Liquid Materials in Stationary Tanks
  - A-3: Storage of Liquid Materials in Portable Containers
  - A-26: Landscaping Activities, Vegetation Management, and Irrigation
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
  - Containment
  - Covering
  - Disposal
- For soils testing, contact the King Conservation District (425-282-1900 or district@kingcd.org, a soils testing professional, or a Washington State University Extension office, 206-205-3100.
- Comply with WAC 16-228 (General Pesticide Rules) and WAC 16-229 (Secondary and Operational Area Containment for Bulk Pesticides).
- For more information, refer to the Pesticide Information Center Online (PICOL) Databases at https://picol.cahnrs.wsu.edu/

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-6: Storage of Contaminated Soils

The following best management practices (BMPs) apply to the storage and/or treatment of contaminated soils such as those excavated during underground fuel tank removal or on-site soil remediation.

The Washington State Department of Ecology regulates businesses engaged in this activity. In addition, a permit from the Puget Sound Clean Air Agency is required if the treatment method for removing soil contaminants involves forcing air through the soil.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, PCBs, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code 9.12. If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Cover contaminated soils to keep them from coming into contact with stormwater.
- Contain the material so that nothing flows into or out of the stockpile.

Required Routine Maintenance

- Sweep paved storage areas as needed. Collect and dispose of soil particles. Do not hose down the area.
- Stock cleanup materials near the storage area.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Containment
    - Covering

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-7: Food and Beverage Manufacturing and Storage

The following best management practices (BMPs) apply to the outdoor storage and/or processing of raw materials for food or beverage items prior to or after packing, processing, or sale, or that crush, cut, ferment, distill or shred food items for fermented beverages, juices, and other food and beverage products.

Additional BMPs may be required for wineries covered under the Washington State Department of Ecology's Winery general permit. Brewery, distillery, cidery general permits may be created by the Department of Ecology in the future. Contact the Department of Ecology's Northwest Regional Office at 206-594-0000for more information.

Potential pollutants can include but are not limited to nutrients, oxygen demanding substances, and sediment.

BMPs are required by King County Water Quality Code 9.12. If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs – Temporary Outdoor Storage

- Train employees to keep a clean storage area.
- Store all food and beverage items in leak-proof containers. The edge of the container should be higher than the items stored within. Do not allow food items to drape over the side of the container.
- Make sure all outside materials that have the potential to leach or spill to the stormwater drainage system are covered, contained, or moved to an indoor location.
- For fruits, vegetables, and grains stored outside for a week or more, cover with a tarp or other waterproof material. Make sure coverings are secured from wind.
- Do not drain water or ice that was in contact with food or beverage items to the stormwater drainage system.
- Dispose of perished items in a timely manner.
- Stock cleanup materials, such as brooms and dustpans, near the storage area.
- Sweep and/or pick up dirt and food fragments daily. Place collected waste in covered leak-proof containers prior to disposal. Do not hose down the storage area to the stormwater drainage system. If water is used for clean-up, it must be collected and treated as wastewater.

Required BMPs – Processing

- Enclose the processing area in a building or shed or cover the area to prevent stormwater run-on. Pave and slope the processing area to capture the water used for cleaning, rinsing, and processing. Collect all wastewater and drain to a holding tank, the sanitary sewer or other treatment facility.
- Do not discharge the wastewater to the stormwater drainage system or to ground.

- If a holding tank is used for the storage of wastewater, pump out the contents before the tank is full and dispose of the wastewater to the sanitary sewer or an approved wastewater treatment system.

Required BMPs – Wineries, Breweries, Distilleries and Cideries

- Wastewater may not be discharged to the stormwater drainage system, surface waters or an on-site septic system.
- Implement a waste management plan that includes how to manage and dispose of all solid organic waste and wastewater created by production, cleaning, rinsing, and bottling and shall include the following:
    - Identification of all solid and liquid waste streams and what steps in the process they are generated;
    - How these waste streams will be collected, stored, and disposed of; and
    - Spill prevention and clean up procedures.
- Disposal options include:
    - Solid organic wastes
        - On-site composting
        - Off-site composting
        - Animal feedstock
    - Wastewater
        - Animal feedstock – contact Washington State Department of Agriculture for approval.
        - Sewer discharge – contact King County Industrial Waste for approval.
        - Land treatment systems – the controlled application of wastewater to irrigation lands for treatment. Irrigation to managed vegetation includes discharging to crops, landscaped areas, or other vegetated areas as long as the vegetation is healthy and maintained. Contact Washington State Department of Ecology for approval.
        - Infiltration basin: A structure where treated wastewater is discharged and allowed to infiltrate to ground. Contact Washington State Department of Ecology for approval.
        - Subsurface Infiltration: An onsite system that treats wastewater before discharging it to a drain field where additional treatment occurs. This is a separate system from a domestic onsite sewage system (septic system). Contact Washington State Department of Ecology for approval.

Supplemental BMPs

- Cover outdoor storage areas.
- Use a containment curb, dike, or berm to prevent off-site runoff from storage or processing areas and to prevent stormwater run-on

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-8: Storage of Solid Waste and Food Waste (Including Cooking Grease)
    - A-12: Cleaning or Washing of Food Service Areas and Equipment
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Containment
    - Controlling and Collecting Contaminated Runoff
    - Covering
    - Disposal
- Contact the local sewer authority and the King County Wastewater Treatment Division Industrial Waste Section at 206-477-5371 for more information on disposal to the sanitary sewer system.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-8: Storage of Solid Waste and Food Wastes (Including Cooking Grease)

The following best management practices (BMPs) apply to garbage dumpsters, trash compactors and outdoor waste containers (e.g., cooking oil/grease receptacles).

Potential pollutants include but are not limited to fecal coliform bacteria, hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code 9.12. If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Store wastes in leak-proof containers with solid lids (e.g., dumpsters and trash compactors). No rainwater should be able to enter the container and no fluids should be leaking out.
- Keep all waste receptacles (e.g., dumpsters, garbage cans, used cooking oil/grease containers) closed except when adding waste.
- Leaking outdoor waste containers must be repaired or replaced. Contact your waste hauler for replacements if the container is leased.
- Trash compactor wastewater must be discharged to the sanitary sewer, septic system or collected and hauled off-site for proper disposal. It must not be discharged to ground, stormwater drainage systems, surface waters or groundwater.
- Trash compactor drain lines should be connected to the sanitary sewer or septic system. If a connection is not possible, collect the wastewater in a dead-end sump or similar device. The wastewater containment must be easily inspected, maintained, and pumped out for proper disposal.
- Used cooking oil/grease containers should be labeled with their contents and have a secured lid.
- While oil/grease containers are not required to have secondary containment, they should be located and/or secured such that they can't be tipped over.
- Clean up any spills immediately using absorbent material or scraping it up. Grease cannot be left on the ground.
- Have spill cleanup materials nearby.
- Use a lid or cover when transporting cooking oil/grease containers from kitchens to outside grease containers to prevent contents from spilling.
- Ensure that drip pans or absorbent materials are used whenever grease containers are emptied by vacuum trucks or other means.

- Dispose of collected cooking oil/grease as garbage if it is not being recycled. Do not dispose of fats, oils, or grease (FOG) into the sanitary sewer, septic system, or stormwater drainage system.

Required Routine Maintenance

- Keep the area around the grease container clean and free of debris.
- Check storage containers frequently for leaks and to ensure that lids are secure.
- Regularly check for loose debris in the waste container storage area and sweep if the area is paved. After sweeping, the waste storage area may be hosed down—without the use of soaps, detergents, or other chemicals—if there are no accumulations of oil and grease present and the rinse water is not discharged to a stormwater drainage system or surface water. The rinse water can infiltrate to ground or be discharged to a sanitary sewer.
- Do not hose down or apply soaps, detergents, or other chemicals to waste storage areas with accumulated oil and grease. Oily wastewater can clog stormwater drainage systems and sanitary sewer lines. Contact a service provider to remove and properly dispose of oil and grease accumulations.
- If cleaning or rinsing waste containers, dispose of all wastewater into the sanitary sewer. If sanitary sewer is not available, then store the wastewater in a holding tank, dead-end sump, or truck it off-site to an approved disposal location.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-31: Parking Lots, Driveways and Outside Storage Areas
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Disposal
    - Drainage Maintenance Contractors

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-9: Storage of Scrap and Recycling Materials (Including Auto Recycling Facilities)

The following best management practices (BMPs) apply to the salvaging and storage of scrap metal, scrapped equipment, junked appliance and vehicles, empty metal drums, and recyclable materials such as cans, bottle, plastic, and paper products.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, oxygen demanding substances, PCBs, sediment, and other pollutants.

BMPs are required by King County Water Quality Code 9.12. If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Check incoming scrap materials, vehicles, and equipment for potential fluid contents and batteries.
- Drain and transfer fluids from vehicles and other equipment only in a designated area with a waste collection system or over drip pans.
- Cover and contain vehicle and equipment dismantling areas to prevent rainwater contact.
- Remove batteries and store off the ground in a leak proof container and under cover.
- Cover and raise any materials that may contaminate stormwater. A tarp and a pallet are acceptable.
- Cover and contain stockpiles of any material that has the potential to contaminate stormwater runoff.
- All containers used to store fluids must comply with activity sheets A-2: Outdoor Storage of Liquid Materials in Stationary Tanks and A-3: Outdoor Storage of Liquid Materials in Portable Containers regarding secondary containment. Storage of gasoline must comply with the appropriate Fire Codes.

Required Routine Maintenance

- Inspect storage areas regularly and promptly clean up any leaks, spills, or contamination.
- Sweep scrap storage areas as needed. Do not hose down anything to the stormwater drainage system.
- Keep spill cleanup materials in a location known to all. Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- If you are involved in transporting any of these materials you must carry spill cleanup material in the vehicle to capture any spilled liquids, and have an impermeable liner in the bed of your truck to capture any spilled or leaked materials. Properly dispose of or reuse any collected fluids.

Supplemental BMPs

- Install catch basin inserts to collect excess sediment and debris if necessary. Inspect and maintain catch basin inserts to ensure they are working correctly.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-2: Outdoor Storage of Liquid Materials in Stationary Tanks
    - A-3: Outdoor Storage of Liquid Materials in Portable Containers
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Catch Basin Inserts
    - Containment
    - Covering

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-10:. Treatment, Storage or Disposal of Dangerous Wastes

This activity applies to businesses that are permitted by the Washington State Department of Ecology to treat, store, or dispose of dangerous wastes.

Potential pollutants can include but are not limited to fecal coliform bacteria, hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code 9.12. If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Detailed BMPs are not included here because treatment, storage, and disposal (TSD) site requirements are beyond the level of typical BMP application.
- Department of Ecology regulates these facilities with specific requirements, which include the need for a National Pollutant Discharge Elimination System (NPDES) permit

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Spill Response and Cleanup Plan
- Contact Ecology at 206-594-0000 or 360-407-6000

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-11: Cleaning or Washing of Tools and Equipment

The following best management practices (BMPs) apply to the cleaning of tools and equipment such as lawn mowers, edgers and grass trimmers, tools used at equipment repair shops, and manufacturing equipment such as saws, grinders, and screens.

Potential pollutants include but are not limited to hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Discharge tool and equipment wash water to the sanitary sewer (with approval from the sewer authority) or a holding tank for offsite disposal. The discharge of wash water to the stormwater drain system is not allowed without treatment and an Individual Wastewater Discharge permit from the Washington State Department of Ecology.
- Rinse lawnmowers with water only on a lawn or similar area where grass clippings will not get into the stormwater drainage system or surface waters when it rains.
- Oily, soapy, or otherwise dirty water is not allowed to discharge to any stormwater drainage system or surface water.

Supplemental BMPs

- Recycle your wash water with an enclosed loop system or use self-contained parts washers. Numerous products are commercially available that recycle and contain wash water and cleaning solvents.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-13: Vehicle Washing and Steam Cleaning
    - A-18: Vehicle and Equipment Repair and Maintenance
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Containment
    - Disposal
    - Oil/Water Separator
    - Water Quality Treatment BMP
- Washington State Department of Ecology's Vehicle and Equipment Washwater Discharges/Best Management Practices Manual https://fortress.wa.gov/ecy/publications/summarypages/95056.html

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-12: Cleaning of Washing of Food Service Areas and Equipment

The following best management practices (BMPs) apply to stationary and mobile operations.

Potential pollutants can include but are not limited to nutrients, oil and grease, oxygen demanding substances, pH, and sediment.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- The cleaning of food service equipment—such as cooking equipment, filter screens, and floor mats—must be done indoors.
- All wash and rinse water (including mop water) must be discharged to the sanitary sewer or the septic system. It may not be discharged outdoors or into the stormwater drainage system.
- Floor mop water must not be poured outside. Instead pour mop water into a mop sink, utility sink or toilet.
- Wash and rinse water containing fats, oils, or grease (FOG) may require pretreatment to remove FOG prior to disposal to the sanitary sewer or septic system. Check with your sewer authority or Public Health-Seattle and King County.
- Do not dispose of wash or rinse waster containing floor stripping or disinfectant chemicals into the septic system as they can seriously inhibit wastewater treatment and cause the system to fail. The wash or rinse water should be collected and hauled offsite for proper disposal (e.g., taken to a wastewater treatment facility).
- The use of “environmentally friendly”, "nontoxic" or “biodegradable” soaps and detergents does NOT make it acceptable to discharge to any stormwater drain system or surface waters. All soaps and detergents are harmful to aquatic organisms.

Additional Information

- Contact Public Health-Seattle and King County at 206-263-9566 or 206-477-8050
- Contact the local sewer authority and the King County Wastewater Treatment Division Industrial Waste Section at 206-477-5371 for more information on disposal to the sanitary sewer system.
- Interagency Resource for Achieving Cooperation’s *A Guide to Restaurant Grease Management* https://apps.lhwmp.org/IRAC/eDoc.ashx?DocID=Xb9va1HRGBg%3d

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-13: Vehicle Washing and Steam Cleaning

The following best management practices (BMPs) apply to all vehicle washing including mobile vehicle washing and detailing services, firefighting equipment, and fleet maintenance. For exterior vessel washing refer to activity sheet A-30: Marine Activities.

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Commercial and fleet car washing and detailing must be done in a contained area where all water is collected and either recycled or discharged to the sanitary sewer.
- Occasional vehicle washing (less than 5 vehicles, 1-2 times a month) with a mild (pH neutral) soap or detergent on gravel, grass, or loose soil is allowed as long as all the water soaks into the ground (with no possibility of the wash water getting into the stormwater drainage system) and you only wash the exterior (not the engine compartment or undercarriage) of the vehicle.
- The use of “environmentally friendly”, "nontoxic" or “biodegradable” soaps and detergents does NOT make it acceptable to discharge vehicle wash water to any stormwater drain system or surface waters. All soaps and detergents are harmful to aquatic organisms.
- If your business is located in an area designated as a critical aquifer recharge area (CARA), infiltration may not be allowed. For additional information on critical aquifer recharge areas in King County, refer to King County Code 21A.24.311-316.
- Do not wash or rinse vehicles on permeable pavement or pavers.
- Do not wash vehicles on impermeable (conventional) paved areas or wash or rinse the engine compartment or the underside of vehicles, unless you do one of the following:
    - Designate a wash area for all vehicles where the wash water is collected and discharged to the sanitary sewer or is processed through an enclosed recycling system;
    - Use a portable collection system that captures all the wash water for proper disposal; or
    - For the occasional washing of the exterior (not the engine compartment or undercarriage) of vehicles (less than 5 vehicles, 1-2 times a month), ensure that the paved area drains directly to grass, gravel or loose soil and there is no possibility of the wash water getting into the stormwater drainage system
- Do not conduct oil changes or other engine maintenance in the designated washing area.

- Rinsing the outside of a vehicle with water and without any soaps or detergents is allowed as long as the water is filtered prior to discharge to the stormwater drainage system.
- At multifamily properties it may be necessary to post signs at the designated wash areas, indicating where and how vehicle washing must be done.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-30: Marine Activities
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Catch Basin Inserts
    - Disposal
- Washington State Department of Ecology's Vehicle and Equipment Wash Water Discharges/Best Management Practices Manual https://fortress.wa.gov/ecy/publications/summarypages/95056.html

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-14: Interior Washing Operations (Including Mobile Contractors)

Potential pollutants can include but are not limited to nutrients, oil and grease, pH, sediment, and other pollutants.

Best management practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- All wash and rinse water (including floor mop water) must be discharged to the sanitary sewer or septic system. It may not be discharged outdoors or into the stormwater drainage system.
- Do not dispose of wash or rinse waster containing floor stripping or disinfectant chemicals into the septic system as they can seriously inhibit wastewater treatment and cause the system to fail. The wash or rinse water should be collected and hauled offsite for proper disposal (e.g., taken to a wastewater treatment facility).
- The use of "environmentally friendly", "nontoxic" or "biodegradable" soaps and detergents does NOT make it acceptable to discharge to any stormwater drain system or surface waters. All soaps are harmful to aquatic organisms.
- Do not dispose of sludge (thick, wet, viscous mixture; e.g., accumulated food debris cleaned from surface of equipment) outdoors or into the stormwater drainage system.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
  - Disposal
- Contact the local sewer authority and the King County Wastewater Treatment Division Industrial Waste Section at 206-477-5371 for more information on disposal to the sanitary sewer system.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-15: Washing of Buildings, Rooftops, and Other Large Surfaces

The following best management practices (BMPs) apply to the washing of objects not associated with the operation or storage of automotive equipment or machinery.

For washing of parking lots, driveways, or other areas where automotive fluid (e.g., oil, gasoline) are present, see activity sheet A-31: Parking Lots, Driveways, and Outside Storage Areas. For washing of docks, wharves, piers, floats, and boat ramps, see activity sheet A-30: Marine Activities.

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, pH, sediment, and other pollutants.

Best Management Practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- If soaps, detergents, or any other chemicals are used, use a sump pump, wet vacuum or similar device that enables collection of wash water and associated solids so they can be disposed of properly. The wash water must not go to the stormwater drainage system, groundwater, or surface water. This may require temporarily blocking or disconnecting downspouts from the stormwater drainage system in order to prevent illicit discharges.
- Wash water runoff does not have to be collected if:
    - No soaps, detergents, or any other chemical (including pesticides) are used;
    - Only cold water is used. Heated water cannot be discharged to the stormwater drainage system; and
        - the wash water can be diverted to a nearby vegetated area to infiltrate into the ground, or
        - the wash water is filtered through media (e.g., filter fabric) to trap solid materials, prior to entering a stormwater drainage system. The area must be swept prior to washing, in order to remove all fines (e.g., silts and clay) that may otherwise clog or bypass the filtering process.
- Oil stains must be removed with absorbent materials prior to washing
- Wash water is not allowed to flow off-site.
- If the surface being washed has lead or other heavy metal-bearing paint or dust (such as chromium or cadmium), you must use a commercial washing service that will collect, test, and properly dispose of the wash water.

- Block or disconnect all rooftop downspouts when washing roofs. The wash water must be directed to pervious areas such as landscaping or gravel for infiltration, collected and disposed of to the sanitary sewer, or taken off-site for proper disposal.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
  - A-30: Marine Activities
  - A-31: Parking Lots, Driveways and Outside Storage Areas
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
  - Catch Basin Insert
  - Disposal

Note: Washing of boats in boat yards, marinas, and dry dock areas is covered by a National Pollutant Discharge Elimination System (NPDES) permit, administered by the Washington State Department of Ecology, so the BMPs listed above may not apply to washing in these locations.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-16: Truck or Rail Loading and Unloading of Liquid or Solid Material

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, and other pollutants.

Best management practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Place drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections.
- Immediately clean up any material that has spilled during transfer operations.
- Have a current spill control plan.
- Train employees to follow proper loading and unloading procedures. Ensure that employees are familiar with the site's spill response and cleanup plans and/or proper spill cleanup procedures.
- Store and maintain appropriate spill cleanup materials in a location known to all.
- Conduct loading and unloading operations under cover if possible.

Required Routine Maintenance BMPs

- Clean drip pans as needed and dispose of contents properly.
- Check equipment for leaks on a regular basis and repair if needed.
- Sweep loading/unloading areas as needed. Never wash anything to the stormwater drainage system or the street.

Supplemental BMPs

- Pave areas where liquids are transferred to and from tanker trucks. Use Portland cement concrete for fuels that react with asphalt, such as gasoline.
- Install a curb or dike, or slope the area to prevent stormwater from running on to the loading/unloading area and washing away spilled material.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Disposal
    - Spill Response and Cleanup Plan

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-17: Stationary Fueling Operations

The following best management practices (BMPs) apply to the fueling of vehicles and equipment, including gas stations and fuel pumps to service equipment or vehicles, where the fuel pumps were constructed or substantially remodeled after July 1995. "Substantial remodeling" means replacing the canopy, adding fuel tanks, or relocating or adding one or more fuel dispensers in such a way that modifies the impervious concrete paving in the fueling area.

For fueling operations installed prior to July 1995, see activity sheet A-47: Older Stationary Fueling Operations. For mobile fueling operations see activity sheet A-48: Mobile Fueling of Vehicles and Heavy Equipment. For in-water and over-water fueling operations, see activity sheet A-30: Marine Activities.

All BMPs related to fueling must be consistent with the requirements of the King County Fire Code (KCC 17.04). The water quality requirements presented in this manual are separate from, and in addition to, the requirements of the King County Fire Code.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, and oxygen demanding substances.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Design the fueling island to minimize stormwater contamination, to control spills, and to collect and direct contaminated stormwater and/or wastewater for treatment.
- The fueling island must have a roof or canopy to prevent the direct entry of precipitation onto the spill containment pad. At a minimum, cover the spill containment pad (within the grade break or fuel dispensing area) and extend several additional feet to reduce the introduction of windblown rain.
    - Roofs and canopies 10 feet or less in height must have a minimum overhang of 3 feet on all sides.
    - Roofs and canopies greater than 10 feet in height mush have a minimum overhand of 5 feet on each side.
- Convey runoff collected from the roof and canopy to a stormwater drainage system or receiving water outside of the spill containment pad. This will prevent mixing of uncontaminated runoff from the roof or canopy with contaminated runoff collected on the spill containment pad.
- Design the fueling island as a spill containment pad with a sill or berm, raised to a minimum of four inches, to prevent the runoff of spilled liquids and to prevent the

run-on of stormwater from the surround area. Raised sills are not required at the open-grate trenches that connect to an approved drainage-control system.

- The spill containment pad must be constructed of impervious concrete. Asphalt is not acceptable.
- Slope the spill containment pad around the fueling island towards the spill containment pad drains; either trench drains, catch basins and/or a dead-end sump. The slope of the drains shall not be less than 1 percent.
- Drains from the spill containment pad must have a normally closed shutoff valve. The valve may be opened to convey stormwater with residual contamination to an oil control treatment system (e.g., oil/water separator, catch basin insert, or equivalent treatment) which then discharges to:
    - at a minimum, a basic treatment system (e.g., sand filter, filter strips, water quality vault) prior to discharging to a storm drainage system, surface water or ground, or
    - a sanitary sewer. Approval from the local sewer authority is required for conveyance of any fuel-contaminated stormwater to a sanitary sewer. State and local regulations prohibit discharges that could cause a fire or explosion (WAC, Section 173-216-060; KCC 28.84.060). For conveyance to the sanitary sewer, a catch basin shall be installed upstream of the oil control treatment system, and a normally closed shutoff valve is required at the discharge point of the oil control treatment system.
- In the case of a fuel spill, spilled fuel must be pumped from the drains or catch basins and must be treated and disposed of offsite in accordance with Department of Ecology regulations. The valve may only then be opened to convey stormwater with residual contamination.
- Discharges from the treatment systems (oil control treatment and basic treatment system) to storm drainage systems, sanitary sewer, surface water or to the ground must not display ongoing or recurring visible sheen and must not contain oil or grease.
- Alternatively, collect runoff from the spill containment pad in a dead-end sump and hold for proper off-site disposal. The dead-end sump must be easily inspected, maintained, and pumped.
- The minimum spill retention volume of the oil control treatment system or dead-end sump shall be:
    - 15 minutes for the flow rate of the dispensing mechanism with the highest through-put rate, or
    - if the area is uncovered, the 15-minute peak flow rate of the 6-month, 24-hour storm event over the surface of the spill containment pad – whichever is greater.
    - The volume of the dead-end sump shall be a minimum of 50 gallons with an adequate grit sedimentation volume.

Additional Required BMPs for Vehicles or Equipment 10 feet in height or greater

A roof or canopy may not be feasible at fueling stations that regularly fuel vehicles or equipment that are 10 feet in height or greater. At those types of fueling facilities, the following BMPs apply, as well as other applicable BMPs for fueling stations:

- If a roof or canopy is infeasible, then the concrete fueling pad must be equipped with emergency spill control features including a shutoff valve for drainage from the fueling area. The drainage shutoff valve may be kept open to convey stormwater with residual contamination from the fueling pad.
- Maintain the valve in the closed position during a spill event and cleanup. An electronically actuated valve is preferred to minimize the time lapse between spill and containment.
- In the case of a fuel spill, spilled fuel must be pumped from the drains or catch basins and must be treated and disposed of offsite in accordance with Department of Ecology regulations. The valve may only then be reopened to convey stormwater with residual contamination.:
    - to a sanitary sewer, if approved by the sewer authority, or
    - to an oil control treatment system (e.g., an oil/water separator, catch basin insert, or equivalent treatment), and then, at a minimum, to a basic treatment system (e.g., sand filter, filter strips, water quality vault). Discharges from treatment systems to stormwater drainage systems, sanitary sewer or surface water must not display ongoing or recurring visible sheen and must not contain oil or grease.

Required Operational BMPs

- Train employees on the proper use of fuel dispensers.
- Post signs in accordance with the Uniform Fire Code (UFC) or International Fire Code (IFC). Post “No Topping Off” signs. Topping off fuel tanks results in spillage and vents gasoline fumes to the air.
- The person conducting the fuel transfer must be present at the fueling pump during fuel transfer. It is encouraged to post “Stay with Vehicle During Fueling” signage near fuel dispensers.
- Make sure that the automatic shutoff on the fuel nozzle is functioning properly.
- Prepare an emergency spill response and cleanup plan. Have designated trained person(s) available either on-site or on call at all times to implement the plan promptly and properly and immediately cleanup all spills.
- Keep suitable cleanup materials, such as dry adsorbent materials, on-site to allow prompt cleanup of a spill. Do not use dispersants or soap to clean up spills or sheens.
- Immediately notify Ecology, the local jurisdiction, and the local sewer authority if a spill reaches sanitary or storm sewers, ground water, or surface water, in accordance with federal and Ecology spill reporting requirements.

- Sweep or vacuum the fueling area as needed to collect sediment and debris. Never hose down the fueling area to the storm drains. Contaminated runoff and spills must be collected for proper disposal.
- Keep drained oil filters in a closed leak-proof container or drum.
- Transfer the fuel from the delivery tank trucks to the fuel storage tank over impervious, contained areas and ensure that appropriate overflow protection is used. Alternatively, cover nearby storm drains during the filling process and use drip pans under all hose connections.

Supplemental BMPs

- Use absorbent materials in or around catch basin inlets on the property to filter oily runoff. Properly dispose of all gas and oil-contaminated absorbents
- A catch basin inserts configured for oil removal may remove some of the pollutants in runoff. The oil-absorbent filter media must be able to retain absorbed oil during future storm events. Replace the filter media if the absorption capacity has been surpassed. See the *King County Surface Water Design Manual* for more information regarding which filter media provide acceptable oil retention.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-30: Marine Activities
    - A-47: Older Stationary Fueling Operations
    - A-48: Mobile Fueling of Vehicles and Heavy Equipment
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Catch Basin Insert
    - Containment
    - Covering
    - Oil/Water Separators
    - Spill Response and Clean-up Plan
- *King County Surface Water Design Manual*

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-18: Vehicle and Equipment Repair and Maintenance

The following best management practices (BMPs) apply to vehicle and equipment repair and maintenance.

Potential pollutants include but are not limited to hydrocarbons, metals, oil and grease, oxygen demanding substances, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Inspect all incoming vehicles and equipment for leaks and use drip pans or absorbent material if necessary, while waiting for service.
- Clean up any spilled fluids immediately. The collected material and absorbents must be disposed of, reused, or recycled properly.
- Cover, contain, and label waste oil, antifreeze, and other fluids.
- Store batteries upright in a secure, contained, covered location (not outside on the ground). Check to ensure batteries are not damaged or leaking. Keep battery acid-neutralizing materials, such as baking soda, available near the storage area.
- Regular work at stationary locations must be done indoors or in a covered area using a tarp or drip pans beneath the vehicle or equipment to capture all spills and drips.
- Ensure that employees are familiar with the site's spill response and cleanup plans and are trained in the proper handling, storage, and disposal of all fluids.
- Store and maintain appropriate spill cleanup materials in an easily accessible location.

Required Routine Maintenance

- Inspect parking and outside storage areas daily for leaks and drips.
- Sweep paved work areas as needed. Soak up vehicle fluids with rags or other absorbent material immediately. Never wash paved areas to the stormwater drainage system or the street.

Supplemental BMPs

- Absorbent material such as pillows or booms can be used around storm drains or in catch basins to absorb oil and other substances.
- A catch basin insert may be necessary. Catch basin inserts require frequent maintenance to be effective.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs

  - A-2: Outdoor Storage of Liquid Materials in Stationary Tanks
  - A-3: Storage of Liquid Materials in Portable Containers
  - A-11: Cleaning or Washing of Tools and Equipment
  - A-13: Vehicle Washing and Steam Cleaning
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
  - Catch Basin Inserts
  - Containment
  - Covering
  - Disposal
- Contact King County Local Hazardous Waste Management Program at 206-296-4692 or visit www.hazwastehelp.org for information on the proper disposal and recycling of vehicle fluids, filters, batteries and used absorbent material.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-19: Concrete and Asphalt Production and Recycling

The following best management practices (BMPs) apply to permanent production sites as well as batch plants.

Mobile concrete pouring and asphalt applications are covered under activity sheet A-20: Concrete and Asphalt Application.

This does not cover concrete production at mining or sand and gravel sites covered by a King County Clearing and Grading Permit or National Pollutant Discharge Elimination System (NPDES) Sand and Gravel Permit issued by the Washington State Department of Ecology.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Discharge all process water generated from production, pouring, crushing and equipment cleaning activities to a sump, process water recycling system, or sanitary sewer system. Never wash contaminated water to the stormwater drainage system. Discharge to the sanitary sewer system requires approval from the local sewer district/agency.
- Contain the production and pouring area to prevent pollutants from being washed to the stormwater drainage system.

Required Routine Maintenance

- Vacuum paved areas as necessary to prevent dust and particle mobilization. Collect loose chunks of aggregate and raw material particles for recycling or proper disposal. Do not hose down the area to the stormwater drainage system.
- Dust suppression water may not be discharged to the stormwater drainage system.

Supplemental BMPs

- A catch basin insert may be necessary. Catch basin inserts require frequent maintenance to be effective.
- Pave the mixing, production, and/or pouring area(s) with a slope that drains to a central collection area.
- Stormwater coming into contact with concrete crushing operations must be collected and discharged to an approved discharge location.

- When pH levels in stormwater rise above 8.5, the pH must be adjusted to the acceptable range of 6.5 to 8.5. Refer to the *King County Surface Water Design Manual*, Appendix D for information on pH adjustment.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
  - A-11: Cleaning or Washing of Tools and Equipment
  - A-20: Concrete and Asphalt Application
  - A-31: Parking Lots, Driveways and Outside Storage Areas
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
  - Catch Basin Inserts
  - Containment
  - Disposal

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-20: Concrete and Asphalt Application

The following best management practices (BMPs) apply to sites where asphalt is applied or small amounts of concrete that is hand mixed on site. The application of premixed concrete must follow the standards in the *King County Surface Water Design Manual*.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Use drip pans, ground cloths, heavy cardboard, or plywood wherever concrete, asphalt, asphalt emulsion and drips are likely to spill, such as beneath discharge points from equipment.
- Cover and contain all nearby storm drains at the beginning of the workday. Drain covers and other containment devices are commercially available to keep runoff out of the storm drainage system. All solids collected must be disposed of properly at the end of the workday (or more frequently) prior to removing the containment or cover device(s).
- Contain and collect the slurry from exposed aggregate washing. Never allow the slurry to get into a storm drain, ditch, roadway shoulder or gutter. Use a catch basin cover, inlet protection or other containment device, such as a hand-dug, lined sump to direct and contain slurry. All collected runoff must be disposed of properly.
- Do not discharge concrete, slurry, or rinse water into gutters, storm drains, or drainage ditches or onto the paved surface of a roadway or driveway.
- Designate an area onsite where hand tools will be cleaned and the water collected for disposal. Commercial products and services are also available for concrete, slurry, and rinse water containment and disposal.
- Do not use diesel fuel for cleaning or prepping asphalt tools and equipment.

Required Routine Maintenance

- Sweep the pouring area at the end of the job or more frequently if needed. Collect loose aggregate chunks and dust. Do not hose down the area to the stormwater drainage system.

Supplemental BMPs

- A catch basin insert may be necessary for sediment removal. Catch basin inserts require frequent maintenance to be effective.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs

  - A-11: Cleaning or Washing of Tools and Equipment
  - A-19: Concrete and Asphalt Production and Recycling
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
  - Catch Basin Insert
  - Containment
  - Covering
  - Disposal
- *King County Surface Water Design Manual*
  - Appendix D – Concrete Handling
  - Appendix D – Concrete Washout Area

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-21: Manufacturing and Post-Processing of Metal Products

The following best management practices (BMPs) apply to mills, foundries, and fabricators that manufacture and/or post-process metal products at stationary sites. Painting, finishing, and coating of metal products are covered under activity sheet A-22: Painting, Finishing and Coating of Vehicles, Products and Equipment.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, oxygen demanding substances, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Keep metal fragments and debris (e.g., grindings, cuttings, dust, shavings) from coming into contact with stormwater. Cover the work area or perform the work indoors.
- Discharge process wastewater to a sanitary sewer, holding tank, or process treatment system. Do not discharge to the stormwater drainage system.
- Cover galvanized metal product storage and processing areas; or capture, treat, and properly dispose of stormwater coming into contact.

Required Routine Maintenance BMPs

- Sweep the work and pouring area at least daily to collect metal fragments and debris and prevent stormwater contamination. Do not hose down the area to the stormwater drainage system.

Supplemental BMPs

- Install catch basin inserts to collect excess sediment and debris, if necessary. Inspect and maintain catch basin inserts regularly to ensure they are working correctly.
- Install collection system to capture fragments and debris.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-9: Storage of Scrap and Recycling Materials (Including Auto Recycling Facilities)
    - A-22: Painting, Finishing and Coating of Vehicles, Products and Equipment
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Catch Basin Insert
    - Covering
    - Disposal

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-22: Painting, Finishing, and Coating of Vehicles, Products and Equipment

The following best management practices (BMPs) apply to the painting, finishing, and coating of vehicles, products, and equipment and includes preparation work such as sanding and blasting.

Best management practices for painting buildings are covered in activity sheet A-29: Building Repair, Remodeling and Construction. Painting and other work on vessels is covered in activity sheet A-30: Marine Activities.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, oxygen demanding substances, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Painting must be done in an enclosed work area and meet the standards of the Puget Sound Clean Air Agency.
- Vehicle painting must be done in paint booths approved and permitted by Puget Sound Clean Air Agency.
- Properly dispose of paint booth filters as required under dangerous and hazardous waste regulations.
- Collect dust and debris from sanding operations using vacuum sanders, ground cloths or similar methods. Do not hose down the area to the stormwater drainage system.
- Use ground cloths and/or drip pans in outdoor locations where paints, finishes, and other liquid materials are mixed and/or applied.

Required Routine Maintenance

- Store and maintain appropriate spill cleanup materials in a location known to all employees.
- Train all employees on the site's spill control plan and/or proper spill cleanup procedures.
- Sweep the area at the end of each day at a minimum. Do not hose down the area to the storm drainage system.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-29: Building Repair, Remodeling and Construction

  - A-30: Marine Activities
  - A-39: Roof Vents and Fugitive Emissions
- Puget Sound Clean Air Agency, 206-343-8800
- Contact King County Local Hazardous Waste Management Program at 206-296-4692 or visit www.hazwastehelp.org for information on the proper disposal of hazardous waste.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-23: Wood Treatment and Preserving

The following best management practices (BMPs) apply to wood treatment performed outdoors including storage of freshly treated wood materials outdoors. It includes permanent sites as well as temporary sites.

Large-scale commercial operations are required to have a stormwater National Pollutant Discharge Elimination System (NPDES) permit from the Washington State Department of Ecology.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, oxygen demanding substances, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Collect drips and spills using ground cloths or drip pans.
- Store portable containers of wood preservative compounds indoors or in a covered location with appropriate secondary containment when not in use.
- Hold dipped lumber over dip tanks until dripping ceases (if applicable).
- Store treated lumber in a covered and paved area until fully dry.
- Cover and contain the storage area to prevent stormwater from running into the covered area.

Required Routine Maintenance

- Cover outdoor dip tanks when not in use.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-3: Storage of Liquid Materials in Portable Containers
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Containment
    - Covering
    - Spill Response and Cleanup Plan

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-24: Commercial Composting

The following best management practices (BMPs) apply to commercial receiving and composting wastes.

In addition to other King County requirements, all commercial composting operations must comply with Public Health-Seattle and King County requirements. Commercial composting operations require a National Pollutant Discharge Elimination System (NPDES) permit and/or a State Waste Discharge permit from the Washington State Department of Ecology.

Potential pollutants can include but are not limited to fecal coliform bacteria, metals, nutrients, oxygen demanding substances, PCBs, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- All composting facilities shall obtain the appropriate state and local permits. Contact Public Health – Seattle and King County for more information.
- Screen incoming waste for dangerous materials and solid waste. These materials may not be accepted for composting and must be properly disposed of.
- Locate composting areas on impervious surfaces.
- Drain all leachate from composting operations to the sanitary sewer, holding tank, or on-site treatment system. Leachate may not go to the stormwater drainage system or groundwater.
- Collect the leachate with a dike or berm, or with intercepting drains placed on the down slope side of the compost area.
- Direct outside runoff away from the composting areas.
- Collect runoff from uncovered finished compost and blending areas and discharge to the sanitary sewer. If that is not feasible, then discharge to surface or ground waters according to the condition of a Washington State Industrial Stormwater General or Individual permit or a State Waste Discharge Permit.
- See Washington Administrative Code 173-350-220 (Composting Facilities) for additional requirements.

Required Routine Maintenance

- Clean up debris from yard areas regularly to prevent stormwater contamination.

Supplemental BMPs

- Install catch basin inserts to collect excess sediment and debris if necessary. Inspect and maintain catch basin inserts regularly to ensure they are working correctly.
- Cover compost storage areas.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-4: Outdoor Storage of Soil, Sand and Other Erodible Materials
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Catch Basin Inserts
    - Containment
    - Disposal
- Contact Public Health-Seattle and King County at 206-263-9566
- Washington Administrative Code 173-350-220 (Composting Facilities)
- Washington State Department of Ecology's *Siting and Operating Composting Facilities in Washington State: Good Management Practices* https://apps.ecology.wa.gov/publications/documents/1107005.pdf

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-25: Chemical Applications – Other Than Landscaping

The following best management practices (BMPs) apply to the use of pesticides, herbicides or other chemicals for such purposes as removing or preventing future growth of rooftop moss, killing nuisance rodents, and using fungicides to preserve patio decks.

Application of pesticides for landscaping is covered under activity sheet A-5: Storage and Use of Pesticides and Fertilizers. Best management practices for washing of roofs are in activity sheet A-15: Washing of Buildings, Rooftops and Other Large Surfaces.

Businesses/agencies engaged in this activity must comply with Public Health-Seattle and King County structural pesticide applicator regulations. The BMPs listed here are intended to complement other regulations. Washington pesticide law requires most businesses that commercially apply pesticides to the property of another to be licensed as a Commercial Applicator from the Washington State Department of Agriculture.

Potential pollutants can include but are not limited to metals, oil and grease, oxygen demanding substances, PCBs, pH, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Avoid excessive application of chemicals. Follow manufacturers' application guidelines and label directions.
- Never apply pesticides or other chemicals in the rain.
- Clean up any spilled chemicals immediately. Do not hose down chemicals to the stormwater drainage system.
- Do not spray pesticides within 100 feet of open waters, including wetlands, ponds, and streams, unless approved by local jurisdiction.
- Train employees on proper application and disposal practices

Supplemental BMPs

- Integrated pest management (IPM), a comprehensive approach to the use of pesticides which minimizes application and stresses selection of proper products and tailored application rates, is the most effective BMP measure that can be taken. IPM is applicable to businesses that frequently apply pesticides.
- Use manual pest control strategies such as physically scraping moss from rooftops, high-pressure sprayers to remove moss, and rodent traps.
- Select the least toxic chemical application that can accomplish the job.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-2: Outdoor Storage of Liquid Materials in Stationary Tanks
    - A-3: Storage of Liquid Materials in Portable Containers
    - A-5: Storage and Use of Pesticides and Fertilizers
    - A-15: Washing of Buildings, Rooftops, and Other Large Surfaces
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Containment
    - Covering
    - Disposal

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-26: Landscaping Activities, Vegetation Management, and Irrigation

The following best management practices (BMPs) apply to landscaping, vegetation management and irrigation activities which include grading, soil transfer, vegetation planning, and vegetation removal. For storage and use of pesticides and fertilizers see activity sheet A-5: Storage and Use of Pesticides and Fertilizers.

Potential pollutants can include but are not limited to fecal coliform bacteria, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, and sediment.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs – Landscaping and Vegetation Management

- Do not dispose of collected vegetation into surface waters or stormwater drainage systems.
- Do not blow vegetation or other debris into the stormwater drainage system, sidewalks, or street. Dispose of collected vegetation by recycling or composting.
- Use mulch or other erosion control measures when soils are exposed for more than one week during the dry season (May 1 to September 30) or two days during the rainy season (October 1 to April 30).
- Ensure sprinkler systems do not "overspray" vegetated areas resulting in the excess water discharging into the stormwater drainage system.
- Ensure that plants selected for planting are not on the noxious weed list. Remove, bag, and dispose of class A and B noxious weeds in the garbage immediately. Make reasonable attempts to remove and dispose of class C noxious weeds. Do not compost noxious weeds as it may lead to spreading through seed or fragment if the composting process is not hot enough.
- New and expanding golf courses must have a Golf Course Management Plan as described in addressed in the King County Golf Course BMP Manual

Required BMPs - Irrigation

- Ensure sprinkler systems do not overspray vegetated areas resulting in runoff discharging into surface waters or stormwater drainage systems. Adjust watering times and schedules to ensure that the appropriate amount of water is being used to minimize runoff. Consider factors such as soil structure, grade, time of year, and type of plant material in determining the proper amounts of water for a specific area.
- Inspect irrigated areas regularly for signs of erosion and/or discharge.

- Do not irrigate plants during or immediately after fertilizer application. The longer the period between fertilizer application and irrigation, the less fertilizer runoff occurs.
- Do not irrigate plants during or immediately after pesticide application (unless the pesticide label directs such timing).
- Reduce frequency and/or intensity of watering as appropriate for the wet season (October 1 to April 30).

Supplemental BMPs - Landscaping and Vegetation Management

- Select the right plants for the planting location based on proposed use, available maintenance, soil conditions, sun exposure, water availability, height, sight factors, and space available.
- Use native plants in landscaping. Native plants do not require extensive fertilizer or pesticide applications.
- Install engineered soil/landscape systems to improve the infiltration and regulation of stormwater in landscaped areas.
- Use at least an eight-inch "topsoil" layer with at least 8 percent organic matter to provide a sufficient vegetation-growing medium.
    - Organic matter is the least water-soluble form of nutrients that can be added to the soil. Composted organic matter generally releases only between 2 and 10 percent of its total nitrogen annually, and this release corresponds closely to the plant growth cycle. Return natural plant debris and mulch to the soil, to continue recycling nutrients indefinitely.
- Select the appropriate turfgrass mixture for the climate and soil type.
    - Certain tall fescues and rye grasses resist insect attack because the symbiotic endophytic fungi found naturally in their tissues repel or kill common leaf and stem-eating lawn insects.
        - The fungus causes no known adverse effects to the host plant or to humans.
        - Tall fescues and rye grass do not repel root-feeding lawn pests such as Crane Fly larvae.
        - Tall fescues and rye grass are toxic to ruminants such as cattle and sheep.
    - Endophytic grasses are commercially available; use them in areas such as parks or golf courses where grazing does not occur.
    - Local agricultural or gardening resources such as Washington State University Extension office can offer advice on which types of grass are best suited to the area and soil type.
- Adjusting the soil properties of the subject site can assist in selection of desired plant species. Consult a soil restoration specialist for site-specific conditions.

- Remove weeds/vegetation in stormwater ditches by hand or other mechanical means and only use chemicals as a last resort. If herbicides are used, refer to activity sheet A-5: Storage and Use of Pesticides and Fertilizers for required BMPs.
- Conduct mulch-mowing whenever practicable.
- Till a topsoil mix or composted organic material into the soil to create a well-mixed transition layer that encourages deeper root systems and drought-resistant plants.
- Apply an annual topdressing application of 3/8" compost. Amending existing landscapes and turf systems by increasing the percent organic matter and depth of topsoil can:
    - Substantially improve the permeability of the soil.
    - Increase the disease and drought resistance of the vegetation.
    - Reduces the demand for fertilizers and pesticides.
- Disinfect gardening tools after pruning diseased plants to prevent the spread of disease.
- Prune trees and shrubs in a manner appropriate for each species.
- If specific plants have a high mortality rate, assess the cause, and replace with another more appropriate species.
- When working around and below mature trees, follow the most current American National Standards Institute (ANSI) ANSI A300 standards, http://www.tcia.org/TCIA/BUSINESS/ANSI_A300_Standards_/TCIA/BUSINESS/A300_Standards/A300_Standards.aspx?hkey=202ff566-4364-4686-b7c1-2a365af59669, and International Society of Arboriculture BMPs to the extent practicable (e.g., take care to minimize any damage to tree roots and avoid compaction of soil).
- Monitor tree support systems (stakes, guys, etc.).
    - Repair and adjust as needed to provide support and prevent tree damage.
    - Remove tree supports after one growing season or maximum of 1 year.
    - Backfill stake holes after removal.
- When continued, regular pruning (more than one time during the growing season) is required to maintain visual sight lines for safety or clearance along a walk or drive, consider relocating the plant to a more appropriate location.
- Re-seed bare turf areas until the vegetation fully covers the ground surface.
- Watch for and respond to new occurrences of especially aggressive weeds such as Himalayan blackberry, Japanese knotweed, morning glory, English ivy, and reed canary grass to avoid invasions.
- Aerate lawns regularly in areas of heavy use where the soil tends to become compacted. Con-duct aeration while the grasses in the lawn are growing most vigorously. Remove layers of thatch greater than ¾-inch deep.

- Set the mowing height at the highest acceptable level and mow at times and intervals designed to minimize stress on the turf. Generally mowing only 1/3 of the grass blade height will prevent stressing the turf.
    - Mowing is a stress-creating activity for turfgrass.
    - Grass decreases its productivity when mowed too short and there is less growth of roots and rhizomes. The turf becomes less tolerant of environmental stresses, more dis-ease prone and more reliant on outside means such as pesticides, fertilizers, and irrigation to remain healthy.

Supplemental BMPs - Irrigation

- Repair broken or leaking sprinkler nozzles as soon as possible.
- Water deeply, but infrequently, so that the top 6 to 12 inches of the root zone is moist. Appropriately irrigate lawns based on the species planted, the available water holding capacity of the soil, and the efficiency of the irrigation system.
    - The depth from which a plant normally extracts water depends on the rooting depth of the plant. Appropriately irrigated lawn grasses normally root in the top 6 to 12 inches of soil; lawns irrigated on a daily basis often root only in the top 1 inch of soil.
- Irrigate with the minimum amount of water needed. Never water at rates that exceed the infiltration rate of the soil.
- Maintain all irrigation systems so that irrigation water is applied evenly and where it is needed.
- Place sprinkler systems appropriately so that water is not being sprayed on impervious surfaces instead of vegetation.
- Place irrigation systems to ensure that plants receive water where they need it. For example, do not place irrigation systems downgradient of plant's root zones on hillsides.
- Use soaker hoses or spot water with a shower type wand when an irrigation system is not present.
    - Pulse water to enhance soil absorption, when feasible.
    - Pre-moisten soil to break surface tension of dry or hydrophobic soils/mulch, followed by several more passes. With this method, each pass increases soil absorption and allows more water to infiltrate prior to runoff.
- Add a tree bag or slow-release watering device (e.g., bucket with a perforated bottom) for watering newly installed trees when irrigation system is not present.
- Identify trigger mechanisms for drought-stress (e.g., leaf wilt, leaf senescence, etc.) of different species and water immediately after initial signs of stress appear.
- Water during drought conditions or more often if necessary, to maintain plant cover.
- Adjust irrigation frequency / intensity as appropriate after plant establishment.
- Annually inspect irrigation systems to ensure:

  - That there are no blockages of sprayer nozzles.
  - Sprayer nozzles are rotating as appropriate.
  - Sprayer systems are still aligned with the plant locations and root zones.
- Consult with the local water utility, King Conservation District, or Cooperative Extension office to help determine optimum irrigation practices.
- Do not use chemigation and fertigation in irrigation systems. This will help avoid over application of pesticides and fertilizers.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
  - A-5: Storage and Use of Pesticides and Fertilizers
- Natural Yard Care Program: http://your.kingcounty.gov/solidwaste/naturalyardcare/watering.asp
- The King County *Best Management Practices for Golf Course Development and Operation* https://your.kingcounty.gov/dnrp/library/water-and-land/stormwater/stormwater-pollution-prevention-manual/Best%20Manangement%20Practices%20for%20Golf%20Course.pdf
- The King County Noxious Weed List can be found at https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/laws.aspx. Additional information on the Washington State Noxious Weed List can be found at https://www.nwcb.wa.gov/printable-noxious-weed-list
- The King County Noxious Weed Control Program provides best management practices for the removal of typical noxious weeds such as blackberry and purple loosestrife. Call 206-296-0290 or see: http://www.kingcounty.gov/environment/animalsandplants/noxious-weeds/weed-control-practices.aspx for more information

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-27: Clearing and Grading of Land for Small Construction Projects

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, and sediment.

Best management practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- King County Permitting coordinates the clearing, grading, and erosion control requirements on individual sites. Contact Permitting prior to clearing, grading, and preparation activities for construction-sites greater than 2,000 square feet.
- Even if your site does not require a permit, erosion control measures are still required to prevent turbid water from entering stormwater drainage systems or surface waters.
- Follow the procedures for construction-site erosion and sediment control outlined in the *King County Surface Water Design Manual*:
    - Appendix C: Small Project Drainage Requirements
    - Appendix D: Erosion and Sediment Control Standards

Additional Information

- *King County Surface Water Design Manual*

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-28: Demolition of Buildings

The following best management practices (BMPs) apply to the removal of existing buildings and other structures by controlled explosions, wrecking balls or other methods, and subsequent clearing of the rubble.

Potential pollutants can include but are not limited to metals, nutrients, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Train employees about the need to control site activities to prevent stormwater pollution, and train them in spill cleanup procedures
- Protect the stormwater drainage system from dirty runoff and loose particles by placing catch basin covers, or a similarly effective containment device, on all nearby storm drains.
    - Place the covers (or devices) on the storm drains at the beginning of the workday.
    - Inspect daily and maintain the covers (or devices) to ensure they are working correctly.
    - At the end of each workday, collect and properly dispose of the accumulated materials before removing the covers (or devices).
    - Use dikes, berms, or other methods to protect natural drainage paths from dirty runoff if storm drains are not present.
- Remove all covers and devices when the job is completed.
- Cover waste container and dumpsters and ensure they are not leaking.
- Sweep surrounding streets, sidewalks, driveways, and other paved surfaces as needed and at the end of the workday to collect loose debris and garbage. Properly dispose of collected debris and garbage. Do not hose down these areas to the stormwater drainage system.
- Handle and dispose of all waste materials and demolition debris in a manner that does not cause contamination of stormwater.
- Control windblown dust and fine materials by applying water or dust suppression products, avoiding excessive application to prevent runoff. Do not use oils for dust control.

Supplemental BMPs

- Construct a screen to prevent stray building materials and dust from escaping the area during demolition. Size and orient the screen to capture windblown materials and contain them onsite.
- When feasible, schedule demolition to take place at a dry time of the year to prevent stormwater runoff from the demolition-site.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Catch Basin Insert
- *King County Surface Water Design Manual*, Appendix D: Construction Stormwater Pollution Prevention Standards

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-29: Building Repair, Remodeling and Construction

The following best management practices (BMPs) apply to the construction of buildings and other structures, remodeling of existing buildings, houses and other structures, and general exterior building repair work.

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Train employees about the need to prevent stormwater pollution.
- Keep spill cleanup materials in a common location onsite at all times. Train employees on spill prevention and clean up measures.
- Identify, remove, and properly dispose of hazardous substances from the building before beginning repairing or remodeling activities that could expose them to stormwater. Such substances could include PCBs, asbestos, lead paint, mercury switches, and electronic waste.
- Use a catch basin cover, filter fabric, or other runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area.
    - Place the cover or containment device over the catch basin at the beginning of the workday.
    - Collect and properly dispose of accumulated dirty runoff and solids before removing the cover or device at the end of each workday.
    - Check runoff control mechanisms and replace as necessary.
- Do not dump any substance, wash water or liquid waste on the pavement, ground, or into the stormwater drainage system
- Use drop cloths when painting, scraping, and sandblasting and properly dispose of collected material daily. Use drip pans in areas where drips are likely to occur if the area cannot be protected with a drop cloth.
- Cleaning paint brushes and tools:
    - Clean paint brushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer.
    - Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal. Solvents may not be disposed of to the sanitary sewer.
    - Never dispose of any wash water to a storm drain.

- Refer to activity sheet A-15: Washing of Buildings, Rooftops, and Other Large Surfaces for best management practices associated with pressure washing buildings.
- Control windblown dust and fine materials by applying water or dust suppression products, avoiding excessive application to prevent runoff. Do not use oils for dust control.
- Cover trash bins and dumpsters and ensure they are not leaking.
- Follow Appendix D of the *King County Surface Water Design Manual*, "Erosion and Sediment Control Measures" for dewatering activities.

Required Routine (Daily) Maintenance

- Sweep paved areas to collect loose particles for proper disposal. Consider using filtered vacuuming to collect waste that may be hard to sweep, such as dust on a drop cloth.
- Wipe up spills with rags or other absorbent material immediately. Do not hose down the area to the stormwater drainage system.
- Store materials, such as solvents, indoors or under cover and secures so that unauthorized personnel will not have access to them.

Supplemental BMPs

- Recycle or reuse leftover materials.
- Set up temporary cover in wet weather conditions.
- Install temporary wheel wash facilities if track out occurs.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-11: Cleaning or Washing of Tools and Equipment
    - A-15: Washing of Buildings, Rooftops, and Other Large Surfaces
    - A-20: Concrete and Asphalt Application
    - A-41: Wheel Wash and Tire Bath Track Out Control
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Catch Basin Insert
- *King County Surface Water Design Manual*, Appendix D: Construction Stormwater Pollution Prevention Standards

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-30: Marine Activities

The following best management practices (BMPs) apply to businesses that operate in or over the marine environment. Marine activities include:

- operations not covered by a National Pollutant Discharge Elimination System (NPDES) permit from the Washington State Department of Ecology (e.g., boatyard general permit);
- transferring fuels from a fueling station to vehicles or equipment in or over surface waters; and
- washing docks, wharves, piers, floats, and boat ramps.

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of surface water and stormwater, you will be required to take additional measures.

Ship/Boat/Watercraft Building, Maintenance and Repair

Required BMPs

- Move maintenance and repair activities onshore, if possible.
- Enclose blasting and spray-painting activities by deploying tarps to prevent dust and overspray from escaping. Use sanders that have dust containment bags. Collect drips and spills using drop cloths or drip pans.
- Collect bilge and ballast water that has an oily sheen on the surface. Properly dispose of it rather than dumping it in surface waters or on land.
- Perform paint and solvent mixing, fuel mixing, and similar handling of liquids on land to avoid spilling into the water. Clean up spills immediately. Do not wash spills to the stormwater drainage system or surface waters.
- Collect and properly dispose of wash water from washing painted boat hulls. Never dispose of wash water containing soap or other chemicals to the stormwater drainage system or surface waters.
- Cover boat construction and structural repair activities.
- Place a tarp underneath the work area on boats or piers to collect drips, spills, paint chips, and loose solids when work is performed over water.
- Do not use soaps or detergents of any kind to wash the topsides or hulls of boats where the wash water will enter surface waters.

Required Routine Maintenance

- Store and maintain appropriate spill cleanup materials in a readily accessible location.
- Have a current spill control plan and train all employees on proper spill cleanup procedures.

- Sweep maintenance yard areas, piers, wharves, and boat ramps to collect sandblasting material, paint chips, oils, and other loose debris. Properly dispose of these collected materials. Do not hose down the area to the water or to a storm drain.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-3: Storage of Liquid Materials in Portable Containers
    - A-11: Cleaning or Washing of Tools and Equipment
    - A-18: Vehicle and Equipment Repair and Maintenance
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Disposal
- Washington State Department of Ecology's *Vehicle and Equipment Wash Water Discharges/Best Management Practices Manual* https://fortress.wa.gov/ecy/publications/summarypages/95056.html

In-Water and Over-Water Fueling Operations

Required BMPs

- Facilities that load or unload petroleum products must comply with U.S. Coast Guard requirements. Refer to specifications in Coast Guard Requirements for Marine Transfer of Petroleum Products.
- Refer to activity sheets A-17: Stationary Fueling Operations and A-47: Older Stationary Fueling Operations for applicable best management practices.

Required BMPs – Training and Fuel Dock Supervision

- Have a trained employee supervise the fuel dock during fueling activities.
- Do not allow self-service on a marina dock without some means of controlling the dock activity. This can be done via camera, intercom, and shutoff abilities in the office.

Required BMPs – Fueling Dock Setup, Maintenance, and Inspection

- Install personal watercraft floats at fuel docks to stabilize personal watercraft/jet skis while refueling.
- Use automatic shut-off nozzles and promote the use of "whistles" and fuel/air separators on air vents or tank stems of inboard fuel tanks to reduce the amount of fuel spilled into receiving waters during fueling of boats.
- Have spill containment booms, pads, and absorbents easily accessible and clearly marked.
- Post a spill response and cleanup plan where employees can easily see it and keep contact information current.

- Post readable refueling directions, BMPs, and emergency protocols at the fueling station.
- Post a sign with emergency spill reporting phone numbers clearly visible. Marinas on land leased from the Washington Department of Natural Resources (DNR) are required to post the "Spills Aren't Slick" signage.
- Display "No Smoking" signs on fuel docks.
- Create a regular inspection, maintenance, and replacement schedule for fuel hoses, pipes, tanks, and spill cleanup materials. Have staff walk the dock fuel lines from dispenser to tank to look for signs of leakage at joints and determine hose condition from end to end.

Required BMPs – Fueling Practices

- Discourage operators from "topping off". Fuel expands and can slosh out of the vent when temperatures rise or waters become choppy.
- When handing over the nozzle, wrap an absorbent pad around the nozzle end or plug inside the nozzle end to prevent fuel in the nozzle from spilling.
- Have the boat operator place an absorbent pad or suction cup bottle under the vent(s) to capture fuel spurts from the vent.
- Never block open the fuel nozzle trigger and always disable hands-free clips to ensure the boater remains with the nozzle to prevent overfilling. Hands-free clips are not allowed in Washington, per WAC 296-24-33015.
- Always keep the nozzle tip pointing up and hang the nozzle vertically when not in use.
- During fueling operations, visually monitor the liquid level indicator to prevent the tank from being overfilled.
- The maximum amount of product received must not exceed 95 percent capacity of the receiving tank.

Required BMPs – Spill Cleanup

- Train all employees on required spill response methods and procedures.
- Manage petroleum-contaminated booms, pads, and absorbents in a designated collection container and properly dispose of these materials.
- Do not use soaps or dispersants in the event of a spill. Use absorbent materials instead.
- See activity sheets A-2: Outdoor Storage of Liquid Materials in Stationary Tanks and A-3: Storage of Liquid Materials in Portable Containers for additional BMPs.

Required BMPs – Fueling by Portable Container

- Have boats fuel on shore or at a fuel dock rather than transport fuel from an upland facility to the boats. Only use hand-held fueling containers or "jerry cans" when necessary or when shore or dock fueling is not practical.

- Always refill portable fuel containers on the pavement or dock to ensure a good electrical ground. While the deck of the boat may seem stable, static electricity can build up and cause a spark.
- On the dock, put an absorbent pad under the container and wrap an absorbent pad around the fuel fill — this can easily be done by putting a hole in the pad.
- Ensure the nozzle stays in contact with the tank opening.
- When transferring fuel from a portable can, use a fuel siphon with a shut-off feature. If a siphon is not available, a nozzle/spout with a shut off is a good alternative.
- Since fueling boats with a portable container can take time, make sure the container is comfortable to carry, hold, and balance.
- Use a high flow funnel. Funnels can help prevent spills by making a larger opening for fueling.
- Place a plug of absorbent pad or paper towel in the nozzle when not in use to capture any extra drops that accumulate.
- Fuel slowly, pour deliberately and watch the container (especially the nozzle mechanism) for signs of wear.
- Store portable fuel tanks out of direct sunlight and keep in a cool, dry place to minimize condensation.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-2: Outdoor Storage of Liquid Materials in Stationary Tanks
    - A-3: Storage of Liquid Materials in Portable Containers
    - A-17: Stationary Fueling Operations
    - A-47: Older Stationary Fueling Operations
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Disposal
    - Spill Response and Cleanup Plan

Dock Washing

Required BMPs – Surface Preparation and Spot Cleaning

- Use dry methods and equipment (scraping, sweeping, vacuuming) to remove debris, bird feces and other contaminants prior to cleaning with water to prevent these pollutants from entering surface water. This will minimize the need for chemical cleaners. Dispose of debris from the dock as solid waste.
- During cleaning activities, if debris, substances, or wash water have the potential to enter surface waters through drains, temporarily block the drains prior to cleaning activities.

- Hose down the area if necessary and to the extent practicable, collect wash water and dispose of it properly.
    - If the dock is paved, the landward area is vegetated, and no soaps or detergents are used, then the wash water does not have to be collected if the water can soak into the ground without discharging to surface waters or the storm drainage system. However, the wash water does have to be filtered to trap solid materials before entering vegetated areas.
    - If the dock and the landward area are both paved, then use a sump pump, wet vacuum or similar device that enables collection of wash water and associated solids so they can be disposed of in a sink or toilet for treatment at your local sewage treatment plant. On-site septic systems should not receive wash water containing harsh chemicals. The wash water must not go to surface waters or storm drainage system.
- Spot clean with water and a coarse cloth before using soaps or detergents or washing down an area.
- If a cleaner is needed for spot cleaning:
    - Mix it in a bucket and use it to scrub down only the areas that need extra attention.
    - Try starting with vinegar and baking soda and move to other options as needed. Spot clean using a rag if harsher cleaning products are needed.
    - Use a mild detergent or soap that is pH neutral. Avoid or minimize the use of petroleum distillates, chlorinated solvents, and ammoniated cleaning agents.
    - Use degreasers or absorbent material to remove residual grease by hand and do not allow this material to enter surface waters.
    - Keep cleaners in sealed containers and keep cleaner containers closed securely when transporting between the shore and docks.
    - Properly dispose of wash water.
- Minimize the scour impact of wash water to any exposed soil at the landward end(s) of the dock or below the dock. Place a tarp over exposed soil, plant vegetation, or put berms to contain eroded soil.

Required BMPs – Dock Washing and Disposal

- During cleaning activities, if debris, substances, or wash water could enter surface waters through drains, then temporarily block the drains and collect all of the wash water.
- To the extent practicable, collect any wash water generated from cleaning dock areas, and dispose of it properly.
    - If the dock is paved, the landward area is vegetated and no soaps or detergents are used, then the wash water does not have to be collected if the water can soak into the ground without discharging to surface waters or the storm drainage system. However, the wash water does have to be filtered to trap solid materials before entering vegetated areas.

  - If the dock and the landward area are both paved, then use a sump pump, wet vacuum or similar device that enables collection of wash water and associated solids so they can be disposed of in a sink or toilet for treatment at your local sewage treatment plant. On-site septic systems should not receive wash water containing harsh chemicals. The wash water must not go to surface waters or storm drainage system.
- If pressure washing use only light pressure. Avoid using excessive pressure, which may damage the dock or send flakes of paint and other material into the water. If the surface is painted with lead or other heavy metal-bearing paint (such as chromium or cadmium), use a commercial pressure washing service that will collect, test, and properly dispose of the wash water.
- Do not place any debris or substances resulting from cleaning activities in shoreline areas, riparian areas, or on adjacent land where these substances may erode into surface waters.
- Where treated wood associated with the structure being washed are present, use non-abrasive methods and tools that, to the maximum extent practicable, minimize removal of the creosote or treated wood fibers when it removes marine growth from creosote or any other treated wood.
- Do not discharge removed marine growth to surface waters.
- Do not discharge emulsifiers, dispersants, solvents, or other toxic deleterious materials to surface waters or storm drainage systems.

Required BMPs – Goose Waste

- If possible, pick up goose waste using shovels, brooms, rakes, power sweepers, and trash cans. Properly dispose of goose waste in the garbage.
- Do not blow, sweep, or wash goose waste into surface waters or storm drainage systems.
- Regularly clean goose waste from areas of chronic deposition.

Supplemental BMPs- Goose Waste

- Do not feed wild geese or other waterfowl.
- Change areas of chronic accumulation of goose waste from goose friendly to goose resistant. Reduce lawn areas and increase the height of shoreline vegetation (tall grass, shrubs) as geese are reluctant to walk through tall vegetation.
- Geese's favorite food is new shoots of grass. Let grass grow to six inches or taller. Stop fertilizing and watering lawn in areas of geese accumulation to reduce the palatability of the lawn.
- Create a natural geese barrier of 20 to 100 feet of herbaceous vegetation at least 3 feet in height to discourage geese. A narrow, winding path through the plantings will allow for beach access, while preventing geese from having a direct line of sight through the planted area. Minimize open sight lines for geese to less than 30 feet.
- Where space is limited, use one or two rows of shrub plantings combined with a fence to construct a geese barrier. Fences should be at least 24 inches tall (3 feet

may be better), firmly constructed, and installed to prevent the geese from walking around the ends. Lower openings should be no larger than 4 inches from the ground to prevent goslings from walking under or through the fence.

- Construct bank slopes steeper than 4:1 to discourage geese by preventing a clear view of the bank top and potential predators. Or, separate the beach from the grass with a few steep steps, which makes the ascent too difficult for most geese.
- Plant shrubs or trees near the water's edge to limit takeoff and landing opportunities.
- Scare geese away when they are around. Geese often learn quickly to ignore scare devices that are not a real physical danger. Vary the use, timing, and location of tactics. Examples of harassment and scare tactics include dogs, monitor lizards, eyespot balloons, flags and streamers, and scarecrows.
- Canada geese are protected under federal and state law. A hunting license and open season are required to hunt them. Where lethal control is necessary outside of hunting seasons, it should be carried out only under permits issued by the U.S. Fish and Wildlife Service.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
  - Controlling and Collecting Contaminated Runoff
  - Drainage Maintenance Contractors
  - Spill Response and Cleanup Plan
- The Humane Society of the United States' *Solving Problems with Canada Geese: A Management Plan and Information Guide* http://www.humanesociety.org/assets/pdfs/wild_neighbors/canada_goose_guide.pdf

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-31: Parking Lots, Driveways and Outside Storage Areas

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, sediment, and other pollutants.

Best management practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of surface water and stormwater, you will be required to take additional measures.

Required BMPs

- Sweep areas as needed to collect dirt, waste, debris, and spilled material. Do not hose down areas to the stormwater drainage system or surface waters.
- Clean up vehicle and equipment fluid drips and spills immediately using absorbent materials.
- Place drip pans under leaking vehicles and equipment, including employee vehicles, until the vehicle/equipment no longer leaks. Properly dispose of accumulated leaked fluids.
- Pressure wash water from paved areas must be collected and disposed of to the sanitary sewer or hauled for offsite disposal, even if soaps, detergents, or cleaners are not used. If the surface to be pressure washed is not utilized by automotive equipment or machinery, see activity sheet A-15: Washing of Building, Rooftops and Other Large Surfaces.
- There are businesses that will clean parking lots and collect water for off-site disposal. Never drain wash water to the stormwater drainage system.
- Follow basic sediment controls as outlined in Appendix D ("Erosion and Sediment Control Standards") of the *King County Surface Water Design Manual* for gravel and dirt lots. These types of parking lots may require additional BMPs to prevent sediment-laden water from leaving your site.

Supplemental BMPs

- Encourage employees to repair leaking personal vehicles.
- Install catch basin inserts to collect excess sediment and oil, if necessary. Inspect and maintain catch basin inserts regularly to ensure they are working correctly.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-3: Storage of Liquid Materials in Portable Containers
    - A-15: Washing of Buildings, Rooftops, and Other Large Surfaces
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Catch Basin Insert
    - Disposal

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-32: Sidewalk Maintenance

Potential pollutants can include but are not limited to fecal coliform bacteria, hydrocarbons, metals, oil and grease, oxygen demanding substances, PCBs, pH, and sediment.

Best management practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of surface water and stormwater, you will be required to take additional measures.

Required BMPs

- Sweep sidewalks as needed to collect loose dirt and debris rather than blowing or pushing it into the street or gutter or hosing it down. Collected materials must be disposed of as solid waste.
- Clean individual stains instead of washing the entire sidewalk, if possible.
- Collect wash water and dispose of into the sanitary sewer or take off-site for appropriate disposal if soaps or other cleaners are used. If only water is used, then install a catch basin insert or filter cloth in order to collect all solids and debris.
- Use a minimum amount of sand or deicing salts and sweep up any remaining granules when the snow and ice have melted.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-3: Storage of Liquid Materials in Portable Containers
    - A-15: Washing of Buildings, Rooftops, and Other Large Surfaces
    - A-31: Parking Lots, Driveways and Outside Storage Areas
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Containment
    - Disposal

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-33: Swimming Pool and Spa Cleaning and Maintenance

The following best management practices (BMPs) apply to pools, spas, hot tubs, and fountains that use chemicals and/or that are heated.

Potential pollutants can include but are not limited to fecal coliform bacteria, nutrients, oxygen demanding substances, pH, and sediment.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required Operational BMPs

- Clean the pool, spa, hot tub, or fountain regularly, maintain proper chlorine levels and maintain water filtration and circulation. Doing so will limit the need to drain the facility.
- Manage pH and water hardness to reduce copper pipe corrosion that can stain the facility and pollute receiving waters.
- Before using copper algaecides, try less toxic alternatives. Only use copper algaecides if the other alternatives do not work. Ask a pool/spa/hot tub/fountain maintenance service or store for help resolving persistent algae problems without using copper algaecides.
- Develop and regularly update a facility maintenance plan that follows all discharge requirements.
- Dispose of unwanted chemicals properly. Many of them are hazardous wastes when discarded.
- Store pool chemicals under cover and in enclosed containers.

Required Water Disposal BMPs

- All pools and spas regulated by Public Health-Seattle and King County must be connected to the sanitary sewer for draining pool water, pool wash water and filter backwash. If the pool or spa does not have a permanent drain connection, then water must be pumped or drained to the sanitary sewer or meet the following BMPs.
- Discharging pool and spa water if sanitary sewer is not available:
    - Non-saltwater and saltwater pool and spa water
        - Have it hauled off-site for disposal at an approved location; or
        - Infiltrate to ground if all 9 conditions below are met. Saltwater pool and spa water must not be allowed to flow off-site, nor may it enter stormwater drainage systems or surface waters. Saltwater discharges can elevate salt concentrations in your soil and damage vegetation.
    - Non-saltwater pools and spas only

    - Drain to the stormwater drainage system if all 9 conditions listed below are met

- Conditions for draining to ground (non-saltwater and saltwater pools and spas) or to a stormwater drainage system (non-saltwater pools and spas only):

  1. No copper-based algaecides were used;
  2. The water must be tested to determine chlorine levels and pH;
  3. The water is dechlorinated to 0.10 ppm Chlorine or less, using neutralizing chemicals or by letting the pool or spa "sit" long enough to reduce the chlorine level to the allowable limit. The pool or spa must not be used during this period;
  4. The pH is neutral (6-8);
  5. Free of any coloration, dirt, suds, or algae;
  6. Free of any filter media;
  7. Free of acid cleaning wastes;
  8. Released at a rate that does not cause erosion either onsite or in the drainage system; and
  9. At ambient temperature.

- Saltwater pool and spa water must not be discharged to the stormwater drainage system. Either infiltrate to ground if all 9 conditions above are met or hire a professional pool-draining service to collect all water for off-site disposal at an approved location.
- Diatomaceous earth (commonly used as a filtering agent) and water from back flushing filter systems cannot be discharged to surface waters, storm drainage systems, septic systems, or the ground. Dispose of diatomaceous earth filter material as solid waste.
- Do not discharge pool or spa water to a septic system, as it is prohibited and may cause the system to fail.
- The discharge of pool and spa filter backwash or cleaning water to the ground, surface waters or the storm drainage system is not allowed.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-3: Storage of Liquid Materials in Portable Containers
    - A-11: Cleaning or Washing of Tools and Equipment
    - A-15: Washing of Buildings, Rooftops, and Other Large Surfaces

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-34: Animal Waste

The following best management practices (BMPs) apply to kennels, doggy daycare, catteries, veterinary clinics, fenced pens, recreational areas, multi-family properties and other locations where pets (not including livestock) are permitted.

For livestock BMPs see activity sheet A-35: Keeping Livestock in Stables, Pens, Pastures or Fields.

Potential pollutants can include but are not limited to fecal coliform bacteria, nutrients, oxygen demanding substances, PCBs, and sediment.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Regularly sweep and clean areas where animals are kept. Collect, bag, and dispose of droppings, uneaten food, and other potential stormwater pollutants.
- Put pet waste in a securely closed bag and deposit it in the trash. Do not place pet waste in yard waste containers because pet waste may carry diseases, and composting may not kill disease-causing organisms.
- Do not use pet waste as fertilizer. Harmful bacteria, worms, and parasites that can transmit disease can live in the soil for years even after the solid portion of the pet waste has dissolved.
- Do not hose down kennels or paved areas where animals are kept to the stormwater drainage system.
- Sweep and clean kennels and paved areas prior to washing the areas. Collect and dispose of the wash water to the sanitary sewer system or infiltrate the wash water into grass or gravel if mild soaps or detergents are used. If floor stripping or disinfectant chemicals are used, the wash water must be hauled off-site for proper disposal (e.g., taken to a wastewater treatment facility).
- Bathe pets indoors or in a manner that wash water won't be discharged to the stormwater drainage system or surface waters.
- Install covered waste containers and provide waste collection service at designated dog exercise areas.

Supplemental BMPs

- Make sure there is vegetative cover or some other type of ground cover, such as mulch, if animals are kept in unpaved and uncovered areas in order to prevent erosion.
- Specially designed septic systems for kennels are commercially available and are recommended if the above BMPs are not adequate.

- Do not dispose of unused pet pharmaceuticals in a storm drain, in a toilet, or down a sink. For proper disposal refer to King County's Secure Medicine Return program, https://kingcountysecuremedicinereturn.org/ .
- Pet pesticides, such as flea prevention, cannot be disposed of at a medicine return drop-box. Pesticides should be taken to at a local hazardous waste drop-off location. Refer to www.hazwastehelp.org for guidelines and to find a drop-off location near you.

Required BMPs – Recreational Areas and Multi-Family Properties

- Post signs at recreation areas and multi-family properties (that allow pets) reminding residents and visitors to pick up after their pets.
- Carefully consider the placement of pet waste stations at recreation sites and near multi-family properties that allow pets. Choose locations convenient for dog walkers to pick up a bag at the start of their walk and locations for them to dispose of it at mid-walk or at the end of their walk.
- Check pet waste stations on a regular basis to keep pet waste bags stocked and disposal stations empty. Consider signage to keep regular trash out of pet waste disposal stations to avoid filling them too quickly. Make sure pet waste disposal stations have a cover to keep out water.
- At multi-family properties with roof-top dog runs, ensure that stormwater from the dog run is not discharged to the stormwater system. Check with the local jurisdiction regarding roof-top dog run connections to sanitary sewer.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-8: Storage of Solid Waste and Food Waste (Including Cooking Grease)
    - A-35: Keeping Livestock in Stables, Pens, Pastures or Fields

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-35: Keeping Livestock in Stables, Pens, Pastures or Fields

The following best management practices (BMPs) apply to livestock, including cows, horses, and other hoofed animals. If a site-specific farm management plan has been approved by King County, adhere to the BMPs in the plan to minimize pollution generated from agricultural activities. For information on farm management plans and livestock management requirements, refer to King County Code 21A.30.

Potential pollutants can include but are not limited to fecal coliform bacteria, nutrients, oxygen demanding substances and sediment.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Livestock wash areas may not be plumbed or flow to the stormwater drainage system or surface waters. Wash water must be discharged to the sanitary sewer, septic system, or infiltrate into the ground.
- Locate soiled bedding and manure piles such that runoff does not flow to the stormwater drainage system or to surface waters.
- Contain bedding to prevent the materials from being blown or washed away into the stormwater drainage system or surface waters.
- Use fencing or dense vegetation to prohibit livestock from entering county owned storm drain ditches
- Properly dispose of spent fluorescent bulbs often used in barns, stables, and arenas. The mercury containing bulbs should not be stored loosely nor thrown in the garbage. Find the nearest collection site at www.lightrecycle.org.
- When maintaining, repairing, and fueling farm equipment implement BMPs in activity sheets A-18 Vehicle and Equipment Repair and Maintenance, A-2 Outdoor Storage of Liquid Materials in Stationary Tanks, and A-3 Storage of Liquid Material in Portable Containers.
- Implement BMPs and specific requirements in accordance with King County Code 21A.30 for livestock management. If BMPs are implemented in accordance with the livestock management code, then additional BMPs may not be necessary unless they are not adequate to protect King County surface waters.

Supplemental BMPs

- Make sure there is vegetative cover or some other type of ground cover, such as mulch, if animals are kept in unpaved and uncovered areas in order to prevent erosion.
- Surround the area where animals are kept by a fence or other means that prevents animals from moving away from the controlled area where BMPs are used.

Technical Assistance

King Conservation District

- The King Conservation District can provide technical assistance for the implementation of livestock management BMPs. Personnel are available for site visits and can help prepare farm management plans compliant with King County code.

  1107 SW Grady Way, Suite 130
  Renton, WA 98057
  Telephone: 425-282-1900
  Email: district@kingcd.org
  http://www.kingcd.org/

Washington State University Cooperative Extension – King County

- The Washington State University Cooperative Extension Service offers a variety of educational services designed to promote sensitivity to water quality concerns in relation to agricultural production, livestock management, and small farms.

  919 SW Grady Way Suite 120
  Renton, WA 98055
  Telephone: 206-205-3100
  http://king.wsu.edu/

Horses for Clean Water

- Horses for Clean Water offers environmentally sensitive horse keeping education on manure management, pasture management, mowing, composting, and what equipment to use.

  7235 Southside Boulevard
  Nampa, ID 83686
  Telephone: 206-909-0225
  http://www.horsesforcleanwater.com

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
  - A-2: Outdoor Storage of Liquid Materials in Stationary Tanks
  - A-3: Storage of Liquid Material in Portable Containers
  - A-18: Vehicle and Equipment Repair and Maintenance
  - A-34: Animal Waste
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets

  - Containment
- King Conservation District - Healthy Horses, Clean Water https://kingcd.org/2019/08/29/healthy-horses-clean-water-tips-for-small-acreages/
- Washington State Department of Agriculture – Nutrient Management Plans https://agr.wa.gov/departments/land-and-water/livestock-nutrients/nutrient-management-plans
- United States Department of Agriculture – Natural Resources Conservation Services https://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-36: Logging and Log Yards

The following best management practices (BMPs) apply to activities that fall under the classification of Class IV General Forest Practices, where timber harvesting is done in the process of converting forest lands into other land uses, such as forest cutting for construction of homes.

Potential pollutants can include but are not limited to hydrocarbons, nutrients, oil and grease, oxygen demanding substances, PCBs, and sediment.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, then you will be required to take additional measures.

Required BMPs

- Comply with King County Code 21A.24 (Critical Areas) requirements for logging near streams, wetlands, and other sensitive areas, and the *King County Surface Water Design Manual* requirements for the clearing and grading of sites.
- Apply for coverage under the Washington State Department of Ecology's National Pollutant Discharge Elimination System (NPDES) permit.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-37: Mining and Quarrying of Sand, Gravel, and Other Materials

The following best management practices (BMPs) apply to surface excavation and on-site storage of sand, gravel, minerals, peat, clay, rock, and other materials that are mined in unincorporated King County.

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, oil and grease, pH, and sediment.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Obtain a National Pollutant Discharge Elimination System (NPDES) Sand and Gravel General Permit for Sand and Gravel Operations, Rock Quarries, and similar mining facilities.
- Obtain a grading permit from King County Local Services Permitting Division (Permitting).
- Comply with King County Code 16.82 (Clearing and Grading). If the grading permit conditions do not adequately protect surface waters and groundwater, then additional BMPs will be required under KCC 9.12 (Water Quality).
- Maintain stormwater facilities per KCC 9.04 (Stormwater Water Runoff).
- Control sediment and erodible materials on-site to prevent track out on to road right of ways and from entering the storm drainage system.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-41: Wheel Wash and Tire Bath Track Out Control
    - A-44: Dust Control for Commercial Operations
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Containment
    - Controlling and Collecting Contaminated Runoff
    - Water Quality Treatment BMPs

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-38: Well, Utility, Directional and Geotechnical Drilling

The following best management practices (BMPs) apply to drilling water wells and utilities, environmental protection and monitoring wells, and geotechnical borings that use machinery in the drilling. It does not apply to the use of devices such as hand augers, or for large structural drilling such as drilled shafts.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, oxygen demanding substances, PCBs, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Obtain permits for drilling activities, and for clearing and grading the access routes and the work site. For more information, contact the King County Local Services Permitting Division at 206-296-6600.
- When drilling in known or suspected soil contamination, test and characterize soil cuttings and accumulated sediment to determine proper management and disposal methods. If applicable, generator knowledge may be used to characterize the soil cuttings and accumulated sediment.
- Protect environmentally sensitive areas (streams, wetlands, erosion hazards, and landslide hazards) within the area of influence of the work site. For horizontal directional drilling, take measures to capture and contain drilling fluids and slurry.
- Mitigate potential impacts to surrounding areas and/or the storm drainage system. The driller must be equipped to quickly respond to spills and unusual conditions that may arise.
- Locate and prepare access roadways to minimize the amount of excavation and the potential for erosion. See the *King County Surface Water Design Manual* for information on vehicle access preparation and maintenance and erosion control measures.
- Contain accumulated uncontaminated water and sediment on-site and pump into a storage tank or direct through a geotextile filtration system (or equivalent system) before discharging to the surrounding ground surface.
- Keep all sediment-laden water out of storm drains and surface waters. If sediment-laden water does escape from the immediate drilling location, block flow to any nearby waterways or catch basins using fabric, inlet protections, sandbags, erosion fences, or other similar methods. Immediately notify King County Stormwater Services at 206-477-4811 and the Washington State Department of Ecology at 206-594-0000, if sediment-laden water impacts the storm drainage system or surface waters.

- Divert any concentrated flows of water into the job site using sandbags or check dams up-slope from the site.
- Dispose of soil cuttings and accumulated sediment appropriately. If cuttings or other soils disturbed in the drilling process are to be temporarily stockpiled on-site, they must be covered and surrounded by a berm or filter device.
- Stabilize exposed soils at the end of the job, using mulch or other erosion control measures.
- Contain spent drilling slurry on-site and allow it to dewater, or haul to an appropriate, approved, disposal site.
- Restore disturbed areas with mulch and seeding or hydroseeding.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-3: Storage of Liquid Materials in Portable Containers
    - A-4: Storage of Soil, Sand, Salt, and Other Erodible Materials
    - A-6: Storage of Contaminated Soils
    - A-10: Treatment, Storage or Disposal of Dangerous Wastes
    - A-11: Cleaning or Washing of Tools and Equipment
    - A-18: Vehicle and Equipment Repair and Maintenance
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Containment
    - Disposal
- *King County Surface Water Design Manual*

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-39: Roof Vents and Fugitive Emissions

The following best management practices (BMPs) apply to processes that vent emissions to a roof and/or the accumulation of pollutants on a roof. Processes of special concern are stone cutting, metal grinding, spray painting, paint stripping, galvanizing, and electroplating. Pollutants from these processes may build up on roofs and may contaminate stormwater roof runoff.

Contact Puget Sound Clean Air Agency and/or the Washington State Department of Ecology for air pollution control regulations. If your activities are permitted by either of these agencies, then these requirements are supplemental.

Potential pollutants can include but are not limited to metals, oil and grease, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Identify processes that are vented to the roof and may contribute pollutants. Pollutants of concern include and are not limited to:
    - metal dust
    - grease from food preparation
    - solvents
    - hydrocarbons
    - fines
    - stone dust
- Inspect around vents, pipes, and other surfaces for pollutant deposition. Properly clean up any deposited pollutants, ensuring they are not disposed of into the stormwater drainage system.
- Install appropriate source control measures such as air pollution control equipment (filters, scrubbers, and other treatment) and/or institute operational or process changes.
- If proper installation and maintenance of air pollution control equipment does not prevent pollutant fallout on your roof, additional treatment of the roof runoff may be necessary. Install/provide appropriate devices for roof runoff before it is discharged off-site. This may include approved water quality treatment BMPs or structural stormwater treatment systems.
- Consider instituting operational or process changes to reduce pollution.

Required Routine Maintenance

- Maintain air filters and pollution control equipment on a regular basis to ensure they are working properly. If you smell odors from outside the building, the pollution control equipment may need maintenance or evaluation.
- When cleaning deposited pollutants from roof tops, first clean using dry methods such as sweeping or vacuuming before using water.
- Collect the wash water and loose materials using a sump pump, wet vacuum, or similar device. Discharge the collected runoff to the sanitary sewer after obtaining permission from the local sewer authority or have a waste disposal company remove it.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
  - Disposal
  - Water Quality Treatment BMPs

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-40: Street Deicing Operations

The following best management practices (BMPs) apply to deicing and anti-icing operations on streets and highways to control ice and snow.

Potential pollutants can include but are not limited to oxygen demanding substances, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Select deicers and anti-icing materials such as sand, calcium chloride, magnesium acetate, potassium acetate, or similar materials that cause less adverse environmental impact than urea, and sodium chloride.
- Apply de/anti-icing materials only as needed, using minimum quantities. Adhere to manufacturer and industry standards of use and application.
- Store de/anti-icing materials (except for sand) in an impervious containment area to keep the material from entering stormwater drainage systems or surface waters. Maintain sand piles so that sand cannot wash into the stormwater drainage system or surface waters.
- Transfer liquid de/anti-icing materials in the containment area or use a drip pan under the hose connection.
- Sweep/clean up accumulated de/anti-icing materials and grit from roads as soon as possible.
- Minimize use of de/anti-icing materials in areas where runoff or spray from the roadway immediately enters sensitive areas such as fish-bearing streams.

Supplemental BMPs

- Intensify roadway cleaning in early spring to help remove particulates from road surfaces.
- When feasible, use de/anti-icing materials with low amounts of metals.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-4: Outdoor Storage of Soil, Sand and Other Erodible Materials

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-41: Wheel Wash and Tire Bath Track Out Control

The following best management practices (BMPs) apply to commercial and industrial operations where materials may be tracked off-site. If a rocked construction-type entrance for an unpaved site, or routine sweeping/vacuuming of a paved site, does not control mud and sediment track out, then a wheel wash system must be installed.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Install a portable wheel wash system, or
- Install a permanent wheel wash system as described in Appendix D of the *King County Surface Water Design Manual*.

Required Routine Maintenance

- Change water as necessary. Dispose of wheel wash water to an appropriate disposal location. Do not discharge wheel wash water to a stormwater drainage system or surface waters.
- Remove and properly dispose of accumulated sediment from the wheel wash system as needed.
- Maintain the appropriate level of water per design.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-11: Cleaning or Washing of Tools and Equipment
    - A-13: Vehicle Washing and Steam Cleaning
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Catch Basin Insert
    - Containment
    - Controlling and Collecting Contaminated Runoff
    - Disposal
    - Water Quality Treatment BMPs
- *King County Surface Water Design Manual*

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-42: Potable Water Line Flushing, Water Tank Maintenance and Hydrant Testing

Potential pollutants can include but are not limited to fecal coliform bacteria, metals, pH, sediment, and other pollutants.

Best management practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Remove solids from associated curbs and gutters before flushing water. Use erosion and sediment control BMPs such as those found in the *King County Surface Water Design Manual* (straw wattles, D.2.1.2.5; and catch basin inlet protection, C.3.9) to collect any solids resulting from flushing activities.
- Discharge water to the sanitary sewer if super chlorination or chemical treatment is used as part of flushing. If sanitary sewer is not available, the water may be infiltrated to the ground as long as it:
    - is dechlorinated to a total residual chlorine concentration of 0.1 ppm or less;
    - meets water quality standards;
    - is discharged through a diffuser to prevent erosion; and
    - does not cross property lines.
- Discharging water (chlorinated to any degree or dechlorinated) to a stormwater drainage system requires approval from King County Stormwater Services. The water must be:
    - dechlorinated to a total residual chlorine concentration of 0.1 ppm or less;
    - pH adjusted if necessary; and
    - volumetrically and velocity controlled to prevent resuspension of sediments in the municipal separate storm sewer system.
- Do not over apply dechlorination products. This can deplete the dissolved oxygen concentration and reduce the pH in discharge/receiving waters. Dechlorination products can include ascorbic acid/sodium ascorbate, calcium thiosulfate, sodium sulfite tablets, sodium thiosulfate, sodium bisulfite or other alternate dechlorination products.

Supplemental BMPs

- If possible, design flushing to convey accumulated materials to strategic locations such as a treatment facility, preventing resuspension and overflow of the solids during storm events.
- If possible, conduct flushing and tank maintenance activities on non-rainy days and during the time of the year that poses the least risk to aquatic biota.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-3: Storage of Liquid Materials in Portable Containers
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Water Quality Treatment BMPs
- *King County Surface Water Design Manual*

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-44: Dust Control for Commercial Operations

The following best management practices (BMPs) apply to existing manufacturing and commercial operations as opposed to new construction or land development. Material handling activities may include concrete crushing, cement mixing, commercial composting, stone grinding, and wood milling.

Potential pollutants can include but are not limited to hydrocarbons, metals, oxygen demanding substances, PCBs, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Sweep paved areas where dust and erodible materials accumulate. Use vacuum sweepers to minimize generation of airborne dust and for more efficient dust removal.
- Clean equipment and vehicles that leave the property to prevent dust and track out of material. Create a designated wash area to collect and properly dispose of the wash water. Never wash down equipment or vehicles to the stormwater drainage system or to surface waters.
- Train employees in the proper operating procedures to minimize dust accumulation.

Supplemental BMPs

- Use dust filtration and collection systems such as bag house filters.
- Use water spray to flush dust accumulations to an approved treatment system or the sanitary sewer where available and allowed by the local sewer authority and the King County Industrial Waste Program.
- Use approved dust suppressants such as those listed in the *King County Surface Water Design Manual*, Appendix D: Erosion and Sediment Control Standards.
- When pH levels in stormwater rise above 8.5, the pH must be adjusted to the acceptable range of 6.5 to 8.5. Refer to the *King County Surface Water Design Manual*, Appendix D, Sections D.2.2.7 and D.2.2.8 for information on pH adjustment.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Catch Basin Insert
    - Controlling and Collecting Contaminated Runoff
    - Water Quality Treatment BMPs
- Washington State Department of Ecology's *Techniques for Dust Prevention and Suppression, #96-433* https://p2infohouse.org/ref/14/13215.pdf. Note that not all

dust suppressants are appropriate for use near storm drainage systems or surface waters.

- Contact Puget Sound Clean Air Agency and/or the Washington State Department of Ecology for air pollution control regulations.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-45: Maintenance of Public and Private Utility Corridors and Facilities

The following best management practices (BMPs) apply to maintenance activities associated with the transmission and distribution of public and private utilities such as petroleum products, natural gas, water, sewage, and electrical power. This includes the maintenance of underground utility vaults, pump stations, and similar facilities.

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Minimize the amount of herbicides and other pesticides used to maintain access roads and facilities.
- Stabilize access roads or areas of bare ground with gravel, crushed rock, or another method to prevent erosion. Use and manage vegetation to minimize bare ground/soils that may be susceptible to erosion.
- Provide stormwater drainage for roads and maintenance areas. Grade roads with a crown or slope to minimize the potential for erosion from runoff. Provide ditches, swales, and culverts to convey stormwater runoff.
- Keep ditches and culverts properly clear to reduce the possibility of the drainage becoming plugged or blocked, which could cause overflows and erosion.
- Check utility vaults or other underground structures for oil prior to pumping out any collected water. Contaminated water must be collected for proper disposal. Small amounts of oil may be captured with absorbent material. Never discharge contaminated water, including oil, sediment, or high or low pH, to stormwater drainage systems, stormwater drainage facilities or surface waters.
- When removing water and/or sediment from electrical transformer vaults, determine from records or testing if the transformers contain PCBs. Properly dispose of accumulated water and sediment from these vaults.
- Clean up any debris or spilled material immediately after completing maintenance and repair activities.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-3: Storage of Liquid Materials in Portable Containers
    - A-5: Storage and Use of Pesticides and Fertilizers
    - A-22: Painting, Finishing and Coating of Vehicles, Products and Equipment

  - A-26: Landscaping Activities, Vegetation Management, and Irrigation
- *King County Surface Water Design Manual*, Appendix D: Erosion and Sediment Control Standards
- Work in public road right of ways requires permission from King County Utility Inspection Program, call 206-296-8122.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-46: Color Events

The following best management practices (BMPs) apply to color events which include charity, religious, or commercial events that involve the use of powdered and/or liquid dyes. Because they typically occur outside, there is a high likelihood of the color material entering stormwater drainage systems and surface water unless measures are taken to prevent these illicit discharges from occurring.

Potential pollutants can include but are not limited to nutrients, oxygen demanding substances, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Pre-event BMPs

- Call King County Stormwater Services at 206-477-4811 and ask to speak to a source control inspector for specific approval requirements and to arrange a pre-event site visit and/or consultation. Every event will have site specific stormwater considerations.
- Create a map of your event that includes the following: event route; nearby streams, lakes and ponds; start and finish areas; color application stations/areas; and the catch basin inlets and open stormwater features (e.g. ditches, swales, bioretention, rain gardens) at the color application, start and finish areas.
- Create a Pollution Prevention Plan that details the measures taken to ensure that NO dye material, either during or after the event, will enter the stormwater drainage system and how all dye material will be removed and disposed of. The plan must address what will happen in the event of rain. Include emergency phone numbers for King County Stormwater Services, 206-477-4811, in case dye material enters the stormwater drainage system or surface waters.
- Contract with a commercial street cleaning company to clean paved surfaces. Have a storm drain cleaning contractor on-call for discharges to stormwater drainage systems or emergency clean-up if necessary. Ensure the commercial street cleaning firm has a plan in place for the proper disposal of sweepings from the event and associated air filters.
- All clean-up must be completed prior to the next forecasted rainfall, no later than 24-hours after the event.
- Request a copy of the dye product's safety data sheet (SDS) from the manufacturer or supplier. Review SDS for potential safety and environmental hazards.
- Provide copies of the map, pollution prevention plan, commercial cleaning contract, dye material SDSs, and the names and contact information of the event officials to the local stormwater agency. This information shall be submitted at least 3 weeks prior to the event.

- Preventing runoff from entering storm drain systems and water bodies:
- Protect storm drains by using berms and covering the drains with tarps or catch basin covers.
- Prohibit participants from throwing dye within 100 feet of any stream, ditch, or water body.
- Set up color stations at least 100 feet away from any stream, ditch, or water body.
- The route, start, finish, and color application stations must be at least 100' away from any permeable pavement or the permeable pavement must be completely covered.
- If the event will be held on a small, contained area, cordon off the area and place enough covers on the ground to cover the entire site. If possible, contain the color application to grassy areas where ground covers are unnecessary.

Event clean-up BMPs

- Dry off tarps and stained wet pavement with towels or absorbent pads.
- Use brooms or street sweepers to clean up paved areas. The fineness of the material may require sweepers with dust control systems.
- Use care when removing berms, covers and tarps to ensure no dye enters the storm drains.
- Do not use blowers to move dye material.
- Do not use hoses or pressure washers to rinse excess dye off of tarps, sidewalks, or paved areas.
- If it becomes necessary to use water to clean surfaces, all the water must be collected and disposed of to the sanitary sewer system, with approval from the local sewer agency.
- Call King County Stormwater Services immediately (24/7) if any colored water enters a stormwater drainage system or water body.
- All litter and debris must be picked up and properly disposed of.
- "Biodegradable" and "non-toxic" do NOT mean that a substance can go into stormwater drainage systems or water bodies. The dye material can harm aquatic organisms by altering water quality and chemistry. State and federal environmental laws require local jurisdictions to prohibit non-stormwater discharges to storm drains. Dye material and any wash water are prohibited non-stormwater discharges.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets
    - Catch Basin Insert
    - Containment
    - Controlling and Collecting Contaminated Runoff
    - Drainage Maintenance Contractors

- Spill Response and Cleanup Plan

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-47: Older Stationary Fueling Operations

The following best management practices (BMPs) apply to the fueling of vehicles and equipment, including gas stations and fuel pumps to service equipment or vehicles, where the fuel pumps were installed prior to July 1995.

For new or remodeled fueling areas installed after July 1995, see activity sheet A-17: Stationary Fueling Operations. For mobile fueling operations see activity sheet A-48: Mobile Fueling of Vehicles and Heavy Equipment. For farm and agricultural operations with above ground fuel tanks, refer to activity sheet A-2: Outdoor Storage of Liquid Materials in Stationary Tanks. For in-water and over-water fueling operations, see activity sheet A-30: Marine Activities.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease and oxygen demanding substances.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Pave and contain the fueling area with impervious concrete (e.g., Portland cement). The fueling area (spill containment pad) shall have a sill or berm raised to a minimum of four inches to prevent the runoff of spilled liquids and to prevent run-on of stormwater from the surrounding area. Raised sills are not required at the open-grate trenches that connect to an approved drainage-control system.
- Cover the fueling area with a roof or canopy or in lieu of covering the fueling area (if the fuel pumps were installed prior to July 1995):
    - Maintain spill materials and drip pans at all times next to the fueling area.
    - For non-retail fueling operations, post a sign stating that a drip pan must be used during fueling and that all spills and drip must be cleaned up immediately.
    - Should subsequent inspections find evidence of spilled fuel on the ground or stormwater contamination, then the fueling area must be covered.
- Drains from the spill containment pad of a fueling areas with a roof or canopy must have a normally closed shutoff valve. The valve may be opened to convey stormwater with residual contamination to an oil control treatment system (e.g., an oil/water separator, catch basin insert, or equivalent treatment) which then discharges to:
    - At a minimum, a basic treatment system (e.g., sand filter, filter strips, water quality vault) prior to discharging to a storm drainage system, surface water or ground; or

  - a sanitary sewer. Approval from the local sewer authority is required for conveyance of any fuel-contaminated stormwater to a sanitary sewer. State and local regulations prohibit discharges that could cause a fire or explosion (WAC, Section 173-216-060; KCC 28.84.060). For conveyance to the sanitary sewer, a catch basin shall be installed upstream of the oil control treatment system, and a normally closed shutoff valve is required at the discharge point of the oil control treatment system.

- In the case of a fuel spill, spilled fuel must be pumped from the drains or catch basins and must be treated and disposed of offsite in accordance with Department of Ecology regulations. The valve may only then be opened to convey stormwater with residual contamination.
- Discharges from the treatment systems (oil control treatment system and basic treatment system) to storm drainage systems, surface water or to the ground must not display ongoing or recurring visible sheen and must not contain oil or grease.
- Alternatively, collect runoff from the spill containment pad in a dead-end sump and hold for proper off-site disposal. The dead-end sump must be easily inspected, maintained, and pumped.
- If a roof or canopy is infeasible, then the concrete fueling pad must be equipped with emergency spill control features including a shutoff valve for drainage from the fueling area. The drainage shutoff valve may be kept open to convey stormwater with residual contamination from the fueling pad.
- Maintain the valve in the closed position during a spill event and cleanup. An electronically actuated valve is preferred to minimize the time lapse between spill and containment.
- In the case of a fuel spill, spilled fuel must be pumped from the drains or catch basins and must be treated and disposed of offsite in accordance with Department of Ecology regulations. The valve may only then be reopened to convey stormwater with residual contamination.:
  - to a sanitary sewer, if approved by the sewer authority, or
  - to an oil control treatment system (e.g., an oil/water separator, catch basin insert, or equivalent treatment), and then, at a minimum, to a basic treatment system (e.g., sand filter, filter strips, water quality vault). Discharges from treatment systems to storm drain system or surface water must not display ongoing or recurring visible sheen and must not contain oil or grease.

Required Operational BMPs

- Train employees on the proper use of fuel dispensers.
- Use drip pans or absorbent pads under all hose connections to capture drips or spills during fuel transfers.
- Post signs in accordance with the Uniform Fire Code (UFC) or International Fire Code (IFC). Post "No Topping Off" signs. Topping off fuel tanks results in spillage and vents gasoline fumes to the air. Post signs that ban customers and employees from changing engine oil or other fluids at that location.

- The person conducting the fuel transfer must be present at the fueling pump during fuel transfer. It is encouraged to post "Stay with Vehicle During Fueling" signage near fuel dispensers.
- Make sure that the automatic shutoff on the fuel nozzle is functioning properly.
- Prepare an emergency spill response and cleanup plan. Have designated trained person(s) available either on-site or on call at all times to implement the plan promptly and properly and immediately cleanup all spills.
- Keep suitable cleanup materials, such as dry adsorbent materials, on-site to allow prompt cleanup of a spill. Do not use dispersants or soap to clean up spills or sheens.
- Immediately notify Ecology, the local jurisdiction, and the local sewer authority if a spill may reach sanitary or storm sewers, ground water, or surface water, in accordance with federal and Ecology spill reporting requirements.
- Sweep or vacuum up sediment and debris in the fueling area as needed. Never hose down the fueling area to the storm drains. Contaminated runoff must be collected for proper disposal.
- Keep drained oil filters in a closed, leak-proof container or drum.
- Transfer the fuel from the delivery tank trucks to the fuel storage tank over impervious, contained areas and ensure that appropriate overflow protection is used. Alternatively, cover nearby storm drains during the filling process and use drip pans under all hose connections.
- Store and maintain appropriate spill cleanup materials in a location known to all employees.

Supplemental BMPs

- Use absorbent materials in or around catch basin inlets on the property to filter oily runoff. Properly dispose of absorbent materials.
- Install a catch basin insert configured for oil removal. The oil absorbent filter media must retain absorbed oil during future storm events.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-2: Outdoor Storage of Liquid Materials in Stationary Tanks
    - A-11: Cleaning or Washing of Tools and Equipment
    - A-13: Vehicle Washing and Steam Cleaning
    - A-17: Stationary Fueling Operations
    - A-18: Vehicle and Equipment Repair and Maintenance
    - A-30: Marine Activities
    - A-31: Parking Lots, Driveways and Outside Storage Areas
    - A-48: Mobile Fueling of Vehicles and Heavy Equipment
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets

  - Catch Basin Insert
  - Containment
  - Covering
  - Oil/Water Separators
  - Spill Response and Cleanup
- *King County Surface Water Design Manual*

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-48: Mobile Fueling of Vehicles and Heavy Equipment

The following best management practices apply to mobile fueling, also known as fleet fueling, wet fueling, or wet hosing. Mobile fueling is the practice of filling fuel tanks of vehicles or equipment by fuel tank trucks, tank trailers, and trucks with accessory fueling tanks that are driven to the yards or sites where the vehicles to be fueled are located.

Potential pollutants can include but are not limited to hydrocarbons, metals, oil and grease, and oxygen demanding substances.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required Operational BMPs

- Obtain approval from the local fire department. Comply with local and Washington State fire codes.
- The driver/operator must be present and constantly observe all fuel transfer operations to ensure the implementation of the following procedures at all fuel transfer locations:
    - To the extent practical, locate the point of fueling at least 25 feet from the nearest storm drain or drainage ditch, or inside an impervious containment with a volumetric holding capacity equal to or greater than 110 percent of the fueling tank volume, or covering the catch basin to prevent discharge of spilled or leaked fuel. Covers are not required for storm drains that convey the inflow to a spill control separator approved by the local jurisdiction and the fire department;
    - Place a leak-proof drip pan or an absorbent pad under each fueling location prior to and during all dispensing operations. The pan or the absorbent pad must have a capacity of at least 5 gallons. There is no need to report spills retained in the drip pan or the pad;
    - Manage the handling and operation of fuel transfer hoses and nozzle, drip pan(s), and absorbent pads as needed to prevent spills/leaks of fuel from reaching the ground, storm drains, or surface waters;
    - Do not extend fueling hoses across a traffic lane without fluorescent traffic cones, or equivalent devices, conspicuously placed to block all traffic from crossing the fuel hose;
    - Remove the fill nozzle and cease filling the tank when the automatic shut-off valve engages. Do not lock automatic shutoff fueling nozzles in the open position;
    - Do not “top off” the fuel tanks; and
    - Do not use dispersants or soap to clean up spills or sheens.

- Develop and follow a mobile fueling plan that includes the required operational BMPs and spill response procedures.
- The responsible manager shall:
    - Sign and date the mobile fueling plan;
    - Distribute mobile fueling procedures to all operators; and
    - Update and retain the mobile fueling plan in the organization files.
- Immediately notify the local fire department (911) and Washington State Department of Ecology in the event of any spill entering surface or ground waters. Establish a "call down list" to ensure the rapid and proper notification of management and government officials should any significant amount of product be lost off-site. Keep the list in a protected but readily accessible location in the mobile fueling truck. The "call down list" should also pre-identify spill response contractors available in the area to ensure the rapid removal of significant product spillage into the environment.
- Train the driver/operator upon hiring, and annually thereafter, on proper fueling procedures, spill prevention, cleanup measures, and emergency procedures. Make all employees are aware of the significant liability associated with fuel spills.
- The driver/operator of the fueling vehicle must have:
    - A current copy of the mobile fueling plan;
    - Adequate flashlights or other mobile lighting to view fuel fill openings with poor accessibility; and
    - Two-way communication with the operator's home base.
- Maintain a minimum of the following spill clean-up materials in all fueling vehicles, that are readily available for use:
    - Non-water absorbents capable of absorbing at least 15 gallons of diesel fuel;
    - A catch basin plug or cover kit;
    - Two, five-gallon buckets with lids or sealable disposal bags;
    - A non-spark generating shovel; and
    - For fuel tankers and trailers with fueling tanks greater than 100 gallons, a non-water absorbent containment boom, minimum 10 feet in length with a 12-gallon minimum absorbent capacity.
- Use automatic shutoff nozzles for dispensing the fuel. Replace automatic shut-off nozzles as recommended by the manufacturer.
- Maintain fueling equipment, particularly hoses and nozzles.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-3: Storage of Liquid Materials in Portable Containers
- *Stormwater Pollution Prevention Manual*, Chapter 5: Information Sheets

- Controlling and Collecting Contaminated Runoff
- Spill Response and Clean-up Plan

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

A-49: Nurseries and Greenhouses

The following best management practices (BMPs) apply to commercial container plant, greenhouse grown, cut foliage, and cannabis production operations.

Potential pollutants can include but are not limited to fecal coliform bacteria, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, and sediment.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of surface water and stormwater, you will be required to take additional measures.

Required Operational BMPs

- Establish nursery composting areas, soil storage, and mixing areas as far away as possible from surface waters and stormwater drainage systems.
- Do not blow, sweep, or otherwise allow vegetation or other debris into stormwater drainage systems or surface waters.
- Regularly clean up spilled potting soil, especially if fertilizers and pesticides are incorporated.
- Cover soil storage and compost storage piles. Refer to activity sheet A-4: Outdoor Storage of Soil, Sand and Other Erodible Materials.
- Dispose of pathogen-laced potting substrate and diseased plants appropriately.
- Place plants on gravel, geotextile, or weed cloth to allow infiltration and minimize erosion, including inside greenhouse structures.
- Properly store, reuse, recycle, and dispose of used polyfilm, containers, and other plastic-based products so that they do not collect stormwater.
- Evaluate and manage irrigation to reduce runoff, sediment transport, and erosion. Refer to activity sheet A-26: Landscaping Activities, Vegetation Management, and Irrigation

Required Structural BMPs

- Control stormwater and irrigation runoff. Either:
    - Collect runoff in a small basin and reuse the runoff,
    - Route runoff through an onsite vegetative treatment area, or
    - Use a graveled area and allow runoff to infiltrate.
- Surround soil storage and compost storage areas with a berm or wattles.
- Use groundcover, such as geotextile fabric or mulch, to stabilize disturbed areas and prevent erosion in areas where vegetative cover is not an option.
- In areas with heavy traffic (foot or machine), use appropriate aggregate such as rock and gravel for stabilization.

- Store potting substrate that contains fertilizer in a dedicated area with an impermeable base. If the storage area is not under a roof to protect it from rainfall, then manage runoff so that no substrate enters the storm drain system or surface waters.

Supplemental BMPs – Operational

- Use soil mixing and layering techniques with composted organic material to reduce herbicide use and watering.
- Utilize soil incorporated with fertilizers and/or pesticides immediately; do not store for extended periods.
- Irrigation:
    - Place irrigation emitters primarily in the plant's root zone. This will significantly reduce nutrient related impacts from fertilizers.
    - Avoid over-irrigating. This may exceed the soil's water-holding capacity and lead to run-off or leaching
    - Consider, and adjust as needed, the uniformity of application, the amount of water retained within the potting substrate, and the amount of water that enters containers compared to that which exits the containers and/or falls between containers.
    - Consolidate containers and turn off irrigation in areas not in production. This may require individual on/off valves at each sprinkler head.
    - Based on the stage of plant growth, space containers and flats as close as possible to minimize the amount of irrigation water that falls between containers.
    - Group plants of similar irrigation needs together.
    - Consider minimizing water losses by using cyclic irrigation (multiple applications of small amounts). Consider using sub-irrigation systems (e.g. capillary mat, ebb-and-flow benches, and trays or benches with liners); these systems can conserve water and reduce nutrient loss, particularly when nutrients are supplied in irrigation water that is reused.

Supplemental BMPs – Structural

- Use windbreaks or other means (e.g. pot in pot) to minimize plant blow over.
- Cover potting areas with a permanent structure to minimize the loss of soil. Use a temporary structure if a permanent structure is not feasible.

Additional Information

- *Stormwater Pollution Prevention Manual*, Chapter 3: Commercial and Multifamily BMPs
    - A-3: Storage of Liquid Materials in Portable Containers
    - A-4: Outdoor Storage of Soil, Sand and Other Erodible Materials
    - A-5: Storage and Use of Pesticides and Fertilizers
    - A-11: Cleaning or Washing of Tools and Equipment

  - A-24: Commercial Composting
  - A-26: Landscaping Activities, Vegetation Management, and Irrigation
- Washington State Department of Ecology's *Regulatory Guidance For Cannabis Operations* https://appswr.ecology.wa.gov/docs/WaterRights/wrwebpdf/Guidance4CannabisOperations.pdf

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

4.0 RESIDENTIAL (NON-COMMERCIAL) BMPS

This chapter consists of a series of activity sheets listing the best management practices (BMPs) that are required for single family residential activities in unincorporated King County. They address typical household activities that have the potential to pollute stormwater, surface waters, and groundwater.

Even small amounts of commonly used household products such as motor oil, pesticides, paint waste, and soaps are harmful to aquatic life. Although individual activities may appear insignificant, runoff from urban areas is now a leading cause of water pollution in rivers, lakes, and coastal areas.

King County's goal is to reduce pollution by educating homeowners and residents to prevent the contamination of stormwater runoff and our streams, rivers, lakes, and groundwater.

For commercial activities occurring on single family residential properties, the BMPs in Chapter 3 must be implemented in order to protect stormwater quality. This includes home occupations that have an outdoor component such as guest or employee parking areas or outdoor storage.

R-1: Residential Automobile and Boat Washing

The following best management practices (BMPs) apply to washing vehicles and boats at your house. Vehicle washing is one of the most common residential activities that pollute streams, creeks, lakes, and Puget Sound. Even soaps that are labeled "biodegradable," "environmentally friendly", or "nontoxic" are harmful to aquatic life and water quality. The "nontoxic" label simply means the soap is less toxic to humans. The most environmentally responsible thing to do is to take your vehicle to a commercial car wash where wash water is properly recycled and discharged to the sanitary sewer.

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, sediment, and other pollutants.

BMPs are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Washing may only be done in an area that allows for infiltration of the wash water, such as gravel, grass, or loose soil.
- When washing vehicles or boats, use a mild detergent or soap that is pH neutral.
- Never clean or pressure wash the engine or undercarriage of your vehicle at home. The pollutants from this activity can contaminate your property or well water.
- Dispose of any remaining soapy water in your wash bucket down the toilet or sink.
- Do not wash or rinse vehicles on permeable pavement or pavers.
- If you wash on an impermeable (conventional) paved area such as your driveway and use soaps or detergents, you must do one of the following:
    - Redirect the wash water to vegetated areas such as the lawn using temporary measures such as a berm, boom/socks, or other solid materials like a piece of lumber placed at the low point of where your vehicle is parked. This will redirect the flow of water to the vegetated area where it can infiltrate into the ground; or.
    - Use a wet vacuum or pump to collect the wash water and then dispose of the water in your sink or toilet for treatment at your local sewage treatment plant.

Tips

- Use a hose nozzle with a trigger and shut it off when you're not using it to conserve water.
- There are several waterless car wash products on the market. Cloths, rags, etc. used with these products should be disposed of as solid waste.

- Do not take your car to a "charity car wash" unless you can see that the wash water is being collected and discharged to the sewer system. When in doubt, ask the event organizers where the car wash water is being disposed of.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

R-2: Residential Storage of Solid Waste and Food Wastes (Garbage)

Leaking garbage cans, waste containers without lids, and scrap piles can cause polluted runoff, which can harm surface waters and groundwater. Accumulated garbage can attract rodents, rats, mosquitoes, and other pests that are also health hazards.

Potential pollutants include but are not limited to fecal coliform bacteria, hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, sediment, and other pollutants.

Best Management Practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Keep garbage, recyclables, and food wastes in covered or lidded containers.
- Dispose of waste, using a curbside pick-up service or take it to a solid waste transfer station.
- Do not let garbage accumulate to the point that it spills out of the container or prevents people from using the container.

Tips

- Recycle as much as possible. Use the King County "What do I do with…?" website to find businesses that accept materials for recycling, donations and disposal https://info.kingcounty.gov/services/recycling-garbage/solid-waste/what-do-i-do-with/
- King County Solid Waste Division waste disposal information http://your.kingcounty.gov/solidwaste/index.asp
- Household hazardous waste disposal: www.hazwastehelp.org, or contact the Household Hazards Line at 206-296-4692. See activity sheet R-4: Residential Hazardous Waste Use, Storage, and Disposal for more information.
- Composting yard and food waste http://your.kingcounty.gov/solidwaste/composting/index.asp
- Yard waste collection http://your.kingcounty.gov/solidwaste/garbage-recycling/yardwaste.asp
- Dispose of pet waste in your garbage, see activity sheet R-8: Residential Animal Waste

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

R-3: Residential Vehicle Repair and Maintenance

Many people repair and maintain their vehicles at home. Keeping your vehicle from leaking oil or other fluids is an important pollution prevention measure. These activities cannot pollute streams, rivers, and lakes.

Potential pollutants include but are not limited to hydrocarbons, metals, oil and grease, oxygen demanding substances, pH, sediment, and other pollutants.

Best Management Practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Collect all used oil, antifreeze, and other vehicle fluids in containers with tight fitting lids. Do not mix these fluids in the same container.
- Recycle oil at an auto parts store or service station. Oil and other fluids can be disposed of at a household hazardous waste collection site. Call the household hazardous waste line at 206-296-4692 or see https://www.hazwastehelp.org/HHW/disposal-locations.aspx for recycling and disposal information and locations. Never dispose of any fluids or waste materials into the stormwater drainage system, surface waters, or onto the ground.
- Never clean the engine or undercarriage of your vehicle at home. For this type of cleaning, take the vehicle to a commercial car wash facility.
- Use drip pans, tarps, or even cardboard and newspaper under the vehicle to capture leaks or spills that may occur during maintenance and repair activities. This ensures spilled fluids won't be washed to the stormwater drainage system.
- Clean up spills with rags or absorbent material, such as sand, dirt, or cat litter. Do not wash down spills. Sweep up absorbents and dispose of them as garbage.
- Store used batteries under cover and off the ground or inside until they can be recycled.

Tips

- Take your vehicle to a commercial car repair facility where fluids are handled, recycled, and disposed of properly.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

R-4: Residential Hazardous Waste Use, Storage and Disposal

A variety of hazardous materials are routinely used in and around our homes including chemical cleaners, pesticides, paints, solvents, lighter fluid, gasoline, antifreeze, brake fluid and other automotive products, wood preservatives and even batteries from our electronic equipment.

Improper disposal and failure to keep hazardous products from rainwater contact may cause surface water and groundwater pollution. With so many hazardous materials present in thousands of households in King County, the cumulative adverse effects of poor usage, storage and disposal practices are potentially severe to human and environmental health.

Potential pollutants can include but are not limited to fecal coliform bacteria, hydrocarbons, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, pH, sediment, and other pollutants.

Best Management Practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Store all hazardous materials inside a building, shed or under cover. Do not expose hazardous materials to rainwater.
- Use products only as specified on labeling directions.
- Carefully follow disposal directions on containers of chemicals.
- Never discharge or dump hazardous chemicals into storm drainage systems or on to the ground.

Disposal Options

Dispose of and recycle hazardous wastes through the Household Hazardous Waste Program or other recycling programs or businesses. There are three fixed hazardous waste collection sites for household hazardous waste in Seattle and King County. See www.hazwastehelp.org/ or call the Household Hazards Line at 206-296-4692 for more information.

Tips

- Use the least toxic product available. See https://kingcountyhazwastewa.gov/en/households-disposal/households-safer-home-products for information on finding alternatives to hazardous household products.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

R-5: Residential Gardening, Lawn Care, Irrigation and Fertilizer Application

Many pollutants can enter stormwater systems, groundwater, and water bodies as a result of typical lawn and gardening work. Runoff contaminated by pesticides and fertilizers can severely degrade streams and lakes and adversely affect fish and other aquatic life.

Disposal of grass clippings and other vegetation into water bodies leads to decreased oxygen levels that can be lethal to fish and other aquatic life. In addition, disposal of leaf litter and other debris to the storm drain system can clog drainage pipes, leading to street flooding and increased maintenance costs. Some gardening chemicals are also harmful to children and pets.

Potential pollutants can include but are not limited to fecal coliform bacteria, metals, nutrients, oil and grease, oxygen demanding substances, PCBs, and sediment.

Best Management Practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Never apply herbicides, insecticides, rodenticides, or fungicides near water or when it is raining.
- Manually or mechanically remove weeds and other pests rather than using pesticides near water.
- Store all bags, piles, and containers of fertilizers and pesticides in a covered location such as a garden shed.
- Do not sweep, blow, or dump grass clippings, leaves, or twigs into any street, drainage ditch, storm drain, or surface waters. Instead, collect and either compost it or dispose as yard waste.
- Store piles of erodible materials, such as topsoil, on lawns or other pervious areas. If these materials are stored on impervious areas such as driveways, cover them with a tarp so they are not washed into storm drains or ditches.
- Control lawn and garden watering so that no runoff leaves your property. Check automatic sprinkler systems to ensure there is no overspray to driveways and sidewalks that drain to storm drainage systems.

Tips

- Compost your yard waste, or use it as mulch in your yard or garden. Contact your local solid waste utility to see if yard waste pickup service is available. See http://your.kingcounty.gov/solidwaste/garbage-recycling/yardwaste.asp.
- Use as little pesticide as possible and always follow the label directions for application. Try pest control measures that do not require chemicals first.

- Learn about alternatives to chemical pesticides and fertilizers. Contact the King County Hazardous Waste Management Program at 206-296-4692, or visit http://www.hazwastehelp.org and the Garden Hotline at https://gardenhotline.org/
- Avoid planting species on the Noxious Weeds list. For assistance or questions contact King County's Noxious Weed Program at 206-296-1900 or visit https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds.aspx.
- For additional information on pesticides and fertilizers see activity sheet A-5: Storage and Use of Pesticides and Fertilizers.
- For additional information on vegetation management and irrigation see activity sheet A-26: Landscaping Activities, Vegetation Management, and Irrigation.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

R-6: Residential Home Maintenance and Repair

There are a variety of home maintenance and repair activities that have the potential to adversely affect our streams, rivers, and lakes. Pollutants generated from these activities can affect whether a water body is swimmable or fishable.

Potential pollutants can include but are not limited to hydrocarbons, metals, nutrients, pH, sediment, and other pollutants.

Best Management Practices (BMPs) are required by King County Code 9.12. If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required BMPs

- Do not dispose of wastewater into the street, gutter, storm drain, drainage ditch, or surface water (e.g., stream, creek, or any other body of water).

Painting

- Do not dispose of wash water from cleaning brushes, paint rollers, paint buckets, or containers to surface water, storm drains, or ditches.
- Wash water from latex paints can be disposed of to the sanitary sewer (down a sink or toilet).
- Empty containers of latex paint can be left open to dry out any residual paint, and then, once a solid, can be disposed of in your normal garbage or taken to a transfer station for disposal.
- Residual oil-based paint, paint thinners, and solvents must be disposed of as hazardous waste.

Washing

- Water from washing decks, driveways, roofs, or other hard surfaces may contain suspended solids and other pollutants that should not be directly discharged to stormwater drainage systems.
- Redirect wash water to vegetated areas or areas such as gravel, lawns, landscaping, or bare soil where the water will infiltrate slowly into the ground. If this cannot be accomplished, then filter the wash water through filter fabric, or other filtering media to collect the suspended solids before discharging the water to a stormwater drainage system.
- If any chemicals, soaps or detergents are used the wash water must be collected and disposed of in a sanitary sewer system (i.e., a sink or toilet) or infiltrated on-site. Do not dispose of this wash water to the stormwater drainage system or surface waters.
- If moss control or another chemical treatment is used during the washing of roofs, then disconnect the downspouts so the chemicals do not discharge to the

stormwater drainage system. Disperse this wash water onto adjacent lawns and landscaping to infiltrate.

Carpet Cleaning

- Most commercial carpet cleaners have onboard wastewater recycling systems. If you do your own carpet cleaning, then the wash water must be discharged to the sanitary sewer or your septic system.
- Filter the water if it contains lint or other particles to avoid clogging the drains.
- If you prefer not to discharge the water to your septic system, you may also discharge the water to your lawn or a landscaped area to allow the wash water to infiltrate slowly into the ground.
- Be aware that detergents and other cleaning chemicals such as solvents can be harmful to vegetation and septic systems.
- Discharging wash water to the ground may not be allowed if you live in a critical aquifer recharge area. For additional information on critical aquifer recharge areas in King County, refer to King County Code 21A.24.311-316.
- Never dispose of carpet cleaning wash water to a storm drain, drainage ditch, or surface water. Carpet cleaning wastewater contains chemicals, detergents, and suspended solids that adversely impact the quality of surface and ground waters.

Cement/Concrete Work

- Concrete/cement wash water has a pH level that is toxic to aquatic life.
- Do not allow wash water from concrete work to discharge into stormwater drainage systems, including small yard drains or adjacent roadways.
- This is especially important when installing washed aggregate driveways or patios. Direct the wash water to vegetated areas or dig a hole where the wash water can settle and infiltrate slowly into the ground. The cement residue can be mixed into the soil where the wash water is infiltrated with no detrimental effects, and the pH will be neutralized.

Tips

- Hire a professional home maintenance and repair company that follows the approved BMPs for home repair and maintenance. If you have questions about which BMPs a business must comply with contact King County Stormwater Services at 206-477-4811 or visit www.kingcounty.gov/stormwater.
- Remember, as a homeowner, you have a responsibility to ensure your contractors follow these required BMPs and all King County codes and regulations.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

R-7: Residential Swimming Pool and Hot Tub Maintenance

Improper drainage or discharge of water from swimming pools, hot tubs, or spas to storm drains or ditches during maintenance activities can lead to pollution of streams, rivers, and lakes. Chemicals used in pool, spa, and hot tub maintenance can contaminate stormwater and surface water if they are not stored, used, and disposed of correctly.

Potential pollutants can include but are not limited to fecal coliform bacteria, nutrients, oxygen demanding substances, pH, and sediment.

Best Management Practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of stormwater, you will be required to take additional measures.

Required Operational BMPs

- Clean the pool, spa, hot tub, or fountain regularly.
- Maintain proper chlorine levels, water filtration, and circulation, which will limit the need to drain the facility.
- Manage pH and water hardness to reduce copper pipe corrosion that can stain the facility and pollute receiving waters.
- Before using copper algaecides, try less toxic alternatives. Only use copper algaecides if the other alternatives do not work. Ask a pool/spa/hot tub/fountain maintenance service or store for help resolving persistent algae problems without using copper algaecides.
- Develop and regularly update a facility maintenance plan that follows all discharge requirements.
- Dispose of unwanted chemicals properly. Many of them are hazardous wastes when discarded.
- Store pool chemicals under cover and in enclosed containers.

Required Water Disposal BMPs

If the pool or spa does not have a permanent drain connection, then water must be pumped or drained to the sanitary sewer or meet the following BMPs.

- Discharging pool and spa water if sanitary sewer is not available:
    - Non-saltwater and saltwater pool and spa water
        - Have it hauled off-site for disposal at an approved location; or
        - Infiltrate to ground if all 9 conditions below are met. Saltwater pool and spa water must not be allowed to flow off-site, nor may it enter stormwater drainage systems or surface waters. Saltwater discharges can elevate salt concentrations in your soil and damage vegetation.
    - Non-saltwater pools and spas only
        - Drain to the stormwater drainage system if all 9 conditions listed below are met

- Conditions for draining to ground (non-saltwater and saltwater pools and spas) or to a stormwater drainage system (non-saltwater pools and spas only):

  1. No copper-based algaecides were used;

  2. The water must be tested to determine chlorine levels and pH;

  3. The water is dechlorinated to 0.10 ppm Chlorine or less, using neutralizing chemicals or by letting the pool or spa "sit" long enough to reduce the chlorine level to the allowable limit. The pool or spa must not be used during this period;

  4. The pH is neutral (6-8);

  5. Free of any coloration, dirt, suds, or algae;

  6. Free of any filter media;

  7. Free of acid cleaning wastes;

  8. Released at a rate that does not cause erosion either onsite or in the drainage system; and

  9. At ambient temperature.

- Saltwater pool and spa water must not be discharged to the stormwater drainage system. Either infiltrate to ground if all 9 conditions above are met or hire a professional pool-draining service to collect all water for off-site disposal at an approved location.
- Diatomaceous earth (commonly used as a filtering agent) and water from back flushing filter systems cannot be discharged to surface waters, storm drainage systems, septic systems, or the ground. Dispose of diatomaceous earth filter material as solid waste.
- Do not discharge pool or spa water to a septic system, as it is prohibited and may cause the system to fail.
- The discharge of pool and spa filter backwash or cleaning water to the ground, surface waters or the storm drainage system is not allowed.

Tips

- Hire a professional maintenance company to service your pool, hot tub, or spa.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

R-8: Residential Animal Waste

Animal feces that enters lakes, streams or Puget Sound begins to decay, using up oxygen and releasing ammonia (nutrients). Low oxygen levels and ammonia combined with warm water can kill fish. Nutrients encourage weed and algae growth, and contribute to low oxygen and high pH in waters we use for swimming, boating, and fishing. Most importantly, feces and fecal contaminated wash water can carry viruses and bacteria that could cause disease and lead to beach or shellfish harvesting closures.

Potential pollutants can include but are not limited to fecal coliform bacteria, nutrients, oxygen demanding substances, PCBs, and sediment.

Best Management Practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of surface water and stormwater, you will be required to take additional measures.

Supplemental BMPs – Pet Waste

- Promptly pick up and dispose of your pet waste when away from home.
- Regularly pick up pet waste deposited on your property.
- Put pet waste in a securely closed bag and deposit it in the trash. Do not place pet waste in yard waste containers because pet waste may carry diseases, and composting may not kill disease-causing organisms.
- Do not compost or use pet waste as fertilizer. Harmful bacteria, worms, and parasites that can transmit disease can live in the soil for years even after the solid portion of the pet waste has dissolved.
- When cleaning out cages and kennels, dispose of wash water down the toilet or a mop sink. Otherwise, wash directly over lawn areas or make sure the wash water drains to a vegetated area.
- Bathe pets indoors or in a manner that wash water won't be discharged to storm drain systems, ditches, or surface waters.

Required BMPs – Goose Waste

- If possible, pick up goose waste using shovels, brooms, rakes, power sweepers, and trash cans. Properly dispose of goose waste in the garbage.
- Do not blow, sweep, or wash goose waste into surface waters or stormwater drainage systems.
- Regularly clean goose waste from areas of chronic deposition.

Supplemental BMPs – Pet Pharmaceuticals and Pesticides

- Do not dispose of unused pet pharmaceuticals in a toilet or down a sink.
- Pet pharmaceuticals can be disposed of at several medicine return drop-boxes located throughout the county. Refer to www.kingcountysecuremedicinereturn.org for guidelines and to locate a drop-box near you.

- Pet pesticides, such as flea prevention, cannot be disposed of at a medicine return drop-box. Pesticides should be taken to at a local hazardous waste drop-off location. Refer to www.hazwastehelp.org for guidelines and to find a drop-off location near you.

Supplemental BMPs – Goose Waste

- Do not feed wild geese or other waterfowl.
- Change areas of chronic accumulation of goose waste from goose friendly to goose resistant. Reduce lawn areas and increase the height of shoreline vegetation (tall grass, shrubs) as geese are reluctant to walk through tall vegetation.
- Geese's favorite food is new shoots of grass. Let grass grow to six inches or taller. Stop fertilizing and watering lawn in areas of geese accumulation to reduce the palatability of the lawn.
- Create a natural geese barrier of 20 to 100 feet of herbaceous vegetation at least 3 feet in height to discourage geese. A narrow, winding path through the plantings will allow for beach access, while preventing geese from having a direct line of sight through the planted area. Minimize open sight lines for geese to less than 30 feet.
- Where space is limited, use one or two rows of shrub plantings combined with a fence to construct a geese barrier. Fences can be made from woven wire, poultry netting, plastic netting, plastic snow fencing, mono-filament line, or electrified wire. Fences should be at least 24 inches tall (3 feet may be better), firmly constructed, and installed to prevent the geese from walking around the ends. Lower openings should be no larger than 4 inches from the ground to prevent goslings from walking under or through the fence.
- Construct bank slopes steeper than 4:1 to discourage geese by preventing a clear view of the bank top and potential predators. Or, separate the beach from the grass with a few steep steps, which makes the ascent too difficult for most geese.
- Plant shrubs or trees along ponds to limit takeoff and landing opportunities.
- Scare geese away when they are around. Geese often learn quickly to ignore scare devices that are not a real physical danger. Vary the use, timing, and location of tactics. Take advantage of geese being fearful of new objects. Examples of harassment and scare tactics include:
    - Dog patrols: Dogs are the method of choice for large open areas. Results are often immediate. After an aggressive initial use (several times a day for one or two weeks), geese get tired of being harassed and will use adjacent areas instead. A dog can be tethered to a long lead (which may require relocating the dog and tether frequently to cover more area), be allowed to chase and retrieve a decoy thrown over a large flock of geese, or be periodically released to chase the birds (if this is not against leash laws).
    - Eyespot Balloons: Large, helium-filled balloons with large eye-like images. Tether balloons on a 20 to 40-foot monofilament line attached to a stake or heavy object. Locate balloons where they will not tangle with trees or utility lines.

  - Flags and Streamers: Simple flags from plastic mounted on tall poles or mylar tape to make 6-foot streamers attached to the top of 8-foot-long poles. Flags and streamers work best in areas where there is steady wind.
  - Scarecrows: Effective in areas where geese view humans as dangerous predators. For maximum effect, the arms and legs should move in the wind, use bright colors, and large eyes. Large, blow-up toy snakes are reported to work as a type of scarecrow.

- Canada geese are protected under federal and state law and a hunting license and open season are required to hunt them. Where lethal control of Canada geese is necessary outside of hunting seasons, it should be carried out only after the above nonlethal control techniques have proven unsuccessful and only under permits issued by the U.S. Fish and Wildlife Service. Currently, the only agency permitted for lethal removal is the U.S. Department of Agriculture's Wildlife Services. Lethal control techniques include legal hunting, shooting out of season by permit, egg destruction by permit, and euthanasia of adults by government officials.
- The Humane Society of the United States' *Solving Problems with Canada Geese: A Management Plan and Information Guide* http://www.humanesociety.org/assets/pdfs/wild_neighbors/canada_goose_guide.pdf

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

R-9: Residential Dock Washing

Improper washing of docks and floats can result in the discharge of dirt, bird feces, soaps and detergents that can be toxic to aquatic life.

Best Management Practices (BMPs) are required by King County Water Quality Code (KCC 9.12). If the BMPs included here are not enough to prevent contamination of surface water and stormwater, you will be required to take additional measures.

Required BMPs – Surface Preparation and Spot Cleaning

- Use dry methods and equipment (scraping, sweeping, vacuuming) to remove debris, bird feces and other contaminants prior to cleaning with water to prevent these pollutants from entering surface water. This will minimize the need for chemical cleaners. Dispose of debris from the dock as solid waste.
- During cleaning activities, if debris, substances, or wash water have the potential to enter surface waters through drains, temporarily block the drains prior to cleaning activities.
- Hose down the area if necessary and to the extent practicable, collect wash water and dispose of it properly.
    - If the dock is paved and the landward area is vegetated, then the wash water does not have to be collected if the water can soak into the ground without discharging to surface waters or the storm drainage system. However, the wash water does have to be filtered to trap solid materials before entering vegetated areas.
    - If the dock and the landward area are both paved, then use a sump pump, wet vacuum or similar device that enables collection of wash water and associated solids so they can be disposed of in a sink or toilet for treatment at your local sewage treatment plant. On-site septic systems should not receive wash water containing harsh chemicals. The wash water must not go to surface waters or storm drainage system.
- Try spot cleaning with water and a coarse cloth before using soaps or detergents or washing down an area.
    - If a cleaner is needed for spot cleaning:
    - Mix it in a bucket and use it to scrub down only the areas that need extra attention.
    - Try starting with vinegar and baking soda and move to other options as needed. Spot clean using a rag if harsher cleaning products are needed.
    - Use a mild detergent or soap that is pH neutral. Avoid or minimize the use of petroleum distillates, chlorinated solvents, and ammoniated cleaning agents.
    - Use degreasers or absorbent material to remove residual grease by hand and do not allow this material to enter surface waters.

  - Keep cleaners in sealed containers and keep cleaner containers closed securely when transporting between the shore and docks.
  - Properly dispose of wash water.
- Minimize the scour impact of wash water to any exposed soil at the landward end(s) of the dock or below the dock. Place a tarp over exposed soil, plant vegetation, or put berms to contain eroded soil.

Required BMPs – Goose Waste

- If possible, pick up goose waste using shovels, brooms, rakes, power sweepers, and trash cans. Properly dispose of goose waste in the garbage.
- Do not blow, sweep, or wash goose waste into surface waters or storm drainage systems.
- Regularly clean goose waste from areas of chronic deposition.

Required BMPs – Dock Washing and Disposal

- During cleaning activities, if debris, substances, or wash water could enter surface waters through drains, then temporarily block the drains and collect all of the wash water.
- To the extent practicable, collect any wash water generated from hosing down or cleaning dock areas, and dispose of it properly.
  - If the dock is paved and the landward area is vegetated, then the wash water does not have to be collected if the water can soak into the ground without discharging to surface waters or the storm drainage system. However, the wash water does have to be filtered to trap solid materials before entering vegetated areas.
  - If the dock and the landward area are both paved, then use a sump pump, wet vacuum or similar device that enables collection of wash water and associated solids so they can be disposed of in a sink or toilet for treatment at your local sewage treatment plant. On-site septic systems should not receive wash water containing harsh chemicals. The wash water must not go to surface waters or storm drainage system.
- If pressure washing using light pressure. Avoid using excessive pressure, which may damage the dock or send flakes of paint and other material into the water. If the surface is painted with lead or other heavy metal-bearing paint (such as chromium or cadmium), hire a commercial pressure washing service that will collect, test, and properly dispose of the wash water.
- Do not place any debris or substances resulting from cleaning activities in shoreline areas, riparian areas, or on adjacent land where these substances may erode into surface waters.
- Where treated wood associated with the structure being washed are present, use non-abrasive methods and tools that, to the maximum extent practicable, minimize removal of the creosote or treated wood fibers when it removes marine growth from creosote or any other treated wood.

- Do not discharge removed marine growth to surface waters.
- Do not discharge emulsifiers, dispersants, solvents, or other toxic deleterious materials to surface waters or storm drainage systems.

Supplemental BMPs- Goose Waste

- Do not feed wild geese.
- Change areas of chronic accumulation of goose waste from goose friendly to goose resistant. Reduce lawn areas and increase the height of shoreline vegetation (tall grass, shrubs) as geese are reluctant to walk through tall vegetation.
- Geese's favorite food is new shoots of grass. Let grass grow to six inches or taller. Stop fertilizing and watering lawn in areas of geese accumulation to reduce the palatability of the lawn.
- Create a natural geese barrier of 20 to 100 feet of herbaceous vegetation at least 3 feet in height to discourage geese. A narrow, winding path through the plantings will allow for beach access, while preventing geese from having a direct line of sight through the planted area. Minimize open sight lines for geese to less than 30 feet.
- Where space is limited, use one or two rows of shrub plantings combined with a fence to construct a geese barrier. Fences should be at least 24 inches tall (3 feet may be better), firmly constructed, and installed to prevent the geese from walking around the ends. Lower openings should be no larger than 4 inches from the ground to prevent goslings from walking under or through the fence.
- Construct bank slopes steeper than 4:1 to discourage geese by preventing a clear view of the bank top and potential predators. Or, separate the beach from the grass with a few steep steps, which makes the ascent too difficult for most geese.
- Plant shrubs or trees near the water's edge to limit takeoff and landing opportunities.
- Scare geese away when they are around. Geese often learn quickly to ignore scare devices that are not a real physical danger. Vary the use, timing, and location of tactics. Examples of harassment and scare tactics include dogs, eyespot balloons, flags and streamers, and scarecrows.
- Canada geese are protected under federal and state law and a hunting license and open season are required to hunt them. Where lethal control is necessary outside of hunting seasons, it should be carried out only under permits issued by the U.S. Fish and Wildlife Service.
- The Humane Society of the United States' *Solving Problems with Canada Geese: A Management Plan and Information Guide* http://www.humanesociety.org/assets/pdfs/wild_neighbors/canada_goose_guide.pdf

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

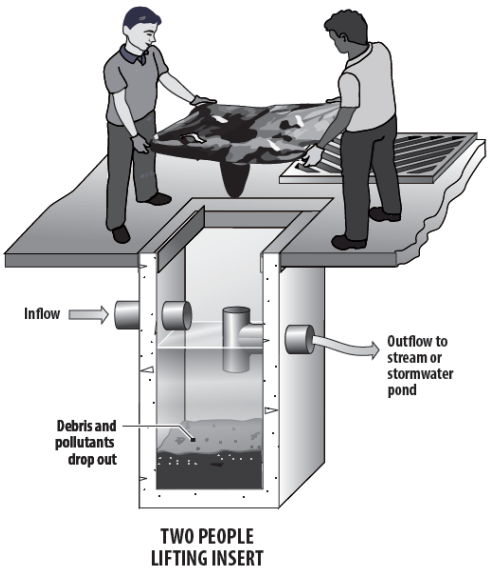
5.0 INFORMATION SHEETS

This chapter provides additional information on how to implement best management practices for certain commercial and residential activities.

- Catch Basin Inserts
- Containment
- Controlling and Collecting Contaminated Runoff
- Covering
- Disposal
- Drainage Maintenance Contractors
- Oil/Water Separator
- Spill Response and Cleanup Plan
- Water Quality Treatment BMPs

Catch Basin Inserts

A catch basin insert is a device installed in a catch basin to provide water quality treatment through filtration or absorption.



Catch basin inserts fit into existing catch basins and are configured to remove one or more of the following contaminants: coarse sediment, oil and grease, and litter and debris. Some units may be able to remove dissolved pollutants and pollutants associated with fine sediments. When selecting an insert, ensure that your specific pollutant-removal needs are met. As with any treatment BMP, catch basin inserts should never be used in place of source control practices.

Oil and Grease Removal: Inserts designed for the removal of oil and grease contain, and depend on, oil-absorbing media. The *King County Surface Water Design Manual* (KCSWDM) requires specific materials/media to be used in catch basin inserts to ensure oils are not re-released during storm flows. These inserts are appropriate for use in any area in which vehicles are used, maintained, or stored. Because of the small storage capacity of these inserts, they are not acceptable as the sole line of defense against actual oil spills in areas where large amounts of oil could be released. Large amounts of sediment entering the catch basin significantly reduce the effectiveness and longevity of the oil absorbing media. Under these conditions, an oil/water separator with a pre-settling chamber may be more appropriate.

Sediment Removal: Inserts designed for sediment removal may be used at construction sites and in situations where stockpiles or unpaved areas are likely to contribute high sediment loads. They may also be appropriate for small (low traffic) businesses. They are not considered a substitute for other source control BMPs.

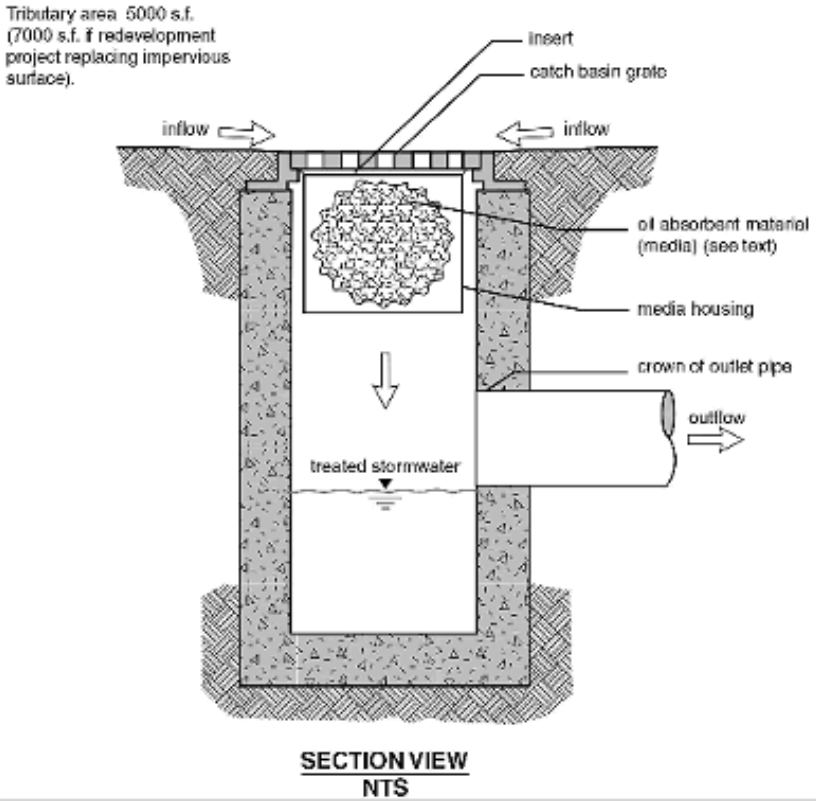
Debris Removal: Inserts can also be used for the removal of litter and debris, particularly leaf and tree material.

Design and Maintenance

Unlike most other treatment BMPs, which must be designed and constructed specifically for your site, catch basin inserts may be purchased directly from a vendor and installed by the user. While standardized insert units are available, most vendors are able to customize their systems for your site. Before purchasing a catch basin insert, the following factors must be considered.

Conveyance Capacity: The conveyance capacity refers to the amount of water that the insert can pass without causing flooding. This capacity is equal to the amount of water that is able to pass through the insert's treatment area, plus the amount that can pass through

the built-in overflow. Over time, the treatment area begins to clog and the total conveyance capacity is reduced. If maintenance is neglected or if an unusually high amount of sediment or debris is captured by the insert, the treatment capacity may drop to zero and all of the water will have to drain through the overflow (routine inspections help prevent this problem). In order to minimize the chance of flooding, the insert should function as designed and be able to handle flow from the area draining to the catch basin. The vendor should be able to tell you what the conveyance capacity is. Don't allow employees to poke holes in the insert to drain flooded areas.



The typical design of a catch basin insert is a set of filters that are specifically chosen to address the pollutants expected at that site (Source: King County, Washington, 2000)

Treatment Capacity and Bypass: The treatment capacity refers to the amount of stormwater that the insert unit will pass through its treatment area. The insert unit should be sized to ensure that most of the water entering the drain inlet is treated even as the treatment area starts to clog. The ability of the insert to remove pollutants will be reduced if water is able to seep between the catch basin grate and the edge of the pavement. Ensure that this gap is sealed. The vendor should provide you with information on how to prevent this situation and information on the treatment capacity of the system.

Maximum Weight: The maximum weight of the insert/filter will be equal to the weight of the insert/unit when new, plus the weight of the sediment and water trapped in the unit. Under the most extreme cases, the treatment area of the insert/unit may become

completely clogged, and the unit may be full of water when it comes time to service it. It is essential the maximum weight of the insert be less than what can be lifted by the people or equipment to be used during maintenance. Before ordering a system, or having a system customized to your site, be sure the vendor knows how you will be removing the insert/unit for maintenance.

Maintenance: Since the installation of one or more catch basin inserts represents a long-term commitment to maintenance, it is important that the unit selected be easy to use and maintain, and that it is built to last. Be sure to have the vendor provide a complete demonstration of the product at your site, and if possible, ask to try an insert before committing to its purchase. **Catch basin inserts are ineffective without adequate maintenance.**

Frequent inspection of the insert is necessary. Actual maintenance will generally consist of removing the insert from the catch basin, emptying accumulated sediments, cleaning or replacing the filter media (if applicable), and reinstalling the insert. In most cases these materials may be disposed of as regular solid waste, however, media used for oil and grease removal may require special treatment. See the Disposal information sheet for more information.

Maintenance frequency will vary depending on the site and on the amount and type of pollutant targeted for removal. All units should be inspected every one to two weeks (except during periods of dry weather), and complete maintenance performed whenever necessary. The simplest way to determine whether the units need maintenance is to inspect them during a rainstorm and see whether water is exiting the overflow.

Performance Problem	**Conditions When Maintenance or Replacement is Needed**	**Results Expected When Maintenance is Performed**
Sediment Accumulation	When sediment forms a cap over the insert media of the insert and/or unit.	No sediment cap on the insert media and its unit.
Trash and Debris Accumulation	Trash and debris accumulate on insert unit creating a blockage/restriction.	Trash and debris removed from insert unit. Runoff freely flows into catch basin.
Media Insert Not Removing Oil	Effluent water from media insert has a visible sheen.	Effluent water is free of oils and has no visible sheen.
Media Insert Water Saturated	Catch basin insert is saturated with water and no longer has the capacity to absorb.	Effluent water is free of oils and has no visible sheen
Media Insert-Oil Saturated	Media oil saturated due to petroleum spill that drains into catch basin.	Effluent water is free of oils and has no visible sheen
Media Insert Use Beyond Normal Product Life	Media has been used beyond the typical average life of media insert product.	Effluent water is free of oils and has no visible sheen

Additional Information

King County Wastewater Division – Industrial Waste Program
(206) 263-3000
www.kingcounty.gov/environment/wastewater/IndustrialWaste

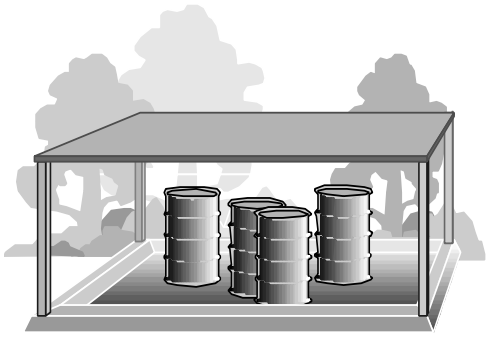
King County Business Waste Line
(206) 263-8899
www.hazwastehelp.org

King County Surface Water Design Manual
www.kingcounty.gov/swdm

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

Containment

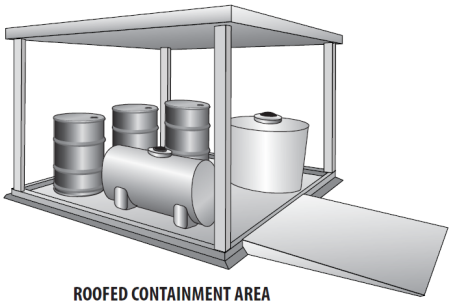
Containment refers to methods to prevent material from leaving or entering a specific area. Containment is an effective means for preventing uncontaminated stormwater from flowing into or onto a contaminated activity area. It is also critical for containing spills in activity areas where pollutants may be present.



Containment Curb

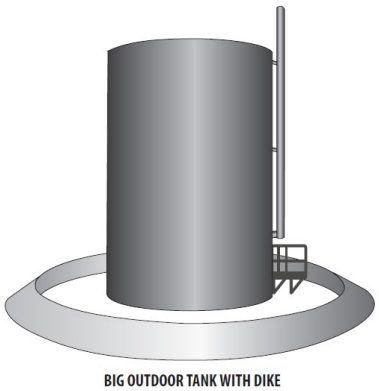
The term "**secondary containment**" means the specific requirement for all chemical liquids, fluids, petroleum products and hazardous wastes stored on-site, to be in a containment area sized to hold a volume of 110 percent of the volume of the largest container or 10% of the volume of all the containers, whichever is greater. Secondary containment may be achieved with specially designed containment pallets, concrete curbing, or earthen berms, depending on the nature and amount of the material, activities on-site, and site-specific conditions.

- Use separate secondary containers for products and wastes that are incompatible (e.g., acids and bases).
- Make sure the construction materials and containers are compatible with products or wastes stored.



ROOFED CONTAINMENT AREA

Activity areas contained by a curb, berm, or dike (to prevent stormwater run-on) should be covered. This will stop precipitation from ponding inside the secondary containment area. In some instances, run-on prevention can be accomplished by placing a curb or berm on the upslope sides of the area. Elevating the activity or storing materials on a platform can also prevent stormwater run-on.



BIG OUTDOOR TANK WITH DIKE

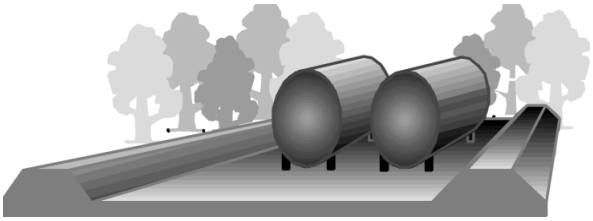
If not covered, containment areas will allow rainwater to accumulate. Contaminated water cannot be drained from the containment area to storm drains or surface waters, or infiltrated into the ground. The water must be collected and disposed of either in a sanitary sewer, a stormwater treatment system, or at a licensed decant facility. During the wet season, secondary containment without cover can lead to frequent disposal of relatively clean water that can be costly. For more detailed information on uncovered containment areas, see the Controlling and Collecting Contaminated Runoff information sheet.

If containing stockpiles of erodible material, a dike, berm, or filtering device must be placed on at least three sides to act as a barrier or filter to treat runoff and to remove suspended solids. If the containment device is three-sided, the open side should not be on the upslope or the downslope side of the stockpile. The dike or filter can be made of hay bales, silt fencing (filter fabric), concrete curbing, ecology blocks, compacted earth with grass planted on it, or similarly effective materials. Timbers treated with creosote or other preservatives should not be used because they can leach contaminants into runoff. All filter materials used around stockpiles must be maintained to work effectively and must be replaced when necessary. See Appendix D of the Surface Water Design Manual for other options.

For storing small items, a tub or wading pool is an acceptable containment structure. A rubber or plastic wading pool may be sufficient for containment of some stored materials that do not require much space, such as storing remodeling or painting materials, or temporary storage of wastes in drums.

Simple Containment Devices (uncovered)

These small storage devices should also be covered to prevent rain from accumulating. You must also consider the type of materials stored to ensure adverse chemical reactions do not occur with the containment material.



Containment Dike

Regular maintenance of containment devices is essential for proper functioning. Commercial products are available that combine containment boxes with elevated pedestals. They prevent stormwater run-on by elevating containers of liquids off the ground and collecting spills and drips inside the pedestal box.

Additional Information

Local Sewer Agency
The name and phone number are identified on your water and sewer bill.

King County Wastewater Division – Industrial Waste Program
(206) 263-3000
www.kingcounty.gov/environment/wastewater/IndustrialWaste

King County Business Waste Line
(206) 263-8899
www.hazwastehelp.org

King County Stormwater Services

(206) 477-4811
www.kingcounty.gov/stormwater

King County Surface Water Design Manual
www.kingcounty.gov/swdm

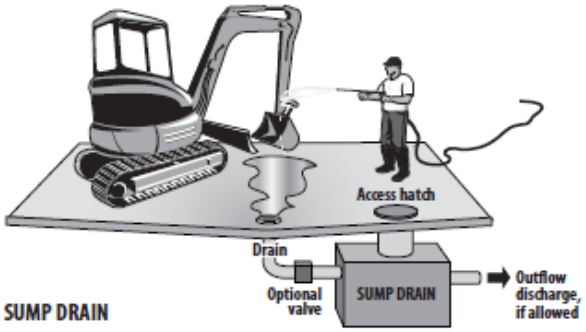
For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

Controlling and Collecting Contaminated Runoff

This BMP applies to activities that cannot be covered effectively yet require a method of controlling and containing contaminated runoff. It is particularly suited to activities with the potential for spills and leaks, but that otherwise do not generate excessive amounts of polluted runoff or that are intermittent such as washing or cleaning operations. A sump or holding tank can provide containment until the liquids can be pumped out of the tank and disposed of properly. If the activity produces large amounts of runoff or wastewater, this BMP will not be effective because contaminated water will overflow the sump or pass through the sump before collection and disposal are possible. A designated area must be paved and sloped to a drain connected to a central collection point. A sump, vault, or holding tank must be installed to capture the wastewater. Some materials, such as gasoline, can react with and cause deterioration of asphalt pavement. It is preferable for the area to be paved with Portland cement concrete. If the area is already paved with asphalt, an asphalt sealant should be applied to the pavement surface. Whatever material is used, the paved surface must be free of gaps and cracks.

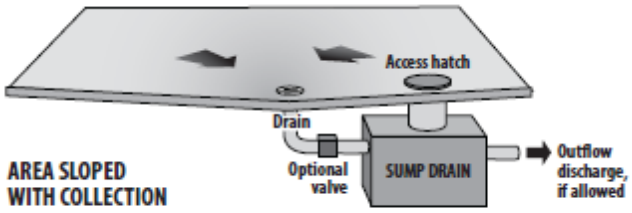
The sump or holding tank should have a large enough capacity to contain the entire volume of wastewater or potential spill generated by the activity. Depending on the circumstances, the sump or tank can be equipped with an outflow pipe to allow discharge of uncontaminated runoff to the storm drainage system, along with a shutoff valve to prevent outflows in the case of a spill. The local sewer authority may, in some instances, allow a connection to the sanitary sewer system.

The paved activity area must also be contained to prevent stormwater run-on and runoff. Curbs, dikes, or berms direct uncontaminated runoff away from the area so that only the precipitation falling within the activity area is discharged (and/or treated) along with the process water. See the Containment information sheet for more information.



The catch basin/tank/sump must have a two-way valve installed at the outflow pipe so that uncontaminated runoff can flow to the storm drainage system when the pollutant-generating activity is not occurring. The two-way valve must easily switch between discharges to the sanitary sewer, holding tank, or treatment facility, and discharges to the storm drainage system. When the activity is occurring, the two-way valve must be set so

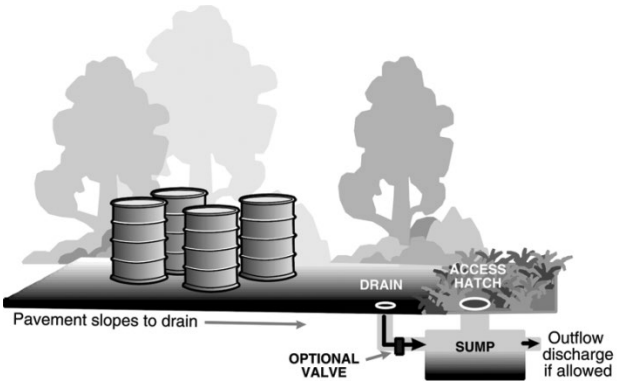
the polluted runoff discharges to the sanitary sewer, holding tank, or treatment system. After the pollutant-generating activity operation is finished and no more process water is generated, the area must be washed down so that the wash water discharges to the sanitary sewer, holding tank, or treatment facility. The two-way valve must be switched after clean-up is completed so that subsequent runoff is discharged to the storm drainage system until the activity resumes. It is critical this valve is always switched to the correct position. Just as contaminated stormwater cannot be discharged to the storm drain system, uncontaminated stormwater cannot be discharged to the sanitary sewer.



Approval for discharges with a two-way valve should be obtained from the King County Industrial Waste Program, the local sewer authority and King County Water and Land Resources Division, Water Quality Compliance Unit.

If discharges to the storm drainage system or sanitary sewer are not allowed, the sump or holding tank contents must be pumped out periodically and disposed of properly. This requirement can make this BMP costly, especially during the wet season. See the Disposal information sheet for disposal options. To keep disposal costs down, use a drain cover, plug, or shutoff valve in the pipe leading to the sump when the activity is not occurring. Before starting the activity (if the activity is intermittent), open the cover, plug, or valve.

Constructing a sump and disposing of accumulated contents can be expensive, so businesses should consider other BMP alternatives. Your local sewer agency may charge additional fees for a sanitary sewer hookup. The fees depend on location, quantity of discharge, and whether the hookup is for a business or residence. A King County industrial waste discharge permit may also be required.



Paved Area with Sump Drain

Several commercial services are available for pumping out sumps and holding tanks. Information on these services can be found on the King County Stormwater Services website at www.kingcounty.gov/stormwater and the Drainage Maintenance Contractors information sheet. Septage hauling contractors may not be used for this type of service.

Additional Information

Local Sewer Agency
The name and phone number are identified on your water and sewer bill.

King County Wastewater Division – Industrial Waste Program
(206) 263-3000
www.kingcounty.gov/environment/wastewater/IndustrialWaste

King County Business Waste Line
(206) 263-8899
www.hazwastehelp.org

King County Stormwater Services
(206) 477-4811
www.kingcounty.gov/stormwater

King County Surface Water Design Manual
www.kingcounty.gov/swdm

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

Covering

Covering potential pollutant-generating activities and materials is one of the most effective ways to prevent stormwater contamination. All of the options must be combined with a method to prevent run-on of stormwater into piles and runoff of any liquids that might leave the pile. See the Containment information sheet for more information.

The first step is reviewing what materials are stored outside and what activities are conducted outside that could cause pollutants to get on the ground.

1. Does the activity need to be conducted outside? Does the material need to be stored outside? Is there a suitable indoor location for these activities?
2. How often does the activity occur?
3. How often is the material used?
4. Can any of the material or equipment be removed if it is no longer needed?
5. Is it feasible to tarp materials or is a permanent structure needed?

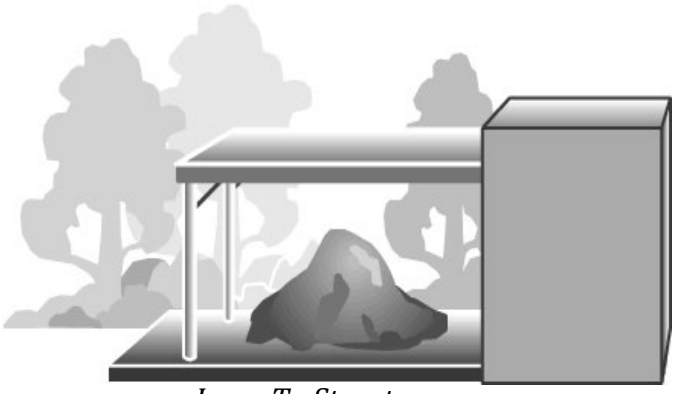
Tarps

Tarp

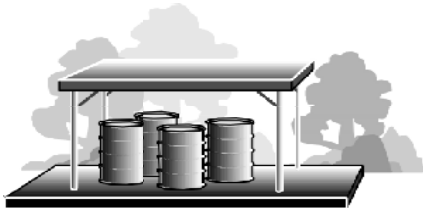
Many materials, such as stockpiles of erodible materials or storage of drums, can be by covered with a heavy plastic tarp made of impermeable material. Weights such as bricks, tires, or sandbags must be used to anchor the cover in place. Care should be taken to ensure that the tarp covers the stored materials completely and that stormwater does not penetrate the cover. If several tarps are used to form a cover, they should be tethered together or overlapped. If necessary, pins or stakes should be used to anchor the tarps to the ground. The tarp/cover will be easier to keep in place and will last longer if some form of wind protection is used or stockpiles are located in areas protected from the wind. The tarps must be in place when the material is not being used and inspected weekly to ensure that no holes or gaps are present.

Roofs & Awnings

The other option for covering is a roof. The roof cover option used depends on the site layout, available space, affordability, and limitations imposed by other regulations. The area of the roof should be sufficient to keep the contents underneath dry. The storage/activity area must be designed to prevent stormwater run-on into the covered area.



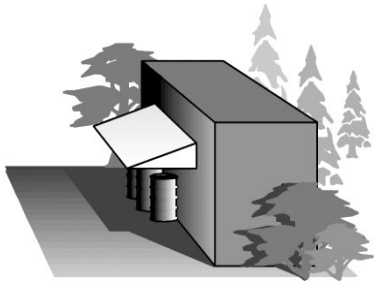
Lean-To Structure



Stand-Alone

Permanent structures may require a permit and must comply with all applicable building and fire codes. Contact the King County Department of Permitting and Environmental Review for information on permits and code requirements for a roof structure.

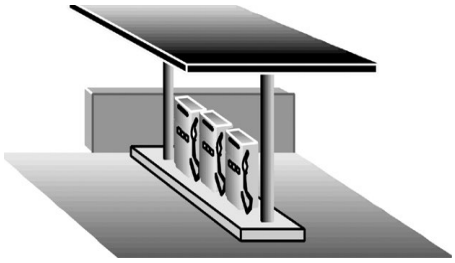
Another option for covering is to use an overhanging awning large enough to prevent precipitation from reaching the contents underneath. This does not include awnings already in place over a public right-of-way such as a sidewalk in front of a store, as this area is not suitable for storage or business activities. Many of the building permit, fire code, and zoning code requirements mentioned above apply to these structures.



Overhanging Awning

Storage Sheds

There are also numerous prefabricated storage sheds that may be effective. Before purchasing these structures, ensure they meet applicable building and fire codes.



Island-Type Overhanging Roof

Fueling Operations

Activities such as fueling operations must covered by an island-type roof. This roof is supported by columns along the center of the structure rather than at the corners, allowing vehicular traffic underneath while still providing protection from precipitation. Refer to BMP Activity Sheet A-17: Stationary Fueling Operations for requirements.

Additional Information

King County Department of Local Services, Permitting Division
Land Use, Fire Code, and Building Code Requirements
(206) 296-6600
www.kingcounty.gov/property/permits

King County Stormwater Services
(206) 477-4811
www.kingcounty.gov/stormwater

King County Surface Water Design Manual
www.kingcounty.gov/swdm

Disposal

All solid and liquid wastes and contaminated stormwater in King County must be disposed of properly. There are generally five options for disposal depending on the types and quantity of materials. These options are:

1. Sanitary sewer system
2. Septic system
3. Municipal solid waste disposal facilities
4. Recycling
5. Off-site waste transportation and disposal services.

Ordinary stormwater runoff is not considered to be contaminated, but stormwater that is mixed with concentrated wastes requires special disposal, as discussed below.

Discharge to Sanitary Sewer System

Wastewater generated by commercial and industrial processes (depending on the nature of the wastewater) may be put into the sanitary sewer, subject to approval by the local sewer authority and the King County Industrial Waste Program. It may be necessary to pretreat the wastewater in order to remove pollutants. Sewer fees may be collected on such discharges. The local sewer authority and King County must be contacted prior to the installation of any permanent connection to the sanitary sewer.

Process wastewater may be recycled on-site as an alternative to discharge to the sanitary sewer. There are numerous products on the market that are designed to recycle wash water.

It is not an option to discharge stormwater to the sanitary sewer in place of implementing adequate best management practices to prevent contamination.

Local Sewer Agency
Contact your local sewer agency for information on allowable discharges and the location of your side sewer. The name of your local sewer agency is identified on your water and sewer bill.

King County Wastewater Division – Industrial Waste Program
The Industrial Waste Program provides information on what can be discharged to the sanitary sewer. Industrial Waste can also assist with information regarding the rerouting of illicit storm water connections/discharges.
(206) 263-3000, www.kingcounty.gov/environment/wastewater/IndustrialWaste

Discharge to Septic System

If your site is not serviced by a sanitary sewer system, you probably have a septic system. Only waste that is comparable to residential sewage may be disposed of into septic systems. Hazardous chemicals and process wastewater cannot be disposed of into septic

systems. Furthermore, the septic system must be designed to accommodate the volume of wastewater generated. Any changes in waste volume and constituency from those which existed when the system was permitted must be approved by Public Health – Seattle & King County. Stormwater, whether contaminated or not, may not be disposed of in septic systems. Animal waste may not be disposed of in a septic system unless specifically designed for this purpose.

Public Health - Seattle & King County – Wastewater Program
Information regarding on-site sewage treatment systems (septic systems) is available for both property owners and septic system professionals.
(206) 296-4932, www.kingcounty.gov/healthservices/health/ehs/wastewater.aspx

Municipal Solid Waste Disposal Facilities

Municipal solid waste disposal facilities are designed to handle solid wastes. They do not accept liquid wastes. Hazardous and dangerous wastes and many liquid wastes must be properly transported and disposed of at an appropriate offsite facility. Contact your local solid waste disposal facility or contact King County Solid Waste Division to find out how to dispose of garbage and other materials.

King County Solid Waste Division
The Solid Waste Division (SWD) provides garbage transfer, disposal and recycling services for residents and businesses in all of King County, except for Seattle and Milton. SWD also provides household hazardous waste disposal options and recycling education programs for its residents.
(206) 477-4466, www.kingcounty.gov/solidwaste/index.asp

King County Business Waste Line
The Business Waste Line answers questions from small businesses on the proper disposal of oil, antifreeze, and other hazardous wastes. The Waste Line may also be used to report complaints and hazardous waste violations.
(206) 263-8899, www.hazwastehelp.org

Hazardous Waste Onsite Consultation Program
The Onsite Consultation Program provides free visits to businesses that request assistance with hazardous waste handling and waste reduction. Only small quantity generators of hazardous wastes (or businesses that are potentially small quantity generators) qualify for this service.
206-263-8899, www.hazwastehelp.org

Recycling

Recycling facilities are recommended for many commercial items, including used oils, used batteries, a variety of used auto parts, scrap metal, solvents, paints, and other solid wastes. There are a number of private businesses that accept materials for recycling. There is also an Industrial Material Exchange clearinghouse which facilitates the transfer of unwanted materials from the generator to another business that can use them.

King County Solid Waste Division – Workplace Recycling Program
This program assists businesses with recycling by: 1) providing information on waste reduction and recycling services for particular needs; 2) helping you work with your employees to promote participation; 3) offering information on buying recycled products; and 4) providing you with ongoing support to ensure your program is successful.
(206) 477-4466, http://your.kingcounty.gov/solidwaste/business/index.asp

Industrial Materials Exchange (IMEX)
IMEX provides a free service helping businesses with surplus materials to find businesses that need them. Surplus or waste materials, such as solvents, paint, plastics, and wood, are exchanged. The website lists materials available and materials wanted. IMEX is a component of the Hazardous Waste Management Program.
(206) 263-8465, www.lhwmp.org/home/IMEX/index.aspx

Offsite Waste Transportation and Disposal Services

Depending on the nature of the waste, it may not be possible to dispose of it in the sewer or municipal landfill. The Seattle-King County Department of Public Health's Waste Characterization Program serves hazardous waste generators in Seattle and King County. Information supplied by the generator on questionable wastes such as sludge, sandblast waste, treated wood, and contaminated soils is reviewed by the Health Department. Permits are issued for wastes that will be allowed in the garbage. The State of Washington's dangerous waste regulations as well as other criteria are used in the decision process.

Sumps, holding tanks or other temporary storage devices may be useful for storing relatively small volumes of liquid wastes on a temporary basis if you cannot discharge to a sanitary sewer or septic system. There are commercial services that can help you identify, quantify, transport, and dispose of any waste that you may generate. They can pump out your sump or holding tank and haul the waste to authorized disposal locations. These can be found in the yellow pages under the headings "Sewer Contractors and Cleaners" and "Tank Cleaning," or on the King County Stormwater Services website at www.kingcounty.gov/stormwater. Holding tanks must be pumped out or drained before the tank is full. Septic system pump out and hauling contractors may only dispose of domestic sewage and cannot haul industrial wastes.

Costs of disposal vary considerably depending on the types of materials, quantities, methods of collection and transport, and whether the wastes are mixed. The rate the contractor charges will generally reflect the costs of testing and/or treating waste materials (if necessary) and the subsequent disposal. It is important to keep different types of wastes separated, so that the disposal contractors can take them to the appropriate place without causing inadvertent contamination problems elsewhere, and so that you are not paying too much for disposal of materials that are not contaminated (e.g. regular garbage). It is essential to be familiar with disposal alternatives and the different types of contractors for each disposal option so that all wastes are disposed of properly.

The disposal of wastes is the responsibility of the generator. Before agreeing to let a company handle your waste, it is recommended that you check the company's references. All waste collected by the company should be delivered to an authorized site. Transfer of waste to a vendor does not release a generator from legal obligation for disposal to a licensed disposal facility. Generators of wastes to be hauled off-site should keep copies of all transactions, including waste manifests and receipts.

Public Health - Seattle & King County -- Waste Characterization
(206) 263-8528
www.kingcounty.gov/healthservices/health/ehs/toxic/SolidWaste.aspx

Washington State Department of Ecology Dangerous Waste TSD information
The Department of Ecology is the source of information on businesses that provide dangerous waste treatment, storage, and disposal (TSD) services, and information on applicable regulations for TSD businesses.
www.ecy.wa.gov/programs/hwtr/managewaste.html

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

Drainage Maintenance Contractors

The firms below perform drainage system cleaning and maintenance services. King County provides this list for your convenience but makes no recommendation whatsoever regarding these firms. **Property owners are encouraged to obtain at least three bids for each job, check references, and inspect the work that has been done to ensure the work has been completed as per County requirements.**

A-1 SERVICES, INC.
P.O. Box 84523
Seattle, WA 98134
Phone: 206-749-5700 or 1-800-343-8096
Fax: 1-800-659-3624

ACAIN'S PARKING LOT SERVICES
PO Box 1270
Maple Valley, WA 98038
425-890-1214-Troy 206-719-1509-Joey
Fax: 425-392-0694
cainspw@hotmail.com

ACTION SERVICES
PO Box 4339
Bremerton, WA 98310
Phone: 360-373-4265 or 1-800-697-1000
Fax: 360-373-9711
amy@getasc.com

ADVANCED ENVIRONMENTAL SOLUTIONS, INC.
8463 South 212th St.
Kent, WA 98031
Phone: 253-872-9363 or 1-800-275-3549
Fax: 253-872-0260
www.shopaes.com

APEX COMPANIES, LLC
Pacific NW Regional Offices:
10220 North Nevada, Suite 70
Spokane, WA 99218
Phone: 509-922-4973
Fax: 509-922-1783
www.apexcos.com

AQUA CLEAN JET-N-VAC
18912 SE 133rd Place
Renton, WA 98059
Phone: 425-271-5459 or
1-800-84-CLEAN
Fax: 425-227-9793
www.aquacleanjetnvac.com

BEST PARKING LOT CLEANING, INC.
P.O. Box 159
Sumner, WA 98390
Phone: 1-888-851-2378 or 1-800-310-7406
Emergency: 253-221-1018
Fax: 253-770-0724
www.bestparkinglot.com

BODINE CONSTRUCTION
6009 212th St. SW
Lynwood, WA 98036
Phone: 425-778-2557 Emergency: 206-510-5482
Fax: 425-672-2434
www.bodineconstruction.com

BRAVO ENVIRONMENTAL SERVICES
6437 S. 144th St.
Tukwila, WA 98168
Phone: 425-424-9000
Fax: 425-424-9002
www.bravoenvironmental.com

CATCHALL ENVIRONMENTAL
2522 North Proctor St., Suite 370
Tacoma, WA 98406
Phone: 253-572-0989
Cell: 253 279-5110
www.catchallenvironmental.com

CCS (COWLITZ CLEAN SWEEP)
55 International Way
Longview, WA 98632 (works in King County)
Phone: 888-423-6316
Fax: 360-423-3409
www.pnecorp.com

CERTIFIED CLEANING SERVICES, INC.
2103 East 112th St.
Tacoma, WA 98445
Phone: 253-536-5500 or 1-800-290-3008
Fax: 253-536-5900
www.certifiedcleaning.com

CLEAN HARBORS ENVIRONMENTAL SERVICES
26328 79th Ave. South
Kent, WA 98032
Phone: 253-639-4240
Fax: 253-639-4249
www.cleanharbors.com

CS DRAINAGE SYSTEMS CLEANING
PO Box 46876
Seattle, WA 98146
Phone: 206-242-7280
Fax: 206-257-1529
drainagesystems@gmail.com

DAVIDSON MACRI INC.
12020 SE 32nd St., Suite 4
Bellevue, WA 98005
Phone: 425-289-1145 or 1-866-457-9337
Fax: 425-289-1146
www.davidsonmacri.com

DeANGELO BROTHERS INC
13122 NE David Circle
Portland, OR 97230
Phone: 503-542-0906
Fax: 503-542-0908
www.dbiservices.com

DRAIN PRO
5111 85th Ave. East, C-2
Puyallup, WA 98371
Phone: 253-255-5663
Fax: 253-926-5555
www.drainproinc.com

DRAIN PRO PLUMBING, INC.
9620 South 242nd Court
Kent, WA 98030
Phone: 253-236-5000
Fax: 253-277-0794

EMERALD SERVICES
7343 East Marginal Way South
Seattle, WA 98108
Phone: 206-832-3000 or 206-832-3052
Fax: 206-832-3030
www.emeraldservices.com

ENVIRONMENTAL QUALITY MANAGEMENT
6825 216th St SW
Lynnwood, WA 98036
Phone: 425-673-2900
Fax: 425-673-7511

EVERGREEN SANITATION AKA COASTAL ENVIRONMENTAL
P.O. Box 259
Lake Stevens, WA 98258
Phone: 206-622-7070 or 1-800-433-1678
www.evergreensanitation.com

EVERSON'S ECONOVAC
P.O. Box 428
Sumner, WA 98390
Phone: 253-848-5250
Fax: 253-848-5363
www.eversons-econovac.com

FISCHER PLUMBING
1115 NW 51st St.
Seattle, WA 98107
Phone: 206-337-2141
Fax: 206-784-4924
www.fischerplumbing.com

GUARDIAN INDUSTRIAL SERVICES, INC.
1813 99th St. East
Tacoma, WA 98445
Phone: 253-536-0455
Fax: 253-536-3072
www.guardianindustrial.net

INNOVAC
20909 70th Ave. West
Edmonds, WA 98026
Phone: 206-783-3317 or 1-800-945-4081
Fax: 206-783-9109
www.innovac.com

JIM DANDY SEWER & PLUMBING
1501 NW 46th St.
SEATTLE WA 98107
Phone: 206-633-1141 or 425-454-8153
Fax: 206-784-2095
www.jimdandysewer.com

LAVELL VAC & DRAINAGE
P.O. Box 3028
Federal Way, WA 98063
Phone: 253-815-0988
Fax: 253-815-0325
office@lavellvac.com

MARINE VACUUM SERVICE, INC.
PO Box 24263
Seattle, WA 98124
Phone: 206-762-0240 or 1-800-540-7491
Fax: 206-763-8084
www.marinevacuum.com

MARSHALL BROTHERS VACUUM SERVICE
4004 103rd Ave. SE
Lake Stevens, WA 98258
Phone: 425-377-9820
Fax: 425-377-9830

MASTER VAC
PO Box 440
Kapowsin, WA 983454
Phone: 253-875-0074
Fax: 360-893-1091
Emergency: 253-377-3007
www.rickysstormdraincleaning.com

McDONOUGH& SONS, INC.
27218 SE Kent Kangley Rd.
Ravensdale, WA 98051
Phone: 425-432-1054
www.msisweep.com

NORTHWEST CASCADE, INC.
P.O. Box 73399
Puyallup, WA 98373
Phone: 253-838-2359 or
1-800-562-4442
www.nwcascade.com

NORTHWEST NATIVES, INC.
P.O. Box 52985
Bellevue, WA 98015
Phone: 206-271-2776
Fax: 425-222-4843
www.nwnatives.com

NORTHWEST STORMWATER MANAGEMENT
1621 Central Ave. South
Kent, WA 98032
Phone: 206-480-2072 - South End
Phone: 206-851-4869 - Seattle
Fax: 253-480-2073
www.nwstormwater.com

NRC ENVIRONMENTAL SERVICES
9520 10th Ave. South Suite 150
Seattle, WA 98108
Phone 1-800-337-7455 or 206-607-3000
Fax: 206-607-3001
www.nrces.com

OLSON BROTHERS PRO-VAC
6622 112th St East
Puyallup, WA 98373
Phone: 253-435-4328
Fax: 253-435-5788
Cell: 253-606-4212
dean@pro-vac.com

PACIFIC CONCRETE SERVICES (PCS)
26220 79th Ave. South
Kent, WA 98032
Phone: 253-856-2572
Fax: 253-859-5087
www.pcsjac.com

PIPELINE VIDEO & CLEANING NORTH
2212 Port of Tacoma Rd.
Tacoma, WA 98421
Phone: 253-661-0828
Fax: 253-952-7465

PRO-VAC CLEAN SERVICE
6622 112th St. East
Puyallup, WA 98373
Phone: 253-435-4328 or 1-888-565-5665
Fax: 253-435-5788
www.pro-vac.com

PSC ENVIRONMENTAL SERVICES
18000 72nd Ave. South
Kent, WA 98032
Phone: 1-800-882-9785 or 425-227-0311
Emergency: 1-877-577-2669
Fax: 425-204-7164
www.pscnow.com

RELIAKOR SERVICES
4008 132nd Pl. NE Suite 502
Marysville, WA 98271
Phone: 425-487-6313
Fax: 425-487-6413
www.reliakor.com

RESCUE ROOTER
175A Roy Rd. SW, Suite 101
Pacific, WA 98047
Phone: 253-872-6970
Fax: 253-872-2390
www.rescuerooter.com

SAFETY KLEEN
3102 B St NW
Auburn, WA 98001
Phone: 253-561-8270
Fax: 253-939-5051
www.safety-kleen.com

SEATTLE DRAIN SERVICE
1820 North 48th St.
Seattle, WA 98103
Phone: 206-632-8069
www.seattledrainservice.com

THERMO FLUIDS, INC.
14221 29th St. East, Suite 101
Sumner, WA 98390
Phone: 253-863-3310
Fax: 253-863-3490
www.thermofluids.com

TIGER CONSTRUCTION AND EXCAVATION
12201 Avondale Rd. NE
Redmond, WA 98052
Phone: 425-558-4437
Fax: 425-869-2633
david@tigerexcavation.com
jill@tigerexcavation.com

VENTILATION POWER CLEANING
3914 Leary Way NW
Seattle, WA 98107
Phone: 1-800-347-3509 or 206-634-2750
Fax: 206-634-2753
www.ventilationpower.com

WHIRLWIND SERVICES, INC.
6801 – 216th St SW
Mountlake Terrace, WA 98043
Phone: 425-697-4373 or 1-800-800-2935
www.whirlwindservices.com

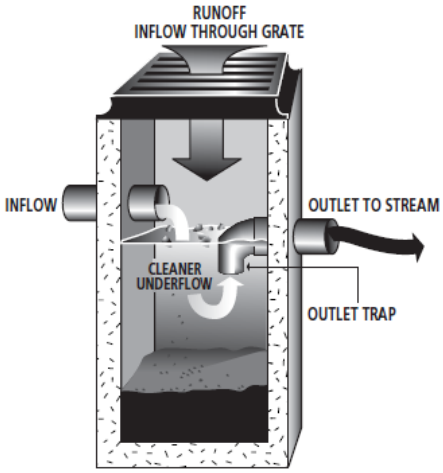
SoundEarth Strategies Construction, LLC
2811 Fairview Ave East, Suite 2000
Seattle, Washington 98102
Phone: 206-306-1900
Mobile: 206-462-0380

Visit King County Stormwater Services Drainage System Maintenance Contractors webpage, https://kingcounty.gov/services/environment/water-and-land/stormwater/problem-investigation-line/drainage_maint_vendors.aspx for the most current list of drainage maintenance contractors.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

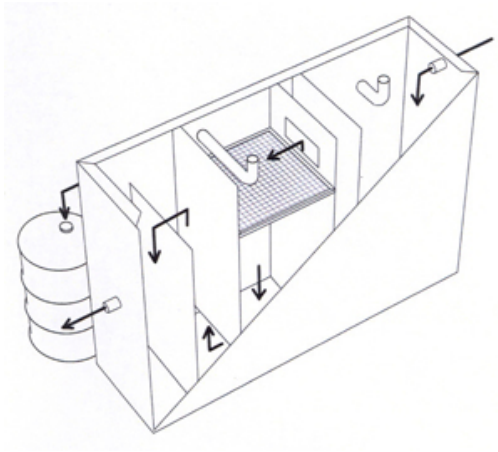
Oil/Water Separator

APPLICATION AND DESCRIPTION



An oil/water separator is a device designed to remove oil, grease, and similar floatable pollutants from stormwater runoff. The name commonly refers to an underground structure; however, more simple designs exist.

Oil/water separators are appropriate at locations where petroleum products may be difficult to control with source-control BMPs. An oil/water separator can be a tee section in a catch basin that contains spills on an emergency basis, or a complex unit that is designed to treat runoff from sites.



For many sites, such as small parking lots, a simple down-turned elbow in a catch basin will temporarily contain pollutants, so they can be cleaned up a before leaving the site. If tee sections are used or installed in catch basins, other measures must be used such as oil absorbent pads or booms. On-sites with greater potential for oil spills and high concentrations of oil and grease in runoff, such as fleet vehicle lots, auto repair shops, or fueling stations, a more complex oil/water separator is needed. Spills must always be cleaned up immediately to avoid downstream contamination. There are two types of complex oil/water separators commonly used in situations where oily runoff is a concern: the American Petroleum Institute (API) separator and the coalescing plate interceptor (CPI). The API separator has the appearance of a long septic tank and must be sized relative to the area it is treating. By placing coalescing plates in the separator, its size can be significantly reduced while retaining the efficiency needed. Consequently, the CPI separator is more commonly used. The savings from reducing the cost of vault construction offset the relatively high cost of the plates.

These oil/water separators should be used for targeted pollutant removal in high traffic areas where oil or petroleum products are a significant problem rather than as an all-purpose stormwater treatment facility. The separator will function more efficiently and require less maintenance if the amount of stormwater passing through is limited. Only runoff that has been exposed to high oil activity areas should be directed through the oil/water separator. Avoid directing stormwater (from other areas on your site) through the separator.

For information on oil/water separators that will be used as pretreatment prior to discharge to the sanitary sewer, contact your local sewer agency or King County's Industrial Waste Program within the Wastewater Treatment Division.

DESIGN AND MAINTENANCE

API and CPI oil/water separators must be designed and sized in accordance with the *King County Surface Water Design Manual*. Oil/water separators must be checked frequently during the wet season. These inspections must occur often enough to prevent BMP failure that allows waste products to exit the oil/water separators. Violations can be cited under King County Code 9.12. How often material should be removed depends on the amount of petroleum in the influent, but the separator should be cleaned at least quarterly, and particularly in the fall before the first storm of the wet season. In addition, the following maintenance requirements apply:

- Remove all sediments from the unit or catch basin if greater than six inches in depth, or if within six inches of the outlet pipe. Sediments should be tested and disposed of properly.
- Oil absorbent pads should be replaced as needed, but should always be replaced in the fall prior to the wet season, and in the spring. Collect used pads in a covered container for oil recovery and recycling by a vendor.
- Use a vendor to clean out the oil/water separator and take any oil and residuals to an approved offsite location for disposal and/or recycling.
- The outlet pipe of the separator must be blocked during cleaning operations.
- Any standing water removed during the maintenance operation must be disposed to a sanitary sewer at a discharge location approved by the local jurisdiction.

Additional Information

Local Sewer Agency
The name and phone number are identified on your water and sewer bill.

King County Wastewater Division – Industrial Waste Program
(206) 263-3000
www.kingcounty.gov/environment/wastewater/IndustrialWaste

King County Business Waste Line
(206) 263-8899
www.hazwastehelp.org

King County Surface Water Design Manual
www.kingcounty.gov/swdm

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

Spill Response and Cleanup Plan

It is critical to have your employees trained, and have a plan and supplies in place to address spills that might occur on or near your property. A spill plan identifies the materials of concern and outlines the steps to be taken when responding to a spill. Plans are customized to each site and can be prepared in-house or by consultants. A template for a sample spill plan follows. There are numerous resources and templates for spill prevention and clean-up plans that can be found online.

The nature of the business, the type and amount of liquid materials transferred and stored on-site, and the potential for spills will dictate the scope and detail of a spill plan. It is critical that the plan be kept up to date to reflect personnel and procedural changes and to have a regular, ongoing review of the plan by all affected employees.

Spill plans should include the following elements:

- Identification of materials of concern
- Spill prevention methods (if you don't have a site pollution prevention plan)
- Likely areas for spill or leaks to occur
- Site plan that identifies the locations of liquid material storage and spill control equipment
- Spill control techniques
- Evacuation procedures (if necessary)
- Cleanup procedures
- Designated responsible employees
- Spill reporting protocols
- Emergency contact numbers

Even if unsure whether a spill presents a threat to human health, welfare, or the environment, go ahead and report it. This will ensure that you have complied with state and federal spill reporting laws. The sooner the agencies know about an incident, the quicker they can deploy resources and assistance to reduce damage to the environment and protect natural resources.

A downloadable version of the spill response and clean-up plan is available at www.kingcounty.gov/stormwater

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

SPILL RESPONSE AND CLEANUP PLAN

Company Name	Date
Site Address	Runoff Drains to

FACILITY ACTIVITIES (Check all that apply)

- ❑ Fueling & fuel transfer
- ❑ Outdoor manufacturing
- ❑ Outside drum or container storage
- ❑ Vehicle, equipment & building washing
- ❑ Loading/unloading of products
- ❑ Landscape construction/maintenance
- ❑ Outside storage of uncovered materials
- ❑ Other:

LIQUIDS STORED ONSITE (Check all that apply)

Cleaning Products

- ❑ Bleach
- ❑ Drain cleaners
- ❑ Sanitizers
- ❑ Soaps
- ❑ Other

Solvents & Paints

- ❑ Solvents, degreasers
- ❑ Paint thinner, turpentine
- ❑ Paints, coatings, sealers
- ❑ Preservatives
- ❑ Other liquids

Petrochemicals

- ❑ Antifreeze
- ❑ Brake and transmission fluid
- ❑ Gasoline
- ❑ Oil (motor, cutting)
- ❑ Hydraulic fluids

Food Preparation/Waste

- ❑ Cooking Oil
- ❑ Grease
- ❑ Other liquids

Acids, Bases, Chemicals

- ❑ Acid
- ❑ Ammonia
- ❑ Caustic, base, lye
- ❑ Photographic chemicals

Other

- ❑ Fertilizers
- ❑ Inks, dyes
- ❑ Other liquids
- ❑ Pesticides, herbicides

SPILL RESPONSE AND CLEANUP PLAN, CONTINUED		
CONTACTS		
Title	**Name**	**Phone Numbers**
Site Manager		
Environmental Officer		
Onsite Spill Cleanup Coordinator		
Backup Spill Cleanup Coordinator		
Business Owner		
Cleanup Contractor		
Potential Spill Areas (list all locations)		
Spill Material & Spill Kit Locations (list all locations)		
Attach a Site Plan		

SPILL RESPONSE AND CLEANUP PLAN, CONTINUED

ADDITIONAL INFORMATION

Provide a description of any additional emergency cleanup and disposal procedures not listed above that you will use at your site, or any other special conditions that exist:

SPILL RESPONSE AND CLEANUP PLAN, CONTINUED

SPILL REPORTING

Stop, contain, and clean up the chemical spill if:

- ❑ The spilled chemical and its hazardous properties have been identified;
- ❑ The spill is small and easily contained; and
- ❑ The responder is aware of the chemical's hazardous properties.

Spill clean up

- ❑ Alert the manager/owner of property where the spill has occurred.
- ❑ Obtain personal protective equipment, as appropriate to the hazards. Refer to the Material Safety Data Sheet or other references for information.
- ❑ Stop the source of the spill (upright container, plug leak, etc.).
- ❑ Seal off storm drains with berms or drain covers and stop any spread of the spill.
- ❑ Protect floor drains or other means for environmental release. Spill socks and absorbents may be placed around drains, as needed.
- ❑ Use pads and/or granular sorbent to clean up spilled material. Loose spill-control material should be distributed over the entire spill area, working from the outside, circling to the inside. When spilled materials have been absorbed, use brush and scoop to place materials in an appropriate container.
- ❑ Let pads sit on spill to absorb spilled material.
- ❑ Remove spent pads and/or sorbent and dispose of properly.

If a spill or release cannot be controlled or injuries have occurred due to the release the following procedures should be implemented:

- ❑ Summon help or alert others of the release;
- ❑ Evacuate the immediate area and provide care to the injured – Call 911;
- ❑ If potential fire or explosion hazards exist, initiate evacuation procedures – Call 911;
- ❑ Respond defensively to any uncontrolled spills:
- ❑ Use appropriate personal protective equipment when responding to any spill;
- ❑ Attempt to shut off the source of the release (if safe to do so);
- ❑ Eliminate sources of ignition (if safe to do so);
- ❑ Protect drains by use of adsorbent, booms or drain covers (if safe to do so).
- ❑ Notify the onsite emergency contacts;
- ❑ Notify other trained staff and/or emergency response contractors to assist with the spill response and cleanup activities;
- ❑ Be prepared to provide MSDS information to the fire department, EMT, hospital or physician;
- ❑ Notify the appropriate agency if a release has entered the environment. Refer to the Spill Reporting Table for reporting thresholds.

SPILL RESPONSE AND CLEANUP PLAN, CONTINUED

SPILL REPORTING

A spill of hazardous material, oil, or other substance, unless there is no chance it will leak out of the building, get into a storm or sewer drain or endanger people.	**Ecology Northwest Regional Office:** 206-594-0000	Immediately, but no later than 24-hours after obtaining the knowledge.
A spill or discharge which could constitute a threat to human health, welfare, or the environment.	**Ecology Northwest Regional Office:** 206-594-0000 AND **911**	Immediately, but no later than 24-hours after obtaining the knowledge.
A spill or discharge of oil or hazardous substances which presents a threat to human or health, welfare, or the environment.	**National Response Center:** 1-800-424-8802 AND **Washington Emergency Management Division:** 1-800-258-5990 OR 1-800-OILS911 AND **Ecology Northwest Regional Office:** 206-594-0000 AND **911**	Immediately
A spill or discharge which might cause bacterial contamination of shellfish.	**WA State Department of Health:** 360-236–3330 AND **Ecology Northwest Regional Office:** 206-594-0000	Immediately
All spills to the storm drain system, including catch basins and drainage ditches, as well as streams, lakes, etc.	**King County Stormwater Services:** 206-477-4811	Immediately

To the best of your ability, please be ready with the following information:

- ❑ Where is the spill?
- ❑ What spilled?
- ❑ How much spilled?
- ❑ How concentrated is the spilled material?
- ❑ Who spilled the material? Is anyone cleaning up the spill?
- ❑ Are there resource damages (e.g. dead fish or oiled birds)?
- ❑ Who is reporting the spill?
- ❑ How can we get back to you?

Water Quality Treatment BMPs

Water quality treatment BMP options may be required if operational or basic structural source controls do not adequately address pollutant discharges from your site. Source control BMPs, as presented in Chapter Three, must always be implemented before treatment BMPs are considered.

The following information describes some basics of water quality treatment systems/facilities. Design and construction details can be found in the *King County Surface Water Design Manual* (which contains relevant information for the treatment BMPs discussed). A private vendor specializing in the treatment system or an engineering consultant can also provide information on treatment systems. All of these systems require regular inspection and maintenance in order to function properly.

Businesses and agencies are allowed to select a treatment BMP other than those presented in this manual if they follow the adjustment process as outlined in the *King County Surface Water Design Manual* and obtain approval from the King County Water Quality Compliance Unit.

The first table presents a brief description of some typical water quality treatment BMPs. The second table presents water quality treatment BMPs for removing specified pollutants. One treatment BMP usually cannot treat all pollutant problems. Each BMP is designed for a specific purpose and is capable of removing only specified pollutants. If you decide to install a water quality treatment BMP, always ensure that it is removing the pollutant of concern from your site runoff.

For more information or assistance contact the King County Stormwater Services at 206–477–4811 and visit kingcounty.gov/stormwater.

WATER QUALITY TREATMENT BMPs	
TREATMENT BMP	**BRIEF DESCRIPTION**
Oil/Water Separator	An underground vault specifically designed to remove oil and grease. Also, will remove floatable and some settleable solids.
Catch Basin Insert	A filtering device that is installed within an existing catch basin and uses various sorbent materials and settling space to collect pollutants.
Catch Basin Sump and Vault Filter	A device similar to catch basin inserts, only larger and placed underground.
Leaf Compost Filters	A filtering device that is installed above or below ground and uses leaf compost to remove pollutants from stormwater.
Wet Pond, Constructed Wetland, Wet Vault	A wet pond is a stormwater pond that retains a permanent pool of water. A constructed wetland is similar to a wet pond, but shallower and supporting wetland vegetation in large areas. A wet vault is an underground, covered, engineered structure that retains a permanent pool of water.
Vegetated Biofilter - Biofiltration Swale and Filter Strip	A biofiltration swale is a long, gently sloped ditch or depression Designed to treat water as it passes through the vegetation. Grass is the most common vegetation. A filter strip is a grass area, wider than biofilters, also with gentle slopes. Water usually enters as sheet flow from the adjacent pavement.
Sand Filter	A structure placed in the landscape, with grass grown on top, or in vaults. Stormwater passes through the sand allowing particulate pollutants to be filtered out.
Infiltration	A normally dry basin which temporarily stores stormwater until it soaks through the bottom and sides of the basin, and infiltrates into surrounding soil.
Chemical Treatment	See the King County Design Manual for allowable chemical treatment including chitosan and alum and CO_2 sparging.

APPROPRIATE USES FOR WATER QUALITY TREATMENT BMPs	
POLLUTANTS TO REMOVE	**APPROPRIATE TREATMENT BMPs**
Oil/Grease Sources: vehicle and equipment areas, industrial areas, food preparation	Oil/water separators; catch basin inserts; catch basin sump/vault filters, leaf compost filters.
Sediments/Solids Sources: sand/gravel storage, construction sites, unpaved areas, agriculture/livestock uses	For coarse sediments -Wet pond/vault; constructed wetland (with forebay); vegetated biofilter; sand filter; catch basin insert; catch basin sump/vault filters; leaf compost filters. For fine sediments -Wet pond/vault; constructed wetland (with forebay); vegetated biofilter; sand filter. Also see catch basin sump/vault filters, chemical treatment
Phosphorus Compounds Sources: detergents/cleaners, fertilizers, organic matter, animal wastes	For particulate phosphorus -Wet pond/vault; constructed wetland (with forebay); vegetated biofilter; sand filter. If dissolved phosphorus must also be removed - a large "oversized" wet pond or sand filter.
Nitrogen Compounds Sources: fertilizers, animal wastes, organic matter	For particulate nitrate -Wet pond/vault; constructed wetland (with forebay); vegetated biofilter; sand filter. For dissolved nitrate - constructed wetland.
Metals Sources: industrial areas, vehicle and equipment areas, paints, pesticides	For particulate metals -Wet pond/vault; constructed wetland (with sediment forebay); vegetated biofilter; sand filter. For dissolved metals - leaf compost filter or constructed wetland.
Fecal Coliform Bacteria Sources: animal wastes; fertilizers	There is no treatment BMP that can reliably reduce fecal coliform bacteria to acceptable levels. Some studies have shown constructed wetlands provide some benefit.
pH Sources: metal plating, printing/graphic industries, cement/concrete production, cleaners	A constructed wetland can neutralize some ranges of pH.
BOD and Trace Organics Sources: organic debris, food wastes, some chemical wastes	For particulate BOD - see "particulate nitrate" above. For dissolved BOD -A constructed wetland will remove some dissolved BOD and trace organics; more reliable performance requires activated carbon.

6.0 TECHNICAL ASSISTANCE

There is a variety of local and regional programs as well as state and federal agencies that can offer technical assistance in selecting and implementing BMPs. Many local governments as well as private sector associations are available to provide suggestions and guidance regarding the most effective and appropriate measures to take in order to protect King County's valuable water resources. This section provides names, contact information, and brief descriptions of several sources of information and assistance available to the businesses and residents of unincorporated King County.

In addition to the personal assistance offered by many organizations and programs, there is also a broad range of written materials available to help businesses and residents select, design, and understand applicable BMPs for water quality protection. This section provides information that can help in the formation of pollution prevention strategies to protect King County's water quality.

6.1 General BMP Selection

King County Water and Land Resources Division
The Water and Land Resources Division has staff available to provide free on-site consultations to businesses and residents for assistance in implementing the water quality BMPs in this manual. For information, or to request an on-site consultation, contact:

King County Water and Land Resources Division
201 South Jackson, Suite 5600
Seattle, WA 98104
206-477-4811
www.kingcounty.gov/stormwater

Stormwater Management Manual for Western Washington
The Department of Ecology developed this manual as a model for local governments. It contains requirements for stormwater management system design, erosion control, and urban best management practices. Volume IV discusses source control. To obtain a copy of the manual, go to:

https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/2019SWMMWW.htm

Trade/Business Associations
Local trade or business associations can be valuable sources of information for specific BMP applications on a business property. Many trade and business associations have developed pollution prevention information for the benefit of their members that is unique to their specific types of operations. Contact the appropriate trade or business

association to obtain information, BMP assistance, and help in locating other businesses that are working out similar problems.

6.2 Sanitary Sewer and Septic Systems Resources

Local Sewer Agency
Contact your local sewer agency for information on allowable discharges and location of your side sewer. The name of your local sewer agency is identified on your water and sewer bill.

Public Health Seattle King County – Wastewater Program
Information and regulation on on-site sewage treatment systems (septic systems) are available for both property owners and on-site system professionals.

Eastgate Environmental Health Services
14350 SE Eastgate Way
Bellevue, WA 98007
206-296-4932
www.kingcounty.gov/healthservices/health/ehs/wastewater.aspx

King County Wastewater Division – Industrial Waste Program
The Industrial Waste Program provides information on what can be discharged to the sanitary sewer. Industrial Waste can also assist with information for rerouting illicit storm sewer connections to the sanitary sewer.

King County Industrial Waste Program
201 S. Jackson St, Suite 500
Seattle, WA 98104
206-477-5300
www.kingcounty.gov/environment/wastewater/IndustrialWaste

6.3 Waste Management and Recycling

King County Solid Waste Division
The Solid Waste Division (SWD) provides garbage transfer, disposal and recycling services for residents and businesses in all of King County, except for Seattle and Milton. SWD also provides household hazardous waste disposal options and recycling education programs for its residents.

King County Solid Waste Division
201 S. Jackson St, Suite 5701
Seattle, WA 98104
206-477-4466
www.kingcounty.gov/solidwaste/

King County Business Waste Line
The Business Waste Line answers questions from small businesses about hazardous waste. The Waste Line may also be used to report complaints and hazardous waste violations.

Business Waste Line: 206-263-8899
www.kingcountyhazwastewa.gov

Hazardous Waste Onsite Consultation Program
The Onsite Consultation Program provides free visits to businesses that request assistance with hazardous waste handling and waste reduction. Only small quantity waste generators or businesses that are potential small quantity waste generators qualify for this service.

King County Hazardous Waste Management Program
201 S. Jackson St, Suite 5600
Seattle, WA 98104
206-296-4692
www.kingcountyhazwastewa.gov/business-disposal

The Household Hazards Line (Household Hazardous Waste)
This telephone hot line provides hazardous waste information and referrals to the general public. (Businesses should call the Business Waste Line, also listed in this Reference Guide.) The Hazards Line tells citizens where to dispose of their hazardous waste and suggests less hazardous alternatives. It also provides operations times and locations for household disposal sites for King County and the City of Seattle.

Hazards Line: 206-296-4692
www.hazwastehelp.org

King County Solid Waste Division – Workplace Recycling Program
This program assists businesses with recycling by: 1) providing information on waste reduction and recycling services for particular needs; 2) helping you work with your employees to promote participation; 3) offering information on buying recycled products; and 4) providing you with ongoing support to ensure your program is successful.

Workplace Recycling
King County Solid Waste Division
201 S. Jackson St, Suite 5701
Seattle, WA 98104
206-477-4466
www.kingcounty.gov/solidwaste/business/index.asp

Seattle – King County Department of Public Health Waste Characterization

This program serves businesses in Seattle and King County that have questionable wastes such as sludge, sandblast waste, treated wood, and contaminated soils. Waste characterization staff assists generators with profiling their waste and determining if the waste can be disposed of in the garbage. For some wastes staff will be able to provide other options such as treatment, recycling, or reuse. The Health Department issues authorizations for proper disposal.

King County Department of Public Health Waste Characterization
206-263-8528
www.kingcounty.gov/healthservices/health/ehs/toxic/SolidWaste.aspx

Industrial Materials Exchange (IMEX)
IMEX provides a free service helping businesses that have surplus materials find businesses that need them. Surplus or waste materials, such as solvents, paint, plastics, and wood, are exchanged. The website lists materials available and materials wanted. IMEX is a component of the Hazardous Waste Management Program.

IMEX
201 S. Jackson St, Suite 5600
Seattle, WA 98104
206-296-4692 or imex@kingcounty.gov
www.kingcountyhazwastewa.gov/en/business-disposal/imex

Washington State Department of Ecology
The Department of Ecology has extensive information on managing and reducing waste, hazardous waste and toxics reduction, and pollution prevention.

Waste and Toxics: www.ecy.wa.gov/waste.html
What you can do: www.ecy.wa.gov/green.html

Washington State Department of Ecology Dangerous Waste TSD
The Department of Ecology is the source of information on businesses that provide dangerous waste treatment, storage, and disposal (TSD) services, and information on applicable regulations for TSD businesses.

www.ecy.wa.gov/waste.html

Washington Toxics Coalition
The Washington Toxics Coalition is a nonprofit organization dedicated to providing information on reducing the use and production of toxic materials. The Coalition offers fact sheets, research materials, and personal assistance to individuals interested in reducing toxics (such as pesticides, solvents, cleaning chemicals, and a variety of other chemicals) and finding safer alternatives to toxic materials.

Washington Toxics Coalition
4516 University Way NE

Seattle, WA 98105
206-632-1545
www.watoxics.org

6.4 Land Use, Fire Code, and Building Code Requirements

King County Department of Local Services
The Department of Local Services Permitting Division (Permitting) should be consulted to determine whether any permits may be required in constructing BMPs, modifying property layout, or otherwise altering a site to control runoff contamination. If permit requirements are overlooked or ignored, business or property owners may be subject to fines. should be contacted while plans are being formed for BMPs, and before any action is taken, to determine permit applicability and potential fees.

King County Local Services Permitting Division
35030 SE Douglas St., Suite 210
Snoqualmie, WA 98065-9266
206-296-6600
www.kingcounty.gov/property/permits.aspx

King County Fire Marshal
Questions on specific fire code requirements for individual site conditions and potential BMP scenarios can be directed to the King County Fire Marshal's office.

King County Fire Marshal
35050 SE Douglas St., Ste. 210
Snoqualmie, WA 98065-9266
206-296-6600
www.kingcounty.gov/fire

King County Critical Area Ordinance User's Manual
King County has enacted a Critical Areas Ordinance (CAO) to define and protect certain land and water features throughout the county. The Environmental Education Section of King County's Department of Local Services Permitting Division (Permitting) prepared a CAO User's Manual that serves as a reference for the CAO in an easy-to-understand format. The CAO User's Manual can help determine special considerations that may be necessary for implementation of BMPs within or near a designated sensitive area. To obtain a copy of the manual, go to:
www.kingcounty.gov/property/permits/codes/CAO.aspx#manual

6.5 Erosion Control Practices

King County Surface Water Design Manual

This manual contains the requirements and standards for designing surface and stormwater management systems in King County. It also includes a chapter on erosion and sediment control requirements for permitted sites.
To obtain a copy of the manual, go to:

www.kingcounty.gov/swdm

Stormwater Management Manual for Western Washington, Volume II
The Department of Ecology developed this manual as a model for local governments. It contains requirements for stormwater management system design, erosion control, and urban best management practices. Volume II discusses erosion and sediment control.
To obtain a copy of the manual, go to:

https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/2019SWMMWW.htm

Master Builders Association of King and Snohomish Counties
This is a business association primarily for residential construction companies. Members have experience in applying erosion and sediment control BMPs on both small and large sites. The association can provide references on erosion and sediment control products for use on construction sites as well as material suppliers who carry erosion and sediment control products.

Master Builders Association of King and Snohomish Counties
335 116th Ave SE
Bellevue, WA 98004
425-451-7920
www.mba-ks.com/

Associated General Contractors
This association provides information and training on erosion and sediment control for contractors and field staff. The Association also provides resources in the areas of waste disposal and erosion/sediment control. It provides information on recommended water quality protection methods for contractors who maintain equipment yards or are involved in building construction or site preparation activities, such as clearing and grading.

Associated General Contractors of Washington
1200 Westlake Avenue North, Suite 310
Seattle, WA 98109
206-284-0061
www.agcwa.com/

6.6 Air Quality

Puget Sound Clean Air Agency

The Puget Sound Clean Air Agency is the primary entity responsible for regulating air pollution from business and industrial activities in King, Kitsap, Pierce, and Snohomish counties. The agency issues air operating permits.

Puget Sound Clean Air Agency
1904 Third Avenue - Suite 105
Seattle, WA 98101
206-343-8800
www.pscleanair.org

6.7 Environmental Organizations

Environmental Coalition of South Seattle (ECOSS)
ECOSS is a nonprofit organization that encourages urban redevelopment and a healthy environment by providing education, resources and technical assistance to diverse businesses and communities in the Puget Sound region. ECOSS helps business with environmentally sustainable practices.

ECOSS
8201 10th Ave S, #3
Seattle, WA 98108
206-767-0432
www.ecoss.org

Pacific Northwest Pollution Prevention Resource Center
The Pacific Northwest Pollution Prevention Resource Center (PPRC) is a nonprofit organization that provides pollution prevention information to business, government, non-government organizations, and other sectors.

Pacific Northwest Pollution Prevention Resource Center
13751 Lake City Way NE, Suite 305
Seattle, WA 98125
206-352-2050
www.pprc.org/

Puget Sound Starts Here
Puget Sound Starts Here is a partnership of cities, counties, state and federal agencies, nonprofit groups, and local organizations dedicated to improving water quality and aquatic habitat in the Puget Sound region. Visit the website to find out how you can protect Puget Sound as a resident.

www.pugetsoundstartshere.org

6.8 Quick Phone References

Associated General Contractors 206-284-0061

Environmental Coalition of South Seattle 206-767-0432

King Conservation District 425-282-1900

King County Department of Local Services (Permitting) 206-296-6600

King County Fire Marshall 206-296-6600

King County Industrial Waste Program 206-477-5300

King County Hazardous Waste Management Program 206-296-4692

King County Solid Waste Division 206-477-4466

King County Stormwater Services 206-477-4811

Master Builders Association of King and Snohomish Counties . 425-451-7920

Pacific Northwest Pollution Prevention Research Center 206-352-2050

Puget Sound Clean Air 206-343-8800

Public Health Seattle–King County

Business Waste Line 206-263-8899

Hazards Line (for households) 206-296-4692

Industrial Materials Exchange (IMEX) 206-296-4692

Wastewater Program (septic systems) 206-477-8050

Waste Characterization 206-296-4692

Washington State Department of Ecology

Northwest Regional Office (Bellevue) 206-594-0000

Reporting of Spills 206-594-0000

Waste reduction and recycling 1-800-RECYCLE

Washington Toxics Coalition 206-632-1545