

**OPERATIONS MAINTENANCE FACILITY
STORMWATER POLLUTION PREVENTION PLAN**

KELSO, WASHINGTON

December 5, 2014

Updated by:

Otak Inc.

Original prepared by:

Skillings Connolly, Inc. and

Van McKay, P.E., City of Kelso

February 12, 2010

for

City of Kelso

P.O. Box 819

Kelso, Washington 98626

CONTENTS

1	INTRODUCTION	1
1.1	Background	1
1.2	Regulatory Background.....	1
1.3	Purpose	1
1.4	SWPPP Format	1
1.5	Definitions.....	2
2	MAINTENANCE FACILITY.....	3
2.1	Site Description	3
2.1.1	Stormwater System	3
2.1.2	Maintenance, Inspection, and Revision Forms.....	3
2.1.3	Site Map	4
2.1.4	Potential Pollutants	4
2.1.5	Discharge Outfall(s).....	5
2.1.6	Receiving Water	5
2.2	Best Management Practices	5
2.2.1	BMP Selection Process.....	5
2.2.2	BMPs	5
2.2.2.1	General Site BMPs	5
	Pollutant	12
2.2.2.2	Source-Specific BMPs	12

- Figure 1: Maintenance Facility Site Map
- Appendix A: Maintenance Facility Worksheets
- Appendix B: Inspection Forms
- Appendix C: Inspection/Maintenance Schedule
- Appendix D: Recommendations for Management of Street Wastes
- Appendix E: Review and Revision Documentation Form

1 INTRODUCTION

1.1 Background

The City of Kelso (City) Operations Maintenance Facility (facility) serves to store and maintain City and Cowlitz 2 Fire & Rescue vehicles and operations equipment. It is located at 2300 Parrot Way and is across Parrott Way from the Airport. There are three building structures at the facility including administration offices, vehicle storage, and vehicle maintenance areas. Activities at the facility include a vehicle wash rack, stockpiling of roadway construction materials and street sweeping debris, maintenance of vehicles, and storage of abandoned and impounded vehicles.

1.2 Regulatory Background

The City became a permittee under the Western Washington Phase II NPDES Municipal Stormwater Permit on February 16, 2007. The Permit requires that the City develop an operations and maintenance (O&M) program that includes items such as a Stormwater Pollution Prevention Plan (SWPPP). This SWPP has been updated to comply with the 2012 Stormwater Management Manual for Western Washington (SMMMWW) and the 2013-2018 Phase II NPDES Municipal Stormwater Permit (Permit).

1.3 Purpose

The City requires that a SWPPP be implemented at the facility. This SWPPP will be used by City personnel to address issues such as flooding and stormwater pollution. It is intended to outline Permit requirements for preventing pollution of stormwater at the facility, the relevant site information, the best management practices (BMPs) implemented at the facility, and a location for various forms needed to document Permit compliance. The methods outlined here are intended to meet the requirements of the Permit, ensure a properly functioning stormwater system, and prevent stormwater pollution.

1.4 SWPPP Format

The SWPPP is divided into two sections:

- Section 1 - Introduction
- Section 2 - Site Description and Best Management Practices (BMPs)
 - Addresses basic information regarding the site layout, industrial activities, potential pollutants, outfall(s), receiving water, and monitoring program

- Identifies the site pollution prevention team and BMPs to be implemented such as mowing, preventive maintenance, employee education, inspection requirements and recordkeeping

1.5 Definitions

The following definitions are excerpted from the NPDES municipal and general industrial stormwater permits and are provided for the benefit of the site staff.

Best Management Practices (BMPs): Schedule of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices approved by Ecology that, when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State.

Operational BMPs: Schedule of activities, prohibition of practices, maintenance procedures, employee training, good housekeeping, and other managerial practices to prevent or reduce the pollution of water of the state.

Significant Materials: Includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with stormwater discharges.

Source Control BMPs: Physical, structural or mechanical devices or facilities that are intended to prevent pollutants from entering stormwater. A few examples of source control BMPs are erosion control practices, maintenance of stormwater facilities, constructing roofs over storage and working areas, and directing wash water and similar discharges to the sanitary sewer.

Treatment BMPs: BMPs that are intended to remove pollutants from stormwater. A few examples of treatment BMPs are detention ponds, oil/water separators, biofiltration, and constructed wetlands.

2 MAINTENANCE FACILITY

2.1 Site Description

The facility serves to store and maintain City vehicles and operations equipment. It is located across Parrott Way from the Airport. At the facility there are three building structures: a vehicle maintenance building that houses administration offices, an open “water/sewer shed” where vehicles are stored and maintained, and an open storage shed where more vehicles and equipment are stored.

Activities at the facility include vehicle washing, stockpiling of roadway construction materials and street sweeping debris, maintenance of City and Cowlitz 2 Fire & Rescue vehicles, tack equipment cleaning, and storage of abandoned and impounded vehicles.

2.1.1 Stormwater System

The stormwater system at the facility includes an onsite catch basin, storm pipes, ditches, and overland flow. Most of the site has water flow overland to ditches along the roadways surrounding the site. A ditch on the north side of the maintenance building collects water from the downspouts of the maintenance building.

Floor drains in the maintenance building drain to sanitary sewer and do not enter the storm sewer system.

Water from the vehicle wash rack also drains to the sanitary sewer. The rack needs to have a cover installed so that stormwater does not discharge to the sanitary sewer.

2.1.2 Maintenance, Inspection, and Revision Forms

A number of maintenance and inspection forms are included in the appendices. Appendix A consists of maintenance facility worksheets that describe the pollution prevention team, lists the stockpiled outdoor materials, lists the BMP identification and implementation, lists employee training and more. Appendix B includes inspection forms and Appendix C contains an inspection and maintenance schedule. Appendix D contains *Recommendations for Management of Street Wastes* from Ecology’s 2012 Stormwater Management Manual for Western Washington. Appendix E contains the Review and Revision Documentation form. This SWPPP and revision form are to be updated whenever there is a change in design, construction, operation, or maintenance which cause(s) the SWPPP to be less effective in controlling the pollutants.

2.1.3 Site Map

The Maintenance Facility Site Map (Figure 1) shows the overall layout of the facility, the drainage patterns, pollutant sources and spill kit locations.

2.1.4 Potential Pollutants

Activities with Pollution Potential

Activities at the facility with pollution potential include:

- Vehicle/equipment maintenance/cleaning areas
- Loading and unloading areas for liquid and solid material
- Outside storage of materials and equipment
- Storage and handling of vehicles
- Storage and handling of liquid-bearing containers and soiled rags
- Washing and steam cleaning of vehicle/equipment/building structures
- Solid and liquid wastes that are not properly stored while awaiting disposal or recycling
- Tack sealing equipment storage and maintenance

Potential Pollutants

Potential pollutants from the above described activities at the facility include:

- Dirt
- Oils and greases
- TSS
- Detergents
- Soaps
- BOD
- Solvents
- Degreasers
- Antifreeze
- Radiator flush
- Chromium
- Zinc
- Copper
- Lead
- Cadmium
- Brake fluid
- Soiled rags
- Oil filters
- Fuel and engine fluids
- Batteries
- Battery sludge
- Cleaning chemicals

- Waste materials
- Paints
- Soapy wastewater

2.1.5 Discharge Outfall(s)

Both the northwestern overland flow and the northern ditch discharge to the west via a culvert to the Parrott Way ditch. Overland flow discharges to the south of the site and to a ditch along Talley Way.

2.1.6 Receiving Water

The stormwater flows through a series of ditches, culverts and stormwater pipes and is conveyed to a Consolidated Diking District #3 lagoon near the Baker Way Pump Station. This pump station conveys stormwater into the Coweeman River. The receiving water is the Coweeman River near river mile 1.3.

2.2 Best Management Practices

Best Management Practices (BMPs) are schedules of activities, prohibitions of practices, maintenance procedures, managerial practices, and/or structural features that prevent or reduce adverse impacts to waters of Washington State.

This SWPPP outlines BMPs intended to address long-term management of stormwater at the facility.

2.2.1 BMP Selection Process

The selection of BMPs is based on land use and the pollutant generating sources. The SWMMWW describes various land uses and activities, and the potential pollutant generating sources associated with those activities. It also identifies source control treatment BMPs that apply to specific types of pollutant sources. BMPs have been selected for the facility based on the guidelines given in the Ecology manual.

2.2.2 BMPs

The following BMPs have been selected as applicable for the facility, and are to be implemented to the maximum extent practical:

2.2.2.1 General Site BMPs

Catch Basins

Fabric inserts located inside the lid of the catch basins will trap and retain sediment. The inserts are to be routinely inspected, cleaned, and replaced as needed.

Compost booms

Compost booms are installed along the fence where overland flow leaves the site to provide stormwater treatment prior discharge. If the compost booms become damaged, they will be replaced.

Tack Equipment Cleaning Station

Secondary containment must be installed under the station drum and the station will be placed under cover.

Vehicle Wash Rack

A cover must be installed over the vehicle wash rack to prevent stormwater from entering the sanitary sewer system.

Maintenance Building Floor Drains

The maintenance building floor slopes to four floor drains. These floor drains appropriately discharge to the sanitary sewer system.

Recycling/Disposal of Vehicle Fluids/Other Wastes

This information was obtained from Ecology's Hazardous Waste Program.

Antifreeze

Store separately for resale. Separate ethylene glycol from propylene glycol for off-site recycling. If not recyclable, send to Treatment, Storage, and Disposal Facility (TSDf) for disposal.

Batteries

INTACT: Accumulate under cover prior to sale, deliver to recycler, or return to manufacturer.

BROKEN: Accumulate acid from broken batteries in resistant containers with secondary containment. Send to TSDf for disposal.

Brake fluid

Accumulate in separate, marked, closed container. Do not mix with waste oil. Recycle.

Fuel

Store gasoline and diesel separately for use or resale. Mixtures of diesel, gasoline, oil, and other fluids may not be recyclable and may require expensive disposal.

Fuel filters

Drain fluids for use as product. With approval of local landfill operator, dispose to dumpster, if needed.

Oil filters

Puncture the filter dome and drain it for 24 hours. Put oil drained from filters into your "USED OIL ONLY" container. Keep drained filters in a separate container marked "USED OIL FILTERS ONLY."

Locate a scrap metal dealer who will pick up and recycle your filters. With approval of local landfill operator, dispose of drained filters to dumpster.

Paint

Accumulate oil-based and water-based paints separately for use or resale. If not recyclable, send accumulations to TSDf for disposal.

Power steering fluid

Same as for used oils

Shop towels/oily rags

Use cloth towels that can be laundered and reused. Accumulate used shop towels in a closed container. Sign up with an industrial laundry service that can recycle your towels.

Solvents

Consider using less hazardous solvents or switching to a spray cabinet that doesn't use solvent. Accumulate solvents separately. Consider purchasing your own solvent still and recycling solvent on site. Do not mix with used oil. Do not evaporate as a means of disposal.

Transmission oil, differential and rear end fluids

Accumulate in your "USED OIL ONLY" container. Arrange for pickup for off-site recycling.

Used oils; including, crankcase oil, transmission oil, power steering fluid and differential/rear end oil

Keep used oil in a separate container marked "USED OIL ONLY." Do not mix with brake fluid, or used antifreeze. Arrange for pickup for off-site recycling.

Windshield washer fluid

Accumulate separately for use or resale. Discharge to on-site sewage disposal, or, if acceptable by the local sewer authority, discharge to sanitary sewer.

Formation of a Pollution Prevention Team

The stormwater manager and the operations superintendent will be responsible for stormwater pollution control. They will hold meetings a minimum of two times per year to review the overall operation of the BMPs. Responsibilities will be established for inspections, operation and maintenance, and availability for emergency situations. Team members will be trained in the operation, maintenance and inspections of BMPs, and reporting procedures.

The pollution prevention team leader is the City stormwater manager. Every operational employee shall receive training in the site BMPs and goals of the maintenance plan, spill prevention and control, good housekeeping, and significant materials management practices.

Senior Engineer and Stormwater Manager, PPT Leader: Van McKay, P.E. Phone: 360-423-6590
Operations Superintendent: Randy Johnson Phone: (360) 423-5730

Good Housekeeping

Promptly contain and clean up solid and liquid pollutant leaks and spills including oils, solvents, fuels, and dust from manufacturing operations on any exposed soil, vegetation, or paved area.

Sweep paved material handling and storage areas regularly as needed, for the collection and disposal of dust and debris that could contaminate stormwater. Do not hose down pollutants from any area to the ground, storm drain, conveyance ditch, or receiving water unless necessary for dust control purposes to meet air quality regulations and unless the pollutants are conveyed to a treatment system approved by the local jurisdiction.

Clean oils, debris, sludge, etc. from all BMP systems regularly, including catch basins, oil/water separators, boomed areas, and conveyance systems, to prevent the contamination of stormwater.

Promptly repair or replace all leaking connections, pipes, hoses, valves, containment systems, etc. which can contaminate stormwater.

Ensure that floor drains in the maintenance building continue to be connected to sanitary sewer.

The following are recommended additional good housekeeping BMPs:

Continue the availability of the spill kits that are presently in place.

Clean up pollutant liquid spills in impervious uncovered areas at the end of each working day.

Use solid absorbents, e.g., clay (kitty litter) and peat absorbents and rags for cleanup of liquid spills/leaks, where practicable.

Recycle materials, such as oils, solvents, and wood waste, to the maximum extent practicable.

Preventive Maintenance

Prevent the discharge of unpermitted liquid or solid wastes, process wastewater, and sewage to ground or surface water, or to storm drains that discharge to surface water, or to the ground.

Conduct all oily parts cleaning, steam cleaning, or pressure washing of equipment or containers inside a building, or on the vehicle wash rack.

Pressure wash impervious surfaces contaminated with oils, metals, sediment, etc. Collect the resulting washwater for proper disposal by plugging the catch basin and pumping or vacuuming washwater for discharge to sanitary sewer.

Do not pave over contaminated soil unless it has been determined that ground water has not been and will not be contaminated by the soil. Call Ecology for assistance.

Construct impervious areas that are compatible with the materials handled. Portland cement concrete, asphalt, or equivalent material may be considered.

Use drip pans to collect leaks and spills from industrial/commercial equipment, trucks and other vehicles which are stored outside.

Drain oil and fuel filters before disposal. Discard empty oil and fuel filters, oily rags, and other oily solid waste into appropriately closed and properly labeled containers, and in compliance with the Uniform Fire Code.

For the storage of liquids use containers, such as steel and plastic drums, that are rigid and durable, corrosion resistant to the weather and fluid content, non-absorbent, water tight, rodent-proof, and equipped with a close fitting cover.

For the temporary storage of solid wastes contaminated with liquids or other potential pollutant materials use dumpsters, garbage cans, drums and comparable containers, which are durable, corrosion resistant, non-absorbent, non-leaking, and equipped with either a solid cover or screen cover to prevent littering. If covered with a screen, the container must be stored under a roof or otherwise covered to prevent rainwater from entering or leaving the container.

Where exposed to stormwater, use containers, piping, tubing, pumps, fittings, and valves that are appropriate for their intended use and for the contained liquid.

The following are recommended additional preventive maintenance BMPs:

Where feasible, store potential stormwater pollutant materials inside a building or under a cover and/or containment.

Minimize use of toxic cleaning solvents, such as chlorinated solvents, and other toxic chemicals.

Use environmentally safe raw materials, products, additives, etc. such as substitutes for zinc used in rubber production.

Recycle waste materials such as solvents, coolants, oils, degreasers, and batteries to the maximum extent feasible.

Empty drip pans immediately after a spill or leak is collected in an uncovered area.

Additional Maintenance Guidelines:

Weed control

Weed and grasses control will consist of herbicide spraying and mechanical removal such as weed eating. Typical weeds requiring control are white-tipped clover, dandelions, Scotch broom, and blackberries. Weed control by herbicide spraying is performed in areas not practical to mow.

Weed control by herbicide spraying *is not* allowed in the ditches.

Weed control by herbicide spraying *is* allowed in the following locations:

- Next to building foundations
- At fence lines

The following herbicides will be used by the City and the application rate shall not be more than the manufacturer's recommendations:

- Round-up (Glyphosate)
- Crossbow (triclopyr + 2,4-D ester)
- DuPont Oust

Herbicides will be applied once a year in the spring and the conditions shall be early in the morning without wind or rain.

Spill Prevention and Cleanup

Immediately upon discovery, stop, contain, and clean up all spills.

Keep spill containment and cleanup kits readily accessible. Location of spills kits are marked on Figure 1.

If the spill has reached or may reach a sanitary or a storm sewer, ground water, or surface water notify Ecology and the local sewer authority immediately. Notification must comply with federal spill reporting requirements.

Do not flush or otherwise direct absorbent materials or other spill cleanup materials to a storm drain. Collect the contaminated absorbent material as a solid and place in appropriate disposal containers.

The following is a recommended additional spill prevention and cleanup BMP:

Place and maintain emergency spill containment and cleanup kit(s) at outside areas where there is a potential for fluid spills. These kits should be appropriate for the materials being handled and the size of the potential spill. Locate spill kits within 25 feet of all fueling/fuel transfer areas, including on-board mobile fuel trucks.

Note: Ecology recommends that the kit(s) include salvage drums or containers, such as high density polyethylene, polypropylene or polyethylene sheet-lined steel; polyethylene or equivalent disposal bags; an emergency response guidebook; safety gloves/clothes/equipment; shovels or other soil removal equipment; and oil containment booms and absorbent pads; all stored in an impervious container.

Employee Training

Train all employees that work in pollutant source areas in identifying pollutant sources and in understanding pollutant control measures, spill response procedures, and environmentally acceptable

material handling practices, particularly those practices related to vehicle/equipment liquids such as fuels, and vehicle/equipment cleaning. Use Ecology's "Guidance Manual for Preparing/Updating a Stormwater Pollution Prevention Plan for Industrial Facilities" (Publication Number 04-10-030) as a training reference.

Inspections

A member of the Pollution Prevention Team will conduct visual inspections monthly to achieve the following:

- Verify that the descriptions of the pollutant sources identified in the stormwater pollution control program are accurate.
- Verify the performance of the stormwater operational and structural source controls and the treatment BMPs.
- Reflect current conditions on the site.
- Include written observations of the presence of floating materials, suspended solids, oil and grease, discoloration, turbidity and odor in the stormwater discharges; in outside vehicle maintenance/repair; and liquid handling, and storage areas. In areas where acid or alkaline materials are handled or stored, use a simple litmus or pH paper to identify those types of stormwater contaminants where needed.
- Eliminate or obtain a permit for unpermitted non-stormwater discharges to storm drains or receiving waters such as process wastewater and vehicle/equipment washwater.

Additional Inspection Guidelines:

Perform an inspection of the stormwater system (ditches) annually in April and after significant storm events. A significant storm event is 2.54 inches in a 24-hour period.

Inspection reports are located in Appendix A.

Record keeping

Retain the following reports for five years:

- Visual inspection reports which should include: time and date of the inspection, locations inspected, statement on status of compliance with the permit, summary report of any remediation activities required, name, title, and signature of person conducting the inspection.
- Reports on spills of oil or hazardous substances in greater than Reportable Quantities (Code of Federal Regulations Title 40 Parts 302.4 and 117), including the following: antifreeze, oil, gasoline, or diesel fuel, that causes a violation of the State of Washington's Water Quality Standards, a film or sheen upon or discoloration of the waters of the State or adjoining

shorelines, a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

- *To report a spill or to determine if a spill is a substance of a Reportable Quantity, call the Ecology regional office and ask for an oil spill operations or a hazardous waste specialist:*

Southwest Region (360) 407-6300

In addition, call the Washington Emergency Management Division at 800-258-5990 AND the National Response Center at 800-424-8802.

Also, refer to Emergency Spill Response in Washington State, Publication # 97-1165-CP.

The following is an additional recommended record keeping BMP:

Maintain records of all related pollutant control and pollutant generating activities such as training, materials purchased, material use and disposal, maintenance performed, etc.

2.2.2.2 Pollutant Source-Specific BMPs

BMPs for Dust Control at Unpaved Parking Lots

Description of Pollutant Sources:

Dust can cause air and water pollution problems.

Pollutant Control Approach:

Minimize dust generation and apply environmentally friendly and government approved dust suppressant chemicals, if necessary.

Applicable Operational BMPs:

Sprinkle or wet down soil or dust with water as long as it does not result in a wastewater discharge.

Use only local and/or state government approved dust suppressant chemicals such as those listed in Ecology Publication #96-433, "Techniques for Dust Prevention and Suppression."

Avoid excessive and repeated applications of dust suppressant chemicals. Time the application of dust suppressants to avoid or minimize their wash-off by rainfall or human activity such as irrigation.

Apply stormwater containment to prevent the conveyance of stormwater TSS into storm drains or receiving waters.

The use of motor oil for dust control is prohibited. Care should be taken when using lignin derivatives and other high BOD chemicals in excavations or areas easily accessible to surface water or ground water.

Consult with the Ecology Regional Office on discharge Permit requirements if the dust suppression process results in a wastewater discharge to the ground, ground water, storm drain, or surface water.

Additional Recommended Operational BMPs for Dust Generating Areas:

Prepare a dust control plan. Helpful references include: Control of Open Fugitive Dust Sources (EPA-450/3-88-088), and Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures (EPA-450/2-92-004)

Limit exposure of soil (dust source) as much as feasible.

Stabilize dust-generating soil by growing and maintaining vegetation, mulching, topsoiling, and/or applying stone, sand, or gravel.

Apply windbreaks in the soil such as trees, board fences, tarp curtains, bales of hay, etc.

Cover dust-generating piles with wind-impervious fabric or equivalent material.

BMPs for Illicit Connections to Storm Drains

Description of Pollutant Sources:

Illicit connections are unpermitted sanitary or process wastewater discharges to a storm drain or to a surface water, rather than to a sanitary sewer, industrial process wastewater or other appropriate treatment. They can also include cleaning solutions and washwaters.

Pollutant Control Approach:

Identify and eliminate unpermitted discharges.

Applicable Operational BMPs:

Eliminate unpermitted wastewater discharges to storm drains, ground water, or surface water; and,

Convey unpermitted discharges to a sanitary sewer if allowed by the local sewer authority.

Obtain appropriate permits for these discharges.

BMPs for Maintenance and Repair of Vehicles and Equipment

Description of Pollutant Sources:

Pollutant sources include parts/vehicle cleaning, spills/leaks of fuel and other liquids, replacement of liquids, outdoor storage of batteries/liquids/parts, and vehicle parking.

Pollutant Control Approach:

Control of leaks and spills of fluids using good housekeeping and cover and containment BMPs.

Applicable Operational BMPs:

Inspect incoming vehicles, parts, and equipment stored temporarily outside for leaks.

Use drip pans or containers under parts or vehicles that drip or that are likely to drip liquids, such as during dismantling of liquid containing parts or removal or transfer of liquids.

Remove batteries and liquids from vehicles and equipment in designated areas designed to prevent stormwater contamination. Store cracked batteries in a covered non-leaking secondary containment system.

Remove liquids from vehicles retired for scrap.

Empty oil and fuel filters before disposal. Provide for proper disposal of waste oil and fuel.

Do not pour/convey washwater, liquid waste, or other pollutants into storm drains or to surface water. Check with the local sanitary sewer authority for approval to convey water to a sanitary sewer.

Do not connect maintenance and repair shop floor drains to storm drains or to surface water.

Applicable Structural Source Control BMPs:

Conduct all maintenance and repair of vehicles and equipment inside a building, or other covered impervious containment area that is sloped to prevent run-on of uncontaminated stormwater and runoff of contaminated stormwater.

Park large mobile equipment in a designated contained area.

Applicable Treatment BMPs:

Contaminated stormwater runoff from vehicle staging and maintenance areas must be conveyed to a sanitary sewer, if allowed by the local sewer authority, or to an API or CP oil and water separator followed by a basic treatment BMP, applicable filter, or other equivalent oil treatment system.

Recommended Additional Operational BMPs:

Store damaged vehicles inside a building or other covered containment, until all liquids are removed.

Clean parts with aqueous detergent based solutions or non-chlorinated solvents such as kerosene or high flash mineral spirits, and/or use wire brushing or sand blasting whenever practicable. Avoid using toxic liquid cleaners such as methylene chloride, 1,1,1-trichloroethane, trichloroethylene or similar chlorinated solvents. Choose cleaning agents that can be recycled.

Inspect all BMPs regularly, particularly after a significant storm. Identify and correct deficiencies to ensure that the BMPs are functioning as intended.

Avoid hosing down work areas. Use dry methods for cleaning leaked fluids.

Recycle greases, used oil, oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic fluids, transmission fluids, and engine oils.

Do not mix dissimilar or incompatible waste liquids stored for recycling.

BMPs for Maintenance of Roadside Ditches

Description of Pollutant Sources:

Common road debris including eroded soil, oils, vegetative particles, and heavy metals can be sources of stormwater pollutants.

Pollutant Control Approach:

Maintain roadside ditches to preserve the condition and capacity for which they were originally constructed, and to minimize bare or thinly vegetated ground surfaces. Maintenance practices should provide for erosion and sediment control.

Applicable Operational BMPs:

Inspect roadside ditches regularly, as needed, to identify sediment accumulations and localized erosion.

Clean ditches on a regular basis, as needed. Ditches should be kept free of rubbish and debris.

Vegetation in ditches often prevents erosion and cleanses runoff waters. Remove vegetation only when flow is blocked or excess sediments have accumulated. Conduct ditch maintenance (seeding, fertilizer application, harvesting) in late spring and/or early fall, where possible. This allows re-establishment of vegetative cover by the next wet season thereby minimizing erosion of the ditch as well as making the ditch effective as a biofilter.

Establish grass vegetation from the edge of the pavement to the bottom of the ditch, if possible.

Do not leave ditch cleanings on the roadway surfaces. Sweep, collect and dispose of dirt and debris that remains on the pavement at the completion of ditch cleaning operations.

Roadside ditch cleanings, not contaminated by spills or other releases and not associated with a stormwater treatment system such as a bioswale, may be screened to remove litter and separated into soil and vegetative matter (leaves, grass, needles, branches, etc.). The soil fraction may be handled as 'clean soils' and the vegetative matter can be composted or disposed of in a municipal waste landfill.

Roadside ditch cleanings contaminated by spills or other releases known or suspected to contain dangerous waste must be handled following the Dangerous Waste Regulations (Chapter 173-303 WAC) unless testing determines it is not dangerous waste.

BMPs for Parking and Storage of Vehicles and Equipment

Description of Pollutant Sources:

Parking lots can be sources of toxic hydrocarbons and other organic compounds, including oils and greases, metals, and suspended solids caused by the parked vehicles.

Pollutant Control Approach:

If the parking lot is a **high-use site** as defined below, provide appropriate oil removal equipment for the contaminated stormwater runoff.

Applicable Operational BMPs:

Do not hose down the area to a storm drain or to a receiving water. Sweep parking lots, storage areas, and driveways, regularly to collect dirt, waste, and debris.

Applicable Treatment BMPs:

An oil removal system such as an API or CP oil and water separator, catch basin filter, or equivalent BMP, approved by the local jurisdiction, is applicable for parking lots meeting the threshold vehicle traffic intensity level of a *high-use site*.

Vehicle High-Use Sites

A high-use site at a commercial or industrial establishment has one of the following characteristics: (Gaus/King County, 1994)

- Is subject to an expected average daily vehicle traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area: or
- Is subject to storage of a fleet of 25 or more diesel vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc.).

BMPs for Washing and Steam Cleaning Vehicles/ Equipment/ Building Structures

Description of Pollutant Sources:

Vehicles, and large buildings may be commercially cleaned with low or high pressure water or steam. The cleaning can include hand washing, scrubbing, sanding, etc. Washwater from cleaning activities can contain oil and grease, suspended solids, heavy metals, soluble organics, soaps, and detergents that can contaminate stormwater.

Pollutant Control Approach:

The preferred approach is to cover and/or contain the cleaning activity, or conduct the activity inside a building, to separate the uncontaminated stormwater from the pollutant sources. Washwater must be conveyed to a sanitary sewer after approval by the local sewer authority, temporarily stored before proper disposal, or recycled, with no discharge to the ground, to a storm drain, or to surface water.

Applicable Structural Source Control BMPs:

At the vehicle wash rack, that drains to the sanitary sewer, a cover or other device to keep stormwater from entering the sanitary sewer system must be installed

Conduct outside washing operations with the following features:

- For equipment washing at the vehicle wash rack, convey the washwater to a sump (like a grit separator) and then to a sanitary sewer (if allowed by the local Sewer Authority), or other appropriate wastewater treatment or recycle system. An NPDES permit may be required for any washwater discharge to a storm drain or receiving water after treatment. Contact the Ecology regional office for NPDES Permit requirements.
- Collect the washwater from building structures and convey it to appropriate treatment such as a sanitary sewer system if it contains oils, soaps, or detergents, where feasible. If the washwater does not contain oils, soaps, or detergents then it could drain to soils that have sufficient natural attenuation capacity for dust and sediment.

Recommended Additional BMPs:

The vehicle wash area should be well marked.

Use phosphate-free biodegradable detergents when practicable.

Consider recycling the washwater.

Because soluble/emulsifiable detergents can be used in the wash medium, the selection of soaps and detergents and treatment BMPs should be considered carefully. Oil/water separators are ineffective in removing emulsified or water soluble detergents.

BMPs for Storage or Transfer (Outside) of Solid Raw Materials, By-Products, or Finished Products

Description of Pollutant Sources:

Solid raw materials, by-products, or products such as gravel, sand, salts, topsoil, compost, logs, sawdust, wood chips, lumber and other building materials, concrete, and metal products sometimes are typically stored outside in large piles, stacks, etc. at commercial or industrial establishments. Contact of outside bulk materials with stormwater can cause leachate, and erosion of the stored materials. Contaminants include TSS, BOD, organics, and dissolved salts (sodium, calcium, and magnesium chloride, etc.

Pollutant Control Approach:

Provide impervious containment with berms, dikes, etc. and/or cover to prevent run-on and discharge of leachate pollutant(s) and TSS.

Applicable Operational BMP:

Do not hose down the contained stockpile area to a storm drain or a conveyance to a storm drain or to a receiving water.

Applicable Structural Source Control BMP Options:

Choose one or more of the source control BMP options listed below 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, etc. Also included are outside storage areas for solid materials such as logs, bark, lumber, metal products, etc.

- Pave the area and install a stormwater 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 runoff to treatment. Slope the paved area in a manner that minimizes the contact between stormwater (e.g., pooling) and leachable materials in compost, logs, bark, wood chips, etc.
- For large stockpiles that cannot be covered, implement containment practices at the perimeter of the site and at any catch basins as needed to prevent erosion and discharge of the stockpiled material offsite or to a storm drain. Ensure that contaminated stormwater is not discharged directly to catch basins without conveying through a treatment BMP.

Applicable Treatment BMP:

Convey contaminated stormwater from the stockpile area to a wet pond, wet vault, settling basin, media filter, or other appropriate treatment system.

Recommended Additional Operational BMPs:

Maintain drainage areas in and around storage of solid materials with a minimum slope of 1.5 percent to prevent pooling and minimize leachate formation. Areas should be sloped to drain stormwater to the perimeter where it can be collected, or to internal drainage “alleyways” where material is not stockpiled.

Additional Guidelines:

See Appendix B for recommendations for management of street wastes, from the SWMMWW.

Resource Materials

Ecology, Stormwater Management Manual for Western Washington, August 2012

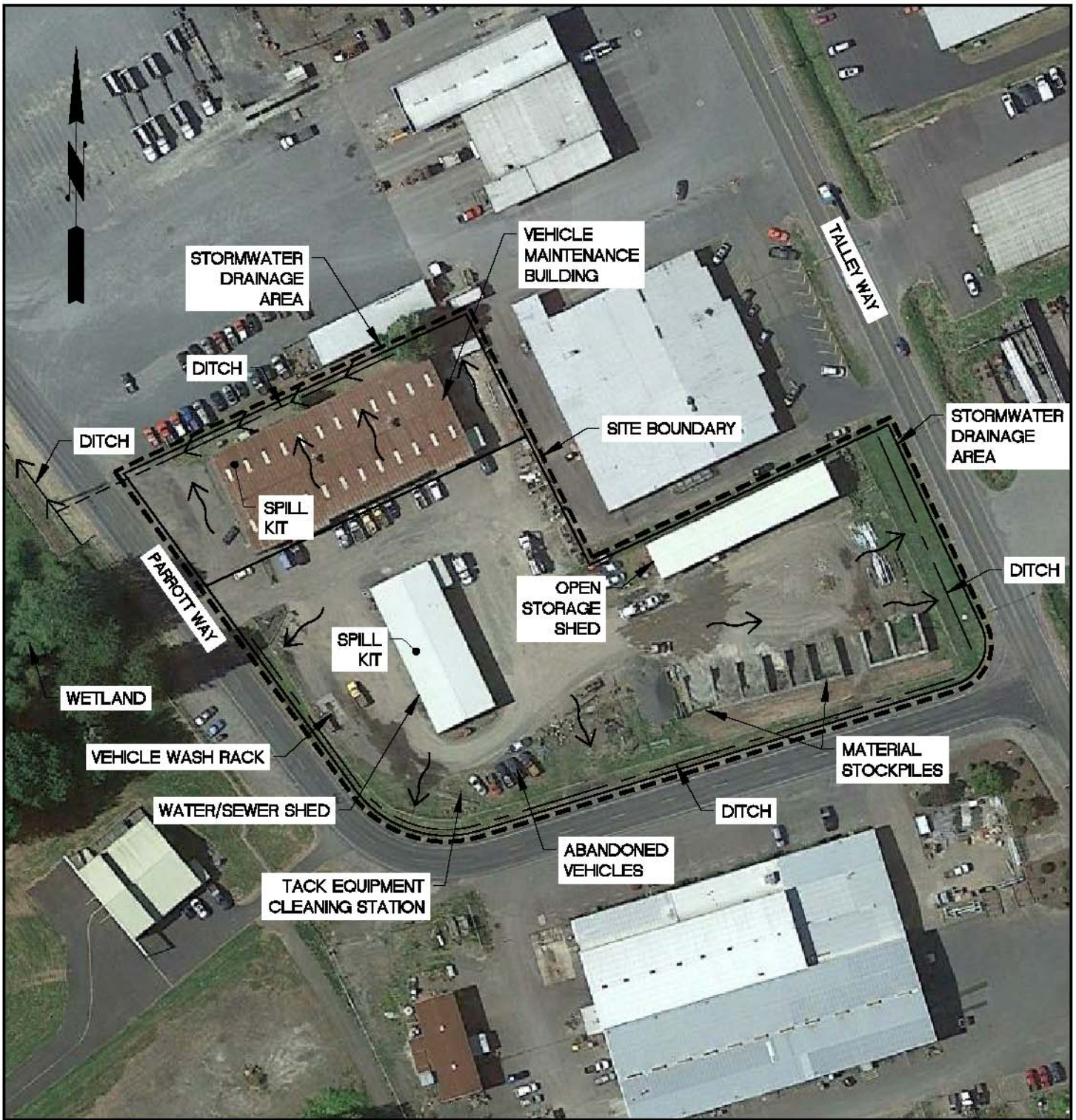


FIGURE 1 - MAINTENANCE FACILITY SITE MAP

Appendix A: Maintenance Facility Worksheets

Pollution Prevention Team	Worksheet #1: Maintenance Facility Completed by: Heye; Bergquist Title: Skillings Connolly, Inc. Date: 1-29-2010
Responsible Official: Van McKay, P.E. Title: Stormwater Manager Team Leader: <u>Van McKay</u> Office Phone: 360-423-6590 Responsibilities: Ensuring the Public Works Department is implementing and in compliance with the City's Stormwater general permit.	
(1) Randy Johnson Title: Operations Manager Office Phone: <u>360-423-5790</u> Responsibilities: Ensure overall implementation of the Stormwater Pollution Prevention Plan (SWPPP) for Municipal Operations for the operations center/maintenance facility.	
(2) Title: _____ Office Phone: _____ Responsibilities:	
(3) Title: _____ Office Phone: _____ Responsibilities: _____ _____	

Material Inventory

Worksheet #2: Maintenance Facility

Completed by: Amanda Heye, P.E.; Bob Bergquist, LEED AP

Title: Skillings Connolly, Inc.

Date: 1-29-2010

List materials handled, treated, stored, or disposed of at the site that may potentially be exposed to precipitation or runoff. Also indicate if any spills or leaks of pollutants have occurred during the three years prior to January 1, 2010. (Including any pollutants no longer handled on-site.)

Material	Purpose/Location	Quantity (Units)			Exposed Since Jan. 2007 (Yes/No)	Likelihood of contact with stormwater? / If BMPs implemented? If Yes, describe reason	Past Spill or Leak	
		Used	Produced	Stored			Yes	No.
		(indicate per/wk. or yr.)						
Stockpiled pea gravel	Drainage / stockpile area			90 CY		No contact likely if BMPs described in text are implemented.		X
Stockpiled sand	Fill & drainage / stockpile area			150 CY		No contact likely if BMPs described in text are implemented.		X
Coarse gravel stockpile	Fill & drainage / stockpile area			75 CY		No contact likely if BMPs described in text are implemented.		X
Fine gravel stockpile	Fill & drainage / stockpile area			50 CY		No contact likely if BMPs described in text are implemented.		X
Sand stockpiled	Fill & drainage / stockpile area			150 CY		No contact likely if BMPs described in text are implemented.		X
Street & culvert debris	Trash - one bay with full stockpile, one empty bay			150 CY		No contact likely if BMPs described in text are implemented.		X
Quarry spoils	Fill			15 CY		No contact likely if BMPs described in text are implemented.		X
Asphalt patch stockpile	Road repairs / open-sided, roofed equipment shed			5 CY		No contact likely if BMPs described in text are implemented.		X

Description of Exposed Significant Material

Worksheet #2A: Maintenance Facility
Completed by: Amanda Heye, P.E.; Bob Bergquist, LEED AP
Title: Skillings Connolly, Inc.
Date: 1-29-2010

Based on your material inventory, list significant materials that are currently exposed.

List of Exposed Significant Materials	Period of Exposure	Quantity Exposed (units)	Location (as indicated on the site map)	Method of storage, handling, treatment, or disposal (e.g., sealed drum standing outside, or covered pile, drum, tank)
			A	
			B	
			C	
			D	
			E	

Potential Pollutant Source Identification

Worksheet #3: Maintenance Facility

Completed by: Amanda Heye, P.E.; Bob Bergquist, LEED AP

Title: Skillings Connolly, Inc.

Date: 1-29-2010

List all potential stormwater pollutants from materials handled, treated, or stored on-site.

Potential Stormwater Pollutant	Stormwater Pollutant Source	Likelihood of pollutant being present in your stormwater discharge. If yes, explain
Chemicals used in roadway crack patching	Tack equipment cleaning station	Currently there are no BMPs to protect stormwater from contamination at this source. BMPs described in the text need to be implemented for this pollutant source.

Identify Areas Associated With Pollutant Generating Activity

Worksheet #5: Maintenance Facility

Completed by: Amanda Heye, P.E.; Bob Bergquist, LEED AP

Title: Skillings Connolly, Inc.

Date: 1-29-2010

List areas and activities, not included on Worksheets 2, 2A, and 3, which may be sources of pollution. Discuss the potential of these areas and activities as potential pollutant sources and identify any pollutant that may be generated by that activity.

Potential Pollutant Generating Area or Activity	Potential Stormwater Pollutant from Area or Activity	Likelihood of being present in your stormwater discharge. If yes, describe reason.
Floor drains in maintenance building that drain to stormwater ditch.	Oil, grease, other vehicle fluids	Currently there are no BMPs to protect stormwater from contamination at this source. BMPs described in the text need to be implemented for this pollutant source.
Abandoned vehicle storage	Oil, grease, other vehicle fluids	Currently there are no BMPs to protect stormwater from contamination at this source. BMPs described in the text need to be implemented for this pollutant source.

**Non-Stormwater Discharge
Dry Weather (July, August, September)
Assessment and Certification**

Worksheet #6: Maintenance Facility

Completed by: _____

Title: _____

Date: _____

The dry season inspection shall determine the presence of unpermitted non-stormwater discharges such as domestic wastewater, non-contact cooling water, or process wastewater (including *leachate*) to the *stormwater drainage system*.

Tests may include: visual observations of flows, odors, and other abnormal conditions; dye tests, television line surveys; and/or analysis and validation of accurate piping schematics.

Date	Discharge Location (as indicated on the site map)	Method used to test or Evaluate Discharge	Describe Results from Test for Presence of Non-Stormwater Discharge	Identify Potential Significant Sources	Person who Conducted The Test

CERTIFICATION

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information. ***Based on my inquiry of the person or persons who manage the systems or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.***

A. Name and Title	B. Phone:
C. Signature	D. Date Signed

Additional BMP Identification

Worksheet #7A: Maintenance Facility

Completed by: Amanda Heye, P.E.; Bob Bergquist, LEED AP

Title: Skillings Connolly, Inc.

Date: 1/29/2010

Describe any treatment and innovative BMPs that are required to address existing and potential pollutant sources identified in Worksheet 3, 4, and 5. These are BMPs needed to prevent the discharge of significant amounts of pollutants despite implementation of operational and source control BMPs.

BMPs	Brief Description of Activities or Improvements
Treatment BMPs	Compost booms shall be placed along the border of the site, to provide treatment for stormwater that flows overland to the surrounding roadside ditches. Permanent stormwater treatment facilities should be designed for the site to provide DOE approved treatment applicable to the site use.
Emerging technologies Flow Control BMPs (if applicable)	Not applicable

BMP Implementation**Worksheet #8:** Maintenance Facility**Completed by:** Amanda Heye, P.E.; Bob Bergquist, Van McKay, P.E.**Title:** Skillings Connolly, Inc. and City of Kelso**Date:** 2-12-2010

Develop a plan for implementing each BMP. Describe the steps necessary to implement the BMP (i.e., any construction or design), the schedule for completing those steps (list dates) and the person(s) responsible for implementation.

BMPs (In need of implementation)	Description of Action(s) Required for Implementation	Schedule Milestone and Completion Date(s)	Person Responsible for Action
Catch Basin Inserts	1. Install inlet protection (catch basin filter) on all inlets located in areas where sediments may flow into the inlet (e.g. unpaved parking lot).	March 2010	Randy Johnson
Compost Booms	1. Place compost booms along the border of the site, to provide treatment for stormwater that flows overland to the surrounding roadside ditches.	December 2011	Randy Johnson
Recycling/Disposal of Vehicle Fluids/Other Wastes	1. Recycle to the maximum extent practical all vehicle fluids and other wastes. Properly dispose of all materials that cannot be recycled. See text for further information.	Ongoing	Randy Johnson
Formation of a Pollution Prevention Team	1. Form a pollution prevention team, establish responsibilities for team members. See text for further information.	February 2010	Van McKay
Good Housekeeping	<ol style="list-style-type: none">1. Clean up spills and leaks as soon as possible.2. Sweep regularly.3. Clean and/or BMP systems regularly.4. See text for further information	Ongoing	Randy Johnson
Preventive Maintenance	<ol style="list-style-type: none">1. Prevent the discharge of unpermitted liquids or solids to ground or surface water.2. See text for further information	Ongoing	Randy Johnson

Spill Prevention and Cleanup	<ol style="list-style-type: none"> 1. Immediately upon discovery, stop, contain, and clean up all spills. 2. Have spill containment kits readily accessible at all areas that store pollutants. 	<ol style="list-style-type: none"> 1. As applicable 2. Ongoing 	Randy Johnson
Employee Training	<ol style="list-style-type: none"> 1. Train all employees that work near pollutant sources about the applicable BMPs. 	February 2010	Van McKay
Inspections	<ol style="list-style-type: none"> 1. Perform routine inspections at least quarterly 2. Perform "Dry Weather" inspections 	As stated	Van McKay
Record Keeping	<ol style="list-style-type: none"> 1. Keep records for at least 3 years – visual inspection reports and spill reports 	Ongoing	Van McKay
BMPs for Dust Control at Unpaved Parking Lots	<ol style="list-style-type: none"> 1. Sprinkle or wet down dust generating areas with water as long as it does not result in wastewater discharge. 	As applicable	Randy Johnson
BMPs for Illicit Connections to Storm Drains	<ol style="list-style-type: none"> 1. Identify and eliminate unpermitted discharges to the storm system. 	Ongoing	Van McKay
BMPs for Maintenance and Repair of Vehicles and Equipment	<ol style="list-style-type: none"> 1. Recycle vehicle wastes to the maximum extent practical. 2. Do not allow washwater from vehicle maintenance to enter the storm drain system. 3. See text for further information. 	Ongoing	Randy Johnson
BMPs for Maintenance of Roadside Ditches	<ol style="list-style-type: none"> 1. Maintain ditches on site to prevent flooding issues. 2. See text for further information. 	Ongoing	Randy Johnson
BMPs for Parking and Storage of Vehicles and Equipment	<ol style="list-style-type: none"> 1. Sweep parking lots regularly to collect dirt, waste, and debris. Do not hose down into storm system. 2. See text for further information. 	Ongoing	Randy Johnson
BMPs for Washing and Steam Cleaning Vehicles/Equipment/Building Structures	<ol style="list-style-type: none"> 1. Conduct vehicle/equipment washing in designated areas designed to drain to the sanitary sewer. 2. Install cover over vehicle wash rack 3. See text for further information. 	<ol style="list-style-type: none"> 1. Ongoing 2. December 2011 	Randy Johnson
BMPs for Storage or Transfer (Outside) of Solid Raw Materials, By-Products, or Finished Products	<ol style="list-style-type: none"> 1. Provide impervious containment with berms, dikes, etc. and/or cover to prevent stormwater contamination. 2. See text for further information. 	As applicable	Randy Johnson

Employee Training

Worksheet #9: Maintenance Facility

Completed by: Van McKay _____

Title: Stormwater Manager _____

Date: February 12, 2010 _____

Describe the annual training of employees on the SWPPP, addressing spill response, good housekeeping, and material management practices.

Training Topics	Brief Description of Training Program/Materials (e.g., film, newsletter course)	Schedule for Training (list dates)	Attendees
1.) STAFF WORKERS			
Spill Prevention and Response	Briefing on Stormwater Pollution Prevention Plan	February 11, 2010	Operations Field Staff
Good Housekeeping	Briefing on Stormwater Pollution Prevention Plan	February 11, 2010	Operations Field Staff
Material Management Practices	Briefing on Stormwater Pollution Prevention Plan	February 11, 2010	Operations Field Staff
2.) P2 TEAM:			
SWPPP Implementation			
Monitoring Procedures			

**RECORD OF VISUAL INSPECTIONS
of STORMWATER DISCHARGES**

Worksheet #10: Maintenance Facility

Completed by *:

Title:

Date:

* Must be conducted by qualified person identified in the SWPPP.

List observed pollutants in all discharges and carefully assess the pollutant sources and action steps needed to control the pollutants. Record pollutant sources/generating activities, BMP adequacy, site map, and other facility information on Worksheets 1-9, inclusive.

Date	Surface Discharge ID	Ground Discharge ID	List of observed pollutants and descriptions of intensities of each. Include floatables, oil sheen, discoloration, turbidity, odor, etc.	Recommended Action Steps

Certification (Other certification document may be used as required in Section S4 of the Permit)

Certification by Responsible Company official: I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information. **Based on my inquiry of the person or persons who manage the systems or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

Name _____

Title _____ Signature _____

Date Signed _____

Appendix B: Inspection Forms

**Non-Stormwater Discharge
Dry Weather (July, August, September)
Assessment and Certification**

Worksheet #6: Maintenance Facility

Completed by: _____

Title: _____

Date: _____

The dry season inspection shall determine the presence of unpermitted non-stormwater discharges such as domestic wastewater, non-contact cooling water, or process wastewater (including leachate) to the stormwater drainage system.

Tests may include: visual observations of flows, odors, and other abnormal conditions; dye tests, television line surveys; and/or analysis and validation of accurate piping schematics.

Date	Discharge Location (as indicated on the site map)	Method used to test or Evaluate Discharge	Describe Results from Test for Presence of Non-Stormwater Discharge	Identify Potential Significant Sources	Person who Conducted The Test

CERTIFICATION

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information. **Based on my inquiry of the person or persons who manage the systems or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

A. Name and Title

B. Phone:

C. Signature

D. Date Signed

**RECORD OF VISUAL INSPECTIONS
of STORMWATER DISCHARGES**

Worksheet #10: Maintenance Facility

Completed by *:

Title:

Date:

* Must be conducted by qualified person identified in the SWPPP.

List observed pollutants in all discharges and carefully assess the pollutant sources and action steps needed to control the pollutants. Record pollutant sources/generating activities, BMP adequacy, site map, and other facility information on Worksheets 1-9, inclusive.

Date	Surface Discharge ID	Ground Discharge ID	List of observed pollutants and descriptions of intensities of each. Include floatables, oil sheen, discoloration, turbidity, odor, etc.	Recommended Action Steps

Certification (Other certification document may be used as required in Section S4 of the Permit)

Certification by Responsible Company official: I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information. **Based on my inquiry of the person or persons who manage the systems or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

Name _____ Title _____ Signature _____

Date Signed _____

**Operations Maintenance Facility
Ditch Inspection Checklist**

Facility ID: _____
 Location: One ditch to North of Maintenance building
 GPS Coordinates: _____
 Inspector(s): _____
 Date: _____
 Time: _____
 Time since last rain event: _____

A. Contributing Drainage Area							
0 = Good condition. Well maintained, no action required.							
1 = Moderate condition. Adequately maintained, routine maintenance needed.							
2 = Degraded condition. Poorly maintained, routine maintenance and repair needed.							
3 = Serious condition. Immediate need for repair or replacement.							
<input type="checkbox"/>	Inspected						
<input type="checkbox"/>	Not Inspected						
	Item	0	1	2	3	N/A	Comments
1.	Excessive trash/debris	0	1	2	3	N/A	
2.	Bare/exposed soil	0	1	2	3	N/A	
3.	Evidence of erosion	0	1	2	3	N/A	

B. Inlets							
0 = Good condition. Well maintained, no action required.							
1 = Moderate condition. Adequately maintained, routine maintenance needed.							
2 = Degraded condition. Poorly maintained, routine maintenance and repair needed.							
3 = Serious condition. Immediate need for repair or replacement.							
<input type="checkbox"/>	Inspected						
<input type="checkbox"/>	Not Inspected						
	Item	0	1	2	3	N/A	Comments
1.	Inlets provide stable conveyance into ditch/bioswale	0	1	2	3	N/A	
2.	Excessive trash/debris/sediment accumulation at inlet	0	1	2	3	N/A	
3.	Culvert ends structurally sound and unblocked	0	1	2	3	N/A	
4.	Evidence of erosion at/around inlet	0	1	2	3	N/A	

E. Facility							
0 = Good condition. Well maintained, no action required.							
1 = Moderate condition. Adequately maintained, routine maintenance needed.							
2 = Degraded condition. Poorly maintained, routine maintenance and repair needed.							
3 = Serious condition. Immediate need for repair or replacement.							
<input type="checkbox"/>	Inspected						
<input type="checkbox"/>	Not Inspected						
	Item	0	1	2	3	N/A	Comments
1.	Maintenance access to ditches/bioswales	0	1	2	3	N/A	
2.	Sediment accumulation	0	1	2	3	N/A	

3. Evidence of erosion	0	1	2	3	N/A
4. Evidence of oil/chemical accumulation	0	1	2	3	N/A
5. Evidence of standing water:					
a. Ponding					
b. Noticeable odors					
c. Water stains					
d. Presence of algae or floating aquatic vegetation					
6. Channel remains vegetated; no concrete, rip-rap, or other lining has been added					
7. Grade ensures positive flow					
8. Vegetation	0	1	2	3	N/A
a. Plant composition consistent with approved plans	0	1	2	3	N/A
b. Presence of invasive species/weeds	0	1	2	3	N/A
c. Dead vegetation/exposed soil	0	1	2	3	N/A

E. Outlets						
0 = Good condition. Well maintained, no action required.						
1 = Moderate condition. Adequately maintained, routine maintenance needed.						
2 = Degraded condition. Poorly maintained, routine maintenance and repair needed.						
3 = Serious condition. Immediate need for repair or replacement.						
	Inspected					
	Not Inspected					
	Item				Comments	
1.	Outlets provide stable conveyance out of ditches/bioswales	0	1	2	3	N/A
2.	Excessive trash/debris/sediment accumulation at inlet	0	1	2	3	N/A
3.	Culvert ends structurally sound and unblocked					
4.	Evidence of erosion at/around inlet	0	1	2	3	N/A

F. Miscellaneous						
0 = Good condition. Well maintained, no action required.						
1 = Moderate condition. Adequately maintained, routine maintenance needed.						
2 = Degraded condition. Poorly maintained, routine maintenance and repair needed.						
3 = Serious condition. Immediate need for repair or replacement.						
	Inspected					
	Not Inspected					
	Item				Comments	
1.	Complaints from local residents	0	1	2	3	N/A
2.	Mosquito and vector proliferation	0	1	2	3	N/A
3.	Drainage vault, structurally sound, sedimentation	0	1	2	3	N/A
3.	Encroachment on facility or easement by buildings or other structures	0	1	2	3	N/A

Inspector's Summary (Include action items):

Photographs

	Photo ID	Description
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Sketch of Facility

(note problem areas)

Appendix C: Inspection/Maintenance Schedule

Operations Maintenance Facility Stormwater Pollution Plan
Inspection and Action Requirements Schedule

<u>Requirement</u>	<u>For more information see BMP</u>	<u>Timeline</u>
Inspect, clean, and replace as needed catch basin Inserts on site	Catch Basin Inserts	Ongoing
Inspect and replace damaged sections	Compost Booms	Ongoing
<i>**No scheduled recurring actions</i>	Recycling/Disposal of Vehicle Fluids/Other Wastes	Ongoing
Hold regular meetings	Formation of a Pollution Prevention Team	Annual
Clean oils, debris, sludge, etc. from all BMP systems	Good Housekeeping	Ongoing
Mechanical weed control	Preventive Maintenance	During Dry season, every 2 weeks
Weed control by herbicide spraying	Preventive Maintenance	Once per year in the spring
Check contents of spill kits, maintain and replace pieces as necessary	Spill Prevention and Cleanup	Quarterly during inspections
<i>**No scheduled recurring actions</i>	Employee Training	New Employees and after changes in procedures, techniques or requirements
Conduct visual inspections as described in text	Inspections	One dry weather inspection per year and quarterly during storm events
<i>**No scheduled recurring actions</i>	Record Keeping	Ongoing
<i>**No scheduled recurring actions</i>	BMPs for Dust Control at Unpaved Parking Lots	As Needed
<i>**No scheduled recurring actions</i>	BMPs for Illicit Connections to Storm Drains	Ongoing
<i>**No scheduled recurring actions</i>	BMPs for Maintenance and Repair of Vehicles and Equipment	Ongoing
Inspect, clean, and repair as needed ditches and culverts	BMPs for Maintenance of Roadside Ditches	As Needed
<i>**No scheduled recurring actions</i>	BMPs for Parking and Storage of Vehicles and Equipment	Ongoing
<i>**No scheduled recurring actions</i>	BMPs for Washing and Steam Cleaning Vehicles/Equipment/Building Structures	Ongoing
<i>**No scheduled recurring actions</i>	BMPs for Storage or Transfer (Outside) of Solid Raw Materials, By-Products, or Finished Products	Ongoing

Appendix D: Recommendations for Management of Street Wastes

Appendix IV-G Recommendations for Management of Street Wastes

Introduction

This appendix addresses waste generated from stormwater maintenance activities such as street sweeping and the cleaning of catch basins, and to a limited extent, other stormwater conveyance and treatment facilities. Limited information is available on the characteristics of wastes from detention/retention ponds, bioswales, and similar stormwater treatment facilities. The recommendations provided here may be generally applicable to these facilities, with extra diligence given to waste characterization.

These recommendations do not constitute rules or regulations, but are suggestions for street waste handling, reuse, and disposal using current regulations and the present state of knowledge of street waste constituents. The recommendations address the liquid and solid wastes collected during routine maintenance of stormwater catch basins, detention/retention ponds, ditches and similar storm water treatment and conveyance structures, and street and parking lot sweeping. In addition to these recommendations, end users and other authorities may have their own requirements for street waste reuse and handling.

"Street Wastes" include liquid and solid wastes collected during maintenance of stormwater catch basins, detention/retention ponds, ditches and similar storm water treatment and conveyance structures, and solid wastes collected during street and parking lot sweeping.

"Street Wastes," as defined here, does not include solids and liquids from street washing using detergents, cleaning of electrical vaults, vehicle wash sediment traps, restaurant grease traps, industrial process waste, sanitary sewage, mixed process, or combined sewage/stormwater wastes. Wastes from oil/water separators at sites that load fuel are not included as street waste. Street waste also does not include flood debris, land-slide debris, and chip seal gravel.

Street waste does not ordinarily classify as dangerous waste. The owner of the storm water facility and/or collector of street waste is considered the waste generator and is responsible for determining whether the waste designates as dangerous waste. Sampling to date has shown that material from routine maintenance of streets and stormwater facilities does not classify as dangerous waste (See [Table G.6](#) below). However, it is possible that street waste from spill sites could classify as dangerous waste. Street waste from areas with exceptionally high average daily traffic counts may contain contaminants - such as heavy metals, total petroleum hydrocarbons (TPH), and carcinogenic polycyclic aromatic hydrocarbons (c-PAH) - at levels that limit reuse options.

Contamination in Street Waste Solids

Street waste is solid waste. While street waste from normal street and highway maintenance is not dangerous waste, it is solid waste, as defined under The Solid Waste Management Act ([Chapter 70.95 RCW](#)) and under the Solid Waste Handling Standards ([Chapter 173-350 WAC](#)). The Solid Waste Management Act gives local health departments primary jurisdiction over solid waste management. Street waste solids may contain contaminants at levels too high to allow unrestricted reuse. There are no specific references in the Solid Waste Handling Standards to facilities managing street waste solids although these facilities typically fit under the section dealing with Piles Used for Storage and Treatment (Section 320). There are no specific references for reuse and disposal options for street wastes in the Solid Waste Handling Standards because they do not apply to clean soils. Clean soils are defined as “soils and dredged material which are not dangerous wastes, contaminated soils, or contaminated dredged material ...” ([WAC 173-350-100](#)). Whether or not a soil is a clean soil depends primarily upon the level of contaminants and, to a lesser degree, on the background level of contaminants at a particular location and the exposure potential to humans or other living organisms. Therefore, evaluate both the soil and potential land application sites to determine if a soil is a clean soil.

There is no simple regulatory mechanism available to classify street waste solids for uncontrolled reuse or disposal. Street wastes are defined simply as solid waste. Local health districts have historically used the Model Toxics Control Act Cleanup Regulation (MTCA) Method A residential soil cleanup levels to approximate "clean" and to make decisions on land application proposals. The MTCA regulation is not intended to be directly applied to setting contaminant concentration levels for land application proposals. However, they may provide human health and environmental threat information and a useful framework for such decisions, when used in conjunction with other health and environmental considerations. In addition to MTCA, Ecological Soil Screening Levels from EPA, ODEQ Risk-based concentrations, Toxicological benchmarks from Oak Ridge National Labs, and natural background levels can be considered. Contact the local health department to determine local requirements for making this determination.

Using the old MTCA regulations, many local health departments have set criterion of 200 mg/Kg Total Petroleum Hydrocarbons (TPH) for diesel and heavy fuel oils as a threshold level for clean soil. Using the new MTCA terrestrial ecological evaluation procedures, allowable TPH levels for land application could range from 200 – 460, depending on site characteristics and intended land use. Street waste sampling has historically yielded TPH values higher than 200 mg/kg for hydrocarbons in the diesel and heavy oil range. These values typically reflect interference from natural organic material and, to a lesser extent, relatively immobile petroleum

hydrocarbons. The mobile hydrocarbons that are of concern for ground water protection are generally not retained with street waste solids. Ecology's Manchester Lab has developed an analytical method to reduce the problem of natural organic material being included in the TPH analysis for diesel and heavier range hydrocarbons. This method, called NWTPH-Dx, reduces the background interference associated with vegetative matter by as much as 85% to 95%. However, even with the new methodology, TPH test results for street waste may still be biased by the presence of natural vegetative material and may still exceed 200 mg/kg. Where the laboratory results report no 'fingerprint' or chromatographic match to known petroleum hydrocarbons, the soils should not be considered to be petroleum contaminated soils. [Table G.1](#) lists Typical TPH levels in street sweeping and catch basin solids.

Table G.1 - Typical TPH Levels in Street Sweeping and Catch Basin Solids

Reference:	Street Sweeping (mg/kg)	Catch Basin Solid (mg/kg)
Snohomish County (1) (Landau 1995)	390 – 4300	
King County (1) (Herrera 1995)		123 – 11049 (Median 1036)
Snohomish County & Selected Cities (1) (W & H Pacific, 1993)	163 - 1500 (Median 760)	163 – 1562 (Median 760)
City of Portland (2)) (Bresch)		MDL – 1830 (Median – 208)
City of Seattle – Diesel Range(2) (Hererra 2009)	330-520	780-1700
City of Seattle – Motor Oil(2) (Herrera 2009)	2000-2800	3500-7000
Oregon (1) (Collins; ODOT 1998)	1600 – 2380	
Oregon (3) (Collins; ODOT 1998)	98 - 125	

- (1) Method WTPH 418.1; does not incorporate new methods to reduce background interference due to vegetative material
- (2) Method NWTPH-Dx
- (3) Method WTPH – HCID

Street waste solids frequently contain levels of carcinogenic PAHs (c-PAH) that make unrestricted use inappropriate. This is complicated further by analytical interference caused by organic matter that raises practical quantitation or reporting limits. To greatly reduce the level of interference, the use of US EPA Test Method 8270, incorporating the silica gel cleanup step, is recommended. The calculated c-PAH value can vary greatly depending upon how non-detect values are handled. The new MTCA Method A criterion for c-PAH is 0.1 mg/kg (the sum of all seven c-PAH

parameters multiplied by the appropriate toxicity equivalency factor)) for unrestricted land uses. The MTCA criteria for soil cleanup levels for industrial properties is 2.0 mg/kg. Following this guidance, most sites where street wastes could be reused as soil will be commercial or industrial sites, or sites where public exposure will be limited or prevented. See [Table G.2](#) for typical c-PAH values in Street Waste Solids and Related Materials. See [Table G.3](#) for typical metals concentrations in Catch Basin Sediments.

Table G.2 - Typical c-PAH Values in Street Waste Solids and Related Materials

Sample Source Analyte	City of Everett					WSDOT	
	Street Sweepings	Soil	3-Way Topsoil	Vactor Solids	Leaf & Sand	Sweepings – Fresh	Sweepings Weathered
Benzo(a)anthracene	0.1U	0.076U	0.074U	0.21	0.45	0.56	0.40
Chrysene	0.14	0.09	0.074U	0.32	0.53	0.35	0.35
Benzo(b)fluoranthene	0.11	0.076U	0.074U	0.27	0.52	0.43	0.51
Benzo(k)fluoranthene	0.13	0.076U	0.074U	0.25	0.38	0.39	0.40
Benzo(a)pyrene	0.13	0.076U	0.074U	0.26	0.5	0.41	0.33U
Indeno(1,2,3-cd)pyrene	0.1U	0.076U	0.074U	0.19	0.39	NR	NR
Dibenzo(a,h)anthracene	0.1U	0.076U	0.074U	0.081	0.12	0.39	0.33U
Revised MTCA Benzo(a)pyrene [ND=PQL]	0.215	0.134	0.134	0.388	0.727	0.708	0.597
Benzo(a)pyrene [ND=1/2 PQL]	0.185	0.069	0.067	0.388	0.727	0.708	0.366
Benzo(a)pyrene [See * below]	0.185	0.069	0	0.388	0.727	0.708	0.366
Benzo(a)pyrene [ND=0]	0.155	0.001	0	0.388	0.727	0.708	0.135

*If the analyte was not detected for any PAH, then ND=0; If analyte was detected in at least 1 PAH, then ND=1/2PQL; If the average concentration (using ND=1/2 PQL) is greater than the maximum detected value, then ND=Maximum value.

The new Method A soil cleanup level for unrestricted land use is 0.1 mg/Kg for BAP. ([WAC 173-340-900](#), Table 740-1)

The new Method A soil cleanup level for industrial properties is 2 mg/Kg for BAP. ([WAC 173-340-900](#), Table 745-1)

Table G.3 - Typical Metals Concentrations in Catch Basin Sediments

PARAMETER	Ecology 1993	Thurston 1993	King County 1995	King County 1995	City of Seattle 2003 through 2011
METALS; TOTAL (mg/kg)	(Min – Max)	(Min – Max)	(Min - Max)	Mean	Min- Max (Mean)
As	<3 -- 24	.39 -- 5.4	4 – 56	0.250	<5 – 50 (9.3)
Cd	0.5 -- 2.0	< 0.22 -- 4.9	0.2 – 5.0	0.5	
Cr	19 -- 241	5.9 -- 71	13 - 100	25.8	
Cu	18 -- 560	25 -- 110	12 - 730	29	9.1 - 3,280 (166)
Pb	24 -- 194	42 -- 640	4 – 850	80	3 - 3,690 (154)
Ni	33 -- 86	23 -- 51	14 – 41	23	
Zn	90 -- 558	97 -- 580	50 – 2000	130	44 - 4,170 (479)
Hg	.04 -- .16	.024 -- .193			<0.03 - 3.8 (0.16)

Permitting of street waste treatment and storage facilities as solid waste handling facilities by the local health department is required.

Under the Solid Waste Management Act, local health departments have primary jurisdiction over solid waste management.

Street waste handling facilities are subject to the requirements of the Solid Waste Handling Standards. Specific requirements depend upon the manner in which the waste is managed. Most facilities are permitted under the section dealing with Piles Used for Storage and Treatment (Section 320).

For most facilities, permit requirements include a plan of operation, sampling, record keeping and reporting, inspections, and compliance with other state and local requirements. The plan of operation should include a procedure for characterization of the waste and appropriate reuse and disposal options, consistent with the recommendations in this document and applicable federal, State and local requirements.

Ecology suggests a street waste site evaluation (see sample at end of this appendix) for all street waste as a method to identify spill sites or locations that are more polluted than normal.

Ecology based the disposal and reuse options listed below on characteristics of routine street waste and are not appropriate for more polluted wastes. The collector of street waste should evaluate it for its potential to be classified as dangerous waste. The collector should also be aware that this waste may not meet end users requirements.

Street waste suspected to be dangerous waste should not be collected with other street waste. Material in catch basins with obvious contamination (unusual color, staining, corrosion, unusual odors, fumes, and oily sheen) should be left in place or segregated until tested. Base testing activities on probable contaminants. Street waste suspected to be dangerous waste should be collected and handled by someone experienced in handling dangerous waste. If collecting potential dangerous waste because of emergency conditions, or if the waste becomes suspect after it is collected, it should be handled and stored separately until a determination as to proper disposal is made. Street waste treatment and storage facilities should have separate "hot load" storage areas for such waste. **Dangerous Waste** includes street waste known or suspected to be dangerous waste. This waste must be handled following the Dangerous Waste Regulations ([Chapter 173-303 WAC](#)) unless testing determines it is not dangerous waste.

Spills should be handled by trained specialists. Public works maintenance crews and private operators conducting street sweeping or cleaning catch basins should have written policies and procedures for dealing with spills or suspected spill materials. Emergency Spill Response telephone numbers should be immediately available as part of these operating policies and procedures.

The end recipient of street waste must be informed of its source and may have additional requirements for its use or testing that are not listed here. This document is based primarily on average street waste's chemical constituents and their potential affect on human health and the environment. There are physical constituents (for example, broken glass or hypodermic needles) or characteristics (for example, fine grain size) that could also limit reuse options. Additional treatment such as drying, sorting, or screening may also be required, depending on the needs and requirements of the end user.

Street waste treatment and storage facilities owned or operated by governmental agencies should be made available to private waste collectors and other governmental agencies on a cost recovery basis. Proper street waste collection and disposal reduces the amount of waste released to the environment. The operators of street waste facilities should restrict the use of their facilities to certified and/or licensed waste collectors who meet their training and liability requirements.

The use of street waste solids under this guidance should not lead to designation as a dangerous waste site, requiring cleanup under MTCA. Exceeding MTCA Method A unrestricted land use cleanup levels in street waste and products made from street waste, does not automatically make the site where street waste is reused a cleanup site. A site is reportable only if "-a release poses a threat to human health or the environment-" (Model Toxic Control Act). The reuse options proposed below are designed to meet the condition of not posing a threat to human health or the environment.

Testing of street waste solids will generally be required as part of a plan of operation that includes procedures for characterization of the waste. Testing frequency, numbers of samples, parameters to be analyzed, and contaminant limit criteria should all be provided as part of an approved plan of operation. However, street sweepings that consist primarily of leaves, pine needles, branches, and grass clippings do not require testing. [Tables G.4](#) and [G.5](#) below provide some recommended parameters and sampling frequencies for piles of street waste solids from routine street maintenance. These are provided as guidance only, and are intended to assist the utility and the local health department in determining appropriate requirements. Sampling requirements may be modified, over time, based on accumulated data. When the material is from a street waste facility or an area that has never been characterized by testing, the test should be conducted on a representative sample before co-mingling with other material. Testing in these instances would be to demonstrate that the waste does not designate as dangerous waste and to characterize the waste for reuse. At a minimum, the parameters in [Table G.4](#) are recommended for these cases. Note that it will generally not be necessary to conduct TCLP analyses when the observed values do not exceed the recommended

values in [Table G.4](#). [Table G.6](#) illustrates some observed relationships between total metals and TCLP metals values.

For further information on testing methods and sampling plans, refer to:

- SW 846 (US EPA, Office of Solid Waste, Test Methods for Evaluating Solid Wastes, 3rd Ed.) and
- Standard Methods for the Examination of Water and Wastewater (American Public Health Association, et al., 18th Edition 1992)

Table G.4 - Recommended Parameters and Suggested Values for Determining Reuse & Disposal Options

Parameter	Suggested Maximum Value
Arsenic, Total	20.0 mg/kg (a)
Cadmium, Total	2.0 mg/kg (b)
Chromium, Total	42 mg/kg (c)
Lead, total	250 mg/kg (d)
Nickel	100 mg/kg (e)
Zinc	270 mg/kg (e)
Mercury (Inorganic)	2.0 mg/kg (f)
PAHs (Carcinogenic)	0.1 – 2.0 mg/kg (see Note at (g) below)
TPH (Heavy Fuel Oil)	2,000 mg/kg (see Note at (h) below)
TPH (Diesel)	200 mg/kg (see Note at (i) below)
TPH (Gasoline)	100 mg/kg (j)
Benzene	0.03 mg/kg (j)
Ethylbenzene	6 mg/kg (j)
Toluene	7 mg/kg (j)
Xylenes (Total)	9 mg/kg (j)

- (a) Arsenic: from MTCA Method A - Table 740-1: Soil cleanup levels for unrestricted land uses
- (b) Cadmium: from MTCA Method A – Table 740-1: Soil cleanup levels for unrestricted land uses.
- (c) Chromium; from MTCA Method A - Table 740-1: Soil cleanup levels for unrestricted land uses
- (d) Lead; from MTCA Method A – Table 740-1: Soil cleanup levels for unrestricted land uses
- (e) Nickel and Zinc; from MTCA Table 749-2: Protection of Terrestrial Plants and Animals
- (f) Mercury; from MTCA Method A – Table 740-1: Soil cleanup levels for unrestricted land uses
- (g) PAH-Carcinogenic; from MTCA Method A – Table 740-1: Soil cleanup levels for unrestricted land uses and Table 745-1, industrial properties, based on cancer risk via direct contact with contaminated soil (ingestion of soil) in residential land use situations and commercial/industrial land uses. Note: The local health department may permit higher levels as part of a Plan of Operation, where they determine that the proposed end use poses little risk of direct human contact or ingestion of soil.
- (h) TPH (Heavy Fuel Oil); from MTCA Method A – Table 740-1: Soil cleanup levels for unrestricted land uses
- (i) TPH (Diesel): from MTCA Table 749-3: Protection of Terrestrial Plants and Animals..
- (j) BETX; from MTCA Method A - Table 740-1: Soil cleanup levels for unrestricted land uses.

Table G.5 - Recommended Sampling Frequency for Street Waste Solids

Cubic Yards of Solids	Minimum Number of Samples
0 – 100	3
101 – 500	5
501 – 1000	7
1001 – 2000	10
>2000	10 + 1 for each additional 500 cubic yards

Modified from Ecology's Interim Compost Guidelines

Table G.6 - Pollutants in Catch Basin Solids – Comparison to Dangerous Waste Criteria

PARAMETER	Range of Values in Catch Basin Waste	Range of Values in Catch Basin Waste	Dangerous Waste Criteria
METALS	Total Metals (mg/kg)	TCLP Metals (mg/kg)	TCLP values (mg/l)
As	<3 - 56	< .02 - 0.5	5.0
Cd	<.22 - 5	.0002 - .03	1.0
Cr	5.9 - 241	.0025 - .1	5.0
Cu	12 - 730	.002 -- .88	none
Pb	4 - 850	.015 -- 3.8	5.0
Ni	23 - 86	< .01 -- .36	none
Zn	50 - 2000	.04 -- 6.7	none
Hg	.02 - .19	.0001 -- .0002	0.2

Data from Thurston County (Thurston County 1993), King County (Herrera 1995) and Ecology (Serdar; Ecology 1993).

For street waste not exceeding the suggested maximum values in [Table G.4](#), Ecology recommends the following street waste solids reuse and disposal options:

- Compost street sweepings that consist primarily of leaves, pine needles and branches, and grass cuttings from mowing grassy swales. Remove litter and other foreign material prior to composting or the composting facility must provide for such removal as part of the process. Dispose of the screened trash as solid waste at an appropriate solid waste handling facility.
- It is possible to reuse coarse sand screened from street sweeping after recent road sanding, for street sanding, providing there is no obvious contamination from spills. The screened trash is solid waste and must be disposed of at an appropriate solid waste handling facility.
- Screen roadside ditch cleanings, not contaminated by a spill or other release and not associated with a stormwater treatment system such as a bioswale, to remove litter and separate into soil and vegetative matter (leaves, grass, needles, branches, etc.). The soils from these activities

are typically unregulated as solid waste. Ditching material that may be contaminated must be stored, tested, and handled in the same manner as other street waste solids. It is the generator's responsibility to visually inspect and otherwise determine whether the materials may be contaminated.

- Construction street wastes; solids collected from sweeping or in storm water treatment systems at active construction sites - may be placed back onto the site that generated it, or managed by one of the methods listed below, provided that it has not been contaminated as a result of a spill. For concrete handling at construction site, refer to BMP C151 in Volume II, Construction Stormwater Pollution Prevention.
- Use screened street waste soils as feedstock materials for topsoil operations. Reserve this option for street waste soils with very low levels of contaminants. Evaluate the allowable level of contaminants based on the proposed use of the soil. At a minimum, the contaminant level in the soil should be below established action levels for in situ soils. Do not dilute street waste soils with clean soils or composted material as a substitute for treatment or disposal. There may be unscreened physical contaminants (for example, glass, metal, nails, etc.) in street waste. Where present, these contaminants in street waste could preclude its use as feedstock material for topsoil operations.
- Fill in parks, play fields, golf courses and other recreational settings, where direct exposure by the public is limited or prevented. One way to accomplish is to cover the fill with sod, grass or other capping material to reduce the risk of soil ingestion. Evaluate the level of contaminants in the street waste to ensure that the soils meet the definition of clean soils when used in this manner.
- Fill in commercial and industrial areas, including soil or top dressing for use at industrial sites, roadway medians, airport infields and similar sites, where there is limited direct human contact with the soil, and stabilize the soils with vegetation or other means. Evaluate the level of contaminants in the street waste to ensure that the soils meet the definition of clean soils when used in this manner.
- Top dressing on roadway slopes, road or parking lot construction material and road subgrade, parking lot subgrade, or other road fill. Evaluate the level of contaminants in the street waste to ensure that the soils meet the definition of clean soils when used in this manner.
- Daily cover or fill in a permitted municipal solid waste landfill provided the street waste solids have been dewatered. Street waste solids may be acceptable as final cover during a landfill closure. Consult the local health department and landfill operator to determine conditions of acceptance.
- Treatment at a permitted contaminated soil treatment facility.

- Recycling through incorporation into a manufactured product, such as Portland cement, prefabricated concrete, or asphalt. Consult the facility operator to determine conditions of acceptance.
- Other end-use as approved by the local health department
- Disposal at an appropriate solid waste handling facility.

For street waste that exceeds the suggested maximum values in [Table G.4](#), Ecology recommends the following street waste solids reuse and disposal options:

- Treatment at a permitted contaminated soil treatment facility.
- Recycling through incorporation into a manufactured product, such as Portland cement, prefabricated concrete, or asphalt. Consult the facility operator to determine conditions of acceptance.
- Other end-use as approved by the local health department
- Disposal at an appropriate solid waste handling facility.

Street Waste Liquids

General Procedures:

Street waste collection should emphasize retention of solids in preference to liquids. Street waste solids are the principal objective in street waste collection and are substantially easier to store and treat than liquids.

Street waste liquids require treatment before their discharge. Street waste liquids usually contain high amounts of suspended and total solids and adsorbed metals. Treatment requirements depend on the discharge location.

The entity responsible for operation and maintenance of the system must approve discharges to sanitary sewer and storm sewer systems. Ecology will not generally require waste discharge permits for discharge of stormwater decant to sanitary sewers or to stormwater treatment BMPs constructed and maintained in accordance with Ecology's Stormwater Management Manual for Western Washington (See Volume 5, Sections 7 through 12 for further detail on approved BMPs).

Follow the following required order of preference, for disposal of catch basin decant liquid and water removed from stormwater treatment facilities.

- 1. Discharge of catch basin decant liquids to a municipal sanitary sewer connected to a Public Owned Treatment Works (POTW).** Discharge to a municipal sanitary sewer requires the approval of the

sewer authority. Approvals for discharge to a POTW will likely contain pretreatment, quantity, and location conditions to protect the POTW. Following the local sewer authority's conditions is a permit requirement.

2. Discharge of catch basin decant liquids may be allowed into a Basic or Enhanced Stormwater Treatment BMP, if option 1 is not available. Only discharge liquid collected from cleaning catch basins and stormwater treatment wetvaults back into the storm sewer system under the following conditions:

- The preferred disposal option of discharge to sanitary sewer is not reasonably available.
- The discharge is to a Basic or Enhanced Stormwater Treatment Facility. If pretreatment does not remove visible sheen from oils, the treatment facility must be able to prevent the discharge of oils causing a visible sheen.
- The discharge is as near to the treatment facility as is practical, to minimize contamination or recontamination of the collection system.
- The storm sewer system owner/operator has granted approval and has determined that the treatment facility will accommodate the increased loading. Part of the approval process may include pretreatment conditions to protect the treatment BMP. Following local pretreatment conditions is a requirement of this permit.
- Ecology must approve in advance flocculants for the pretreatment of catch basin decant liquids. The liquids must be non-toxic under the circumstances of use.

The discharger shall determine if reasonable availability of sanitary sewer discharge exists, by evaluating such factors as distance, time of travel, load restrictions, and capacity of the stormwater treatment facility.

3. Operators may return water removed from stormwater ponds, vaults, and oversized catch basins to the storm sewer system.

Stormwater ponds, vaults, and oversized catch basins contain substantial amounts of liquid, which hampers the collection of solids and poses problems in hauling the removed waste away from the site. Water removed from these facilities may be discharged back into the pond, vault, or catch basin provided:

- Operators may discharge clear water removed from a stormwater treatment structure directly to a down gradient cell of a treatment pond or into the storm sewer system.
- Turbid water may be discharged back into the structure it was removed from if the removed water has been stored in a clean container (eductor truck, Baker tank, or other appropriate container used

specifically for handling stormwater or clean water); and there will be no discharge from the treatment structure for at least 24 hours.

- The storm sewer system owner/operator must approve the discharge.

Table G.7 - Typical Catch Basin Decant Values Compared to Surface Water Quality Criteria

PARAMETER	State Surface Water Quality Criteria		Range of Values Reported	Range of Values Reported
	Freshwater Acute (ug/l – dissolved metals)	Freshwater Chronic (ug/l – dissolved metals)	Total Metals (ug/l)	Dissolved Metals (ug/l)
Arsenic	360	190	100 – 43000	60 - 100
Cadmium*	2.73	0.84	64 - 2400	2 - 5
Chromium (total)			13 -- 90000	3 - 6
Chromium (III)*	435	141		
Chromium (VI)	0.5	10		
Copper*	13.04	8.92	81 -- 200000	3 - 66
Lead*	47.3	1.85	255 -- 230000	1 - 50
Nickel*	1114	124	40 -- 330	20 - 80
Zinc*	90.1	82.3	401 -- 440000	1900 - 61000
Mercury	2.10	.012	0.5 -- 21.9	

*Hardness dependent; hardness assumed to be 75 mg/l

Table G.8 - Typical Values for Conventional Pollutants in Catch Basin Decant

PARAMETER	Ecology 1993	(Min - Max)	King County 1995	(Min - Max)
Values as mg/l; except where stated	Mean		Mean	
pH	6.94	6.18 - 7.98	8	6.18 - 11.25
Conductivity (umhos/cm)	364	184 - 1110	480	129 - 10,100
Hardness (mg/l CaCO3)	234	73 - 762		
Fecal Coliform (MPN/100 ml)	3000			
BOD	151	28 - 1250		
COD	900	120 - 26,900		
Oil & Grease	11	7.0 - 40	471	15 - 6242
TOC	136	49 - 7880	3670	203 - 30,185
Total Solids	1930	586 - 70,400		
Total Dissolved Solids	212	95 - 550		
Total Suspended Solids	2960	265 - 111,000		
Settleable Solids (ml/hr)	27	2 - 234	57	1 - 740
Turbidity (ntu)	1000	55 - 52,000	4673	43 - 78,000

Table G.9 - Catch Basin Decant Values Following Settling¹

Parameter; Total Metals in mg/l	Portland – Inverness Site Min - Max	King County - Renton Min - Max	METRO Pretreatment Discharge Limits
Arsenic	.0027 .015	< MDL – 0.12	4
Cadmium	.0009 - .0150	< MDL – 0.11	0.6
Chromium	.0046 - .0980	.017 – .189	5
Copper	.015 - .8600	.0501 – .408	8
Lead	.050 – 6.60	.152 – 2.83	4
Nickel	.0052 - .10	.056 - .187	5
Silver	.0003 - .010	< MDL	3
Zinc	.130 – 1.90	.152 – 3.10	10
Settleable Solids; ml/L	No Data	.02 - 2	7
Nonpolar FOG	5.7 - 25	5 - 22	100
Ph (std)	6.1 – 7.2	6.74 – 8.26	5.0 - 12.0
TSS	2.8 - 1310		
Recorded Total Monthly Flow; Gallons	Data not available	31,850 - 111,050	
Recorded Max. Daily Flow; Gallons	Data not available	4,500 - 18,600	25,000 GPD
Calculated Average Daily Flow; GPD	Data not available	1517 - 5428	

1) Data from King County's Renton Facility (data from 1998 – 199) and the City of Portland's Inverness Site (data from 1999 – 2001); detention times not provided

Site Evaluation

Ecology suggests use of a site evaluation as method to identify spill sites or locations that potentially contain dangerous wastes.

The site evaluation will aid in determining if waste is a dangerous waste and in determining what to test for if dangerous waste is suspected. The site evaluation will also help to determine if the waste does not meet the requirements of the end users.

There are three steps to a site evaluation:

1. An **historical review** of the site for spills, previous contamination and nearby toxic cleanup sites and dangerous waste and materials.

The historical review will be easier if done on an area wide basis prior to scheduling any waste collection. The historical review should be more thorough for operators who never collected waste at a site before. At a minimum, the historical review should include operator knowledge of the area's collection history or records kept from previous waste collections.

Private operators should ask the owner of the site for records of previous contamination and the timing of the most recent cleaning. Ecology's Hazardous Substance Information Office maintains a Toxic Release Inventory and a "Facility Site" webpage, tracking more than 15,000 sites. This information is available from Ecology through the Internet at

http://www.ecy.wa.gov/epcra/chemical_summary_2008/tri_intro_numbers.html or by calling a toll-free telephone number (1-800-633-7585).

The webpage allows anyone with web-access to search for facility information by address, facility name, town, zip code, and SIC code, etc. It lists why the Department of Ecology is tracking each one (NPDES, TSCA, RCRA, Clean Air Act, etc.), as well as who to call within Ecology to find out more about the given facility. EPA's toxic release website is http://iaspub.epa.gov/triexplorer/tri_release.chemical

2. An area visual inspection for potential contaminant sources such as a past fire, leaking tanks and electrical transformers, and surface stains.

Evaluate the area around the site for contaminant sources prior to collection of the waste. The area visual inspection may be done either as part of multiple or as single site inspections. If the inspection finds a potential contaminant source, delay the waste collection until the potential contaminant is assessed.

A second portion of the area visual inspection is a subjective good housekeeping evaluation of the area. Locations with poor housekeeping commonly cut corners in less obvious places. Inspect these sites in greater detail for illegal dumping and other contamination spreading practices.

3. A waste and container inspection before and during collection.

The inspection of the waste and catch basin or vault is the last and perhaps most critical step in the site evaluation.

For example, if the stormwater facility has an unusual color in or around it, then there is a strong possibility that someone dumped something into it. Some colors to be particularly wary of are yellow-green from antifreeze dumping and black and rainbow sheen from oil and/or grease dumping. In addition, if the inspector observes any staining or corrosion, then a solvent may have been dumped.

Fumes are also good indicators of potential dangerous or dangerous waste. Avoid deliberate smelling of catch basins for worker safety, but suspicious odors may be encountered from catch basins thought to be safe. Some suspicious odors are rotten eggs (hydrogen sulfide is present), gasoline or diesel fumes, or solvent odors. If unusual odors are noted, contact a dangerous waste inspector before cleaning the basin.

Finally, operator experience is the best guide to avoid collection of contaminated waste.

This page purposely left blank

Resource Materials – Management of Street Wastes

- Austin, City of, Removal Efficiencies of Stormwater Control Structures. Environmental and Conservation Services Department, 1990.
- ASTM D2487 - 06 (2006). Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System). American Society for Testing Materials.
- Binkhorst, G.K. and Robbins, G.A. (1998). Conducting and Interpreting Slug tests in Monitoring Wells with Partially Submerged Screens. *Ground Water*, Volume 36, Number 2, pp. 225-229.
- British Petroleum (BP) Corporation of North America (2002). Monitoring Well Comparison Study: An Evaluation of Direct Push vs. Conventional Monitoring Wells. USEPA Office of Underground Storage Tanks, EPA Regions IV and V.
- City of Portland Vactor Waste Decant Data, Personal Communication with Katie Bretsch, April 2000
- City of Los Angeles website, web page relating to pools and disposal of their associated waters
<http://www.lacitysan.org/wpd/siteorg/education/bmps/swimpools.htm>
- County of Napa website, web page relating to pools, spas, fountains and the disposal of their associated waters
<http://www.countyofnapa.org/Pages/DepartmentContent.aspx?id=4294969083>
- Campbell, Robert, Street Waste Characterization Testing Program, VTP-1, Snohomish County Public Works Maintenance & Operations Division, March 1994.
- Cohen, et al., (1992). Evaluation of Visual Methods to Detect NAPL in soil and Water. *Ground Water Monitoring and Remediation*, Fall, 1992, pp. 132-141.
- Collins, Jay, Oregon Department of Transportation, Street Waste Issues and Options FHWA-OR-RD-99-05, July 1998
- Conant et. al. (1995). Effect of Well Screen Placement on Recovery of Vertically Stratified Contaminants. *Ground Water*, Volume 33, Number 2, pages 455-456.
- Dahlen et al. (2003). Impacts to Groundwater Resources in Arizona from Leaking Underground Storage Tanks (LUSTS). Arizona State University, in Cooperation with the Arizona Department of Environmental Quality (ADEQ).
- Ecology, TPH Draft Guidance Publication 10-09-057..
- Ecology, Analytical Methods for Petroleum Hydrocarbons, Publication No. ECY 97-602, June 1997.
- Ecology, Dangerous Waste Regulations, Chapter 173-303 WAC.

- Ecology, Discussion Draft - Recommendations for Management of Street Waste, June 1999
- Ecology, Solid Waste Handling Standards, Chapter 173-350 WAC..
- Ecology, Guidance for Remediation of Petroleum Contaminated Soils, pub 91-30, 1994.
- Ecology, Model Toxics Control Act (MTCA) Cleanup Regulations, Chapter 173-340 WAC
- Ecology, Water Quality Standards For Surface Waters of the State of Washington, Chapter 173-201A.
- Fitzgerald, J. (1993). Onsite Analytical Screening of Gasoline Contaminated Media Using a Jar Headspace Procedure: in Principles and Practices for Petroleum Contaminated Soils. E.J. Calabrese and P.T. Kosteki, eds. Lewis Publishers: Boca Raton, Florida. Pp. 49-66.
- Hazardous Waste Management Act of 1976, Chapter 70.105 RCW
- Henebry, B.J. and Robbins, G.A. (2000). Reducing the Skin Effect on Hydraulic Conductivity Determinations in Multilevel Samplers Installed with Direct Push Methods. Ground Water, Volume 38, Number 6, pp. 883-886.
- Herrera Environmental Consultants, Inc., King County Maintenance Waste Disposal Characterization Study, prepared for King County Surface Water Management Division, January Draft, 1995.
- Herrera Environmental Consultants, Inc., Street Truck Operations and Disposal Practices, 1991.
- Holz, Thomas, Street Waste Disposal, Thurston County, Washington: Final Engineering Report and One Year Certification, Grant No. Tzx 91-129, May, 1994.
- Hutchins, S.R., and S.D. Acree (2000). Groundwater Sampling Bias Observed in Shallow, Conventional Wells. Ground Water Monitoring and Remediation, Volume 20, Number 1, Pages 86-93.
- Jacobson, Michael, Data Summary of Catch Basin and Vactor Waste Contamination in Washington State, Final Report, Center for Urban Water Resources, University of Washington, 1993.
- Kaplan et. al. (1996) Patterns of Chemical Changes During Environmental Alteration of Hydrocarbon Fuels. Ground Water. Volume 28, Number 2, pp. 244-252.
- King County, Vactor Waste Disposal Plan, King County Surface Water Management Division, Water Quality Unit, 1994.
- King County's Renton Facility Decant Data, Personal Correspondence with Jerry Creek, and Susan Turner, June 1999
- Landau Associates, Inc. Snohomish County Street Waste Characterization, Final Report, December 1995

- Marinelli, F. and Durnford, D.S. (1995). LNAPL Thickness in Monitoring Wells Considering Hysteresis and Entrapment. *Ground Water*, Volume 34, Number 3, pp. 405-414
- Kram, M. D. Lorenzana, J. Michaelsen and E. Lory (2001), Performance Comparison: Direct Push Wells versus Drilled Wells. Naval Facilities Engineering Command, Technical Report TR-2120-ENV.
- North Dakota Department of Health (2002). Guideline: Procedures for Headspace Analysis of Gasoline Contaminated Soils. Division of Waste Management—Underground Storage Tank Program.
- Pitt, R. and P. Bissonnette, Bellevue Urban Runoff Program; Summary Report, Prepared for City of Bellevue Storm and Surface Water Utility, 1984.
- Pitt, R., 1985, Characterizing and Controlling Urban Runoff through Street and Sewer Cleaning, EPA/600/2-85/038
- Pond, Rodney, South Base Pond Report - The Response of Wetland Plants to Stormwater Runoff From a Transit Base, Municipality of Metropolitan Seattle Publication 775, 1993.
- Robbins, G.A., G.K. Binkhorst, M.A. Butler, B.K. Bradshaw, C. Troskosky, and K. Billick (1996). Recommended Guidelines for Applying Field Screening Methods in Conducting Expedited Site Investigations at Underground Storage Tank Sites in Connecticut. For the Connecticut Department of Environmental Protection.
- Robbins, G.A., Butler, M. and Zack, P. (1997). Recommended Guidelines for Multilevel Sampling of Soil and Groundwater in Conducting Expedited Site Investigations at Underground Storage Tanks Sites in Connecticut. Developed for the LUST Trust Fund Program, Connecticut Department of Environmental Protection.
- Robbins, G.A. (2000). Expedited Site Assessment: The CD. Prepared for the Connecticut Department of Environmental Protection (Excel File “constant.xls”).
- Schueler, Thomas, R., Pollutant Dynamics of Pond Muck, *Wat. Prot. Techniques*, 1 (2). Summer 1994
- Seattle Public Utilities and Herrera Environmental Consultants, Inc. Seattle Street Sweeping Pilot Study, April 22, 2009
http://www.seattle.gov/util/groups/public/@spu/@drainsew/documents/webcontent/spu01_005046.pdf
- Serdar, Dave, Ecology, Contaminants in Vector Truck Wastes, April 1993
- State of Oregon Department of Environmental Quality, Fact Sheet: Disposing of Chlorinated Water from Swimming Pools and Hot Tubs, Updated 1/10/12, on website:
<http://www.deq.state.or.us/wq/pubs/factsheets/wastewater/bmpchlorwaterdisp.pdf>

Thurston County Environmental Health Division, (Environmental Health Division-Unpublished data), 1993

Thurston County Environmental Health Division, Report on Street Facility Monitoring Grant Tax No. 91-129, April 1993

TPH Criteria Working Group (1999). Volume 4: Development of Fraction Specific Reference Doses (RFDs) and Reference Concentration (RFCs) for Total Petroleum Hydrocarbons (TPH). Amherst Scientific Publishers.

<http://www.aehs.com/publications/catalog/contents/tph.htm>

TYMCO, Inc. Best Management Practices - Street Sweeping, Waco, Texas, 1993.

USEPA (2006). Guidance on Systematic Planning using the Data Quality Objective Process, EPA QA/G-4". EPA/240/B-06/001. <http://www.epa.gov/quality1/qs-docs/g4-final.pdf>

USEPA (1996). How to Effectively Recover Free Product at Leaking Underground Storage Tank Sites: A Guide for State Regulators. EPA 510-R-96-001. Chapter III: Correction to Compute Hydraulic Head In Wells Containing Free Product Behavior of Hydrocarbons in the Subsurface, Exhibit III-10, p. III-16 <http://www.epa.gov/oust/pubs/fprg.htm>

US Environmental Protection Agency, "Methods for Evaluating Solid Waste, Physical/ Chemical

US Environmental Protection Agency, Test Methods for Evaluating Solid Wastes, (SW-846), 3rd Edition, 1986.

W&H Pacific, Inc., Street and Street Sweeping Waste Characteristics Snohomish County, Washington, February 1994.

Appendix E: Review and Revision Documentation Form

