



STORMWATER POLLUTION PREVENTION PLAN

**CITY OF RAYMORE
PUBLIC WORKS DEPARTMENT**

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**Public Works Department
SWPPP and Operation and Maintenance (O&M) Manual**

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I. Introduction

This manual is designed to assist City of Raymore personnel on how to properly implement Best Management Practices (BMP's) on City owned facilities and field activities as part of the municipal stormwater management program.

This manual will identify the potential pollutants and activities that can contribute to the pollution of storm waters as well as the BMPs used to ensure that the potential for these pollutants affecting storm water is diminished to the maximum extent practicable.

II. Potential Pollutant Sources

A variety of pollutants are associated with stormwater pollution due to municipal activities including: sediment, nutrients, bacteria and viruses, oxygen demanding substances, oil and grease, metals, toxic pollutants and floatables (Table 1). The impacts of these pollutants on water quality along with a discussion on municipal activities which can potentially contribute to their introduction into stormwater runoff are presented in the following subsections.

A) Sediment. Sediment is a common component of stormwater, and is considered to be one of the most damaging pollutants. Sediment fills in streams, lakes, rivers, wetlands and road drainage ditches, and can affect aquatic life by smothering fish larvae and eggs. Suspended soil particles can cause water to look cloudy or turbid. Excessive turbidity reduces light penetration in the water, impairing the sight of feeding fish; clogs fish fills, and increases drinking water treatment costs. Fine sediment also acts as a vehicle to transport other pollutants including nutrients, trace metals and hydrocarbons to nearby surface waters. Significant sediment-borne pollutants are associated with highway runoff; originating from pavement wear, vehicles and other road maintenance. Other sources of sediment include erosion from new development and construction sites.

B) Nutrients- nutrients, especially nitrogen and phosphorus, can cause algae blooms and excessive aquatic plant growth in water bodies. These conditions can impair many important uses of these waters, including recreation, fish habitat, and water supply. Nitrogen and phosphorus associated with stormwater runoff come mostly from fertilizer application.

Phosphorus has also been associated with application of sand and salt of roads. Nutrients are a result of yard debris, garbage, as well as fertilizer and pesticide use.

C) Metals- Trace metals are a water quality concern because the toxic effects they can have on aquatic life. Metals can also be a health hazard to humans through direct ingestion of contaminated water or through eating contaminated fish. The most common trace metals found in stormwater runoff in urban areas are lead, zinc, copper, cadmium, nickel and other metal sources originating from body rust, brake lining wear steel highway structures, tire wear, steel fabrication and vehicle maintenance.

D) Oxygen-demanding substances- oxygen-demanding substances tend to deplete the dissolved oxygen levels in streams and lakes. The depleted oxygen supply can result in the reduction of aquatic life. Oxygen demanding substances are found in yard waste (such as leaves and lawn clippings), animal wastes, street litter and organic matter.

E) Bacteria and Viruses- bacteria and viruses are the most common microorganisms found in surface water runoff. Bacteria and viruses often carry diseases which can be transferred to animal life and to humans. The main sources of these contaminants are animal excrement and sanitary sewer overflows.

F) Oil, Grease and Hydrocarbons- oil grease and hydrocarbons contain a wide array of compounds, some of which are toxic to aquatic organisms at low concentrations. The main sources of oil and grease are leakage from engines and waste oil disposal. Hydrocarbons typically come from spills, leaks, lubricants and asphalt surface leachate. Hydrocarbon levels are highest from parking lots, roads and service stations.

G) Floatables- floatables (garbage) are pollutants that may be contaminated with heavy metals, pesticides and bacteria. Typically resulting from street refuse or industrial yard waste, floatables also create an eyesore in water ways *and* detention basins.

Pollutant sources and their Impacts

Pollutant	Source	Impacts
Sediment	Construction sites, vehicle/boat washing, agricultural sites	Destruction of aquatic habitat for fish and plants, transportation of attached oils, nutrients, and other chemical contamination, increased flooding.
Nutrients (Phosphorus, Nitrogen, Potassium, Ammonia)	Fertilizers from agricultural operations, lawns and gardens, livestock and pet waste, decaying grass and leaves, sewer overflows and leaks.	Harmful algal blooms, reduced oxygen in the water, changes in water chemistry and pH. Nutrients can result in excessive or accelerated growth of vegetation, resulting in impaired use of water in lakes and other receiving waters.
Hydrocarbons (Petroleum Products, Benzene, Toluene, Ethyl Benzene, Xylene)	Vehicle and equipment fluid leaks engine emissions, pesticides, equipment . cleaning, leaking fuel storage containers, fuel spills, parking lot runoff	These pollutants are toxic to humans and wildlife at very low levels. Carcinogenic. Teratogenic.
Heavy Metals	Vehicle brake and equipment wear, engine emissions, parking lot runoff, batteries, paint and wood preservatives, fuels and fuel additives, pesticides, cleaning agents	Metals including lead, zinc, cadmium, copper, chromium and nickel are commonly found in stormwater. Metals are of concern because they are toxic to all life at very low levels. Carcinogenic. Teratogenic.
Toxic Chemicals (Chlorides)	Pesticides, herbicides, dioxins, PCBs, industrial chemical spills and leaks, deicers, solvents,	Chemicals are of concern because they are toxic to all life at very low levels. Carcinogenic. Teratogenic.
Debris/Litter/Trash	Improper solid waste storage and disposal, abandoned equipment, litter	Aesthetically unpleasant. Risk of decay product toxicity. Risk of aquatic animal entrapment or ingestion and death.
Pathogens (Bacteria)	Livestock, human, and pet waste, sewer overflows and leaks, septic systems	Human health risks due to disease and toxic contamination of aquatic life.

III. Facilities Locations, Activities and Control Measures

1. Public Works Operations and Maintenance Facility (High priority)

Location- The facility covered by this SWPPP is the Operations and Maintenance Facility located at 1021 South Madison Street, Raymore, Missouri.

MAP 1 Public Works Operations Facility



Activities-

The following potential pollution generating activities are conducted at this facility:

- Washing, pressure washing, and steam cleaning of vehicles and equipment.
- Loading and unloading of solid and liquid materials.
- Minor automotive repair and maintenance.
- Painting, finishing, and coating of equipment.
- Storage of liquids in above ground tanks
- Parking lot maintenance and storage of vehicles and equipment.
- Storage of lubricants and other vehicle maintenance liquids

Pollution Generating Activity	Potential Pollutants	Relevant Source Control BMP
Washing, pressure washing, and steam cleaning of vehicles and equipment.	Soaps and detergents, oils and greases, suspended solids, metals	SOP Vehicle Washing
Loading and unloading of solid and liquid materials	Hydraulic fluids, oils, bulk salt, liquid de-icing fluid, construction debris and materials etc.	SOP Salt Storage SOP Transporting Excavated Material SOP Petroleum and Chemical Storage
Minor automotive repair and maintenance	Lubricating oils, antifreeze, solvents	SOP Petroleum and Chemical Storage
Painting, finishing, and coating of equipment	Paint, solvents, metals	SOP Painting
Storage of liquids in above ground tanks	De-icing fluids	SOP Petroleum and Chemical Storage
Parking lot maintenance and storage of vehicles and equipment	Oils and greases, suspended solids, metals	SOP Vehicle Equipment and Storage
Storage of lubricants and other vehicle maintenance liquids	Oils and greases, anti-freeze	SOP Petroleum and Chemical Storage

IV. Facilities Locations, Activities and Control Measures

2. Public Works Operations and Field Activities (High priority)

In addition the following field maintenance activities were identified as potential sources of pollution:

- Snow and Ice control
- Catch Basin cleaning
- Crack Sealing
- Street Sweeping
- Transportation of Excavated Material
- Vehicle Fueling
- Water main repairs

Pollution Generating Activity	Potential Pollutants	Relevant Source Control BMP
Snow and Ice control	Salt, Sand and liquid de-icing material	SOP Snow and Ice Control
Catch Basin cleaning	Misc. Debris, floatables, metals	SOP Catch Basin Cleaning
Crack Sealing	Oils, bituminous material, suspended solids	SOP Crack Sealing
Street Sweeping	Metals, suspended solids, misc debris	SOP Street Sweeping
Transportation of Excavated Material	Construction debris	SOP Transporting Excavated Material
Vehicle Fueling	Diesel Fuel, gasoline	SOP Vehicle fueling
Water main repairs	Suspended solids	SOP Water Main Repairs

V. Spill Prevention and Response Procedures

Each facility work area and Supervisors vehicles have a spill response kit. Most spills can be cleaned up following the product manufacturer recommendations or for liquid spills using absorbent oil/dry materials. Absorbent oil dry, sealable containers, plastic bags, and shovels/brooms are suggested minimum spill response kit.

- Make sure the spill area is safe to enter and that it does not pose an immediate threat to the health or safety of any person.
- Stop the spill source
- Check for hazards (flammable material, noxious fumes, cause of spill) -if flammable liquid, turn off engines and nearby electrical equipment. If serious hazards are present leave the area and call 911. **LARGE SPILLS ARE LIKELY TO PRESENT A HAZARD.**
- Call the supervisor for assistance and to make them aware of the spill and potential dangers.
- If possible, stop the spill from entering drains (use absorbent or other material as necessary).
- Stop spill from spreading (use absorbent or other material)

- If spilled material has entered a storm sewer; contact the Public Works Department Operations Director.
- Clean up spilled material according to manufacturer specifications, for liquid spills use absorbent materials and do not flush area with water.
- Properly dispose of cleaning materials and used absorbent material according to Manufacturer specifications.

VI. Inspections

Qualified personnel from the Public Works Operations and Engineering Departments will conduct inspections of the assigned areas and document with the appropriate report. Inspection reports and logs are located on the appendices section of this manual.

- Weekly visual inspections: Buildings (include grounds and parking lots)
Weekly visual inspections will be tracked in the log attached on appendix F,
- High Priority Facilities Compliance Reports
High Priority Facility Compliance reports will be documented on appendix G; spills will be cleaned up immediately and documented on a spill report located on appendix D.

Deficiencies will have to be corrected within one week of being reported. All inspections and follow up actions will be documented and kept in the Corrective Action Log Appendix E

VII. Employee Training

All Public Works employees will receive training regarding this O&M Manual and Storm Water Controls at least annually. The training will cover the following subjects:

- Impacts associated with illicit discharges;
- Proper disposal and management of wastes;
- Proper maintenance of indoor and outdoor working areas including parking lot surfaces;
- Spill response; and
- Inspections training.

