

CHAPTER 7

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7.00 POLLUTION PREVENTION

DESCRIPTION

Individuals, industries and local government should develop and implement a Pollution Prevention Plan (Plan), which could be part of a local water-management plan, to address the specific conditions for various sites, facilities or activities. The goal of the Plan is to avoid, minimize or mitigate pollution. If pollutants cannot be eliminated, they should be properly treated or removed for disposal.

ENVIRONMENTAL CONCERNS

Storm water is an environmental concern because, depending upon its source and its path, it can contain or pick up contaminants which are then transferred to the surface or ground water to which it drains. Certain contaminants can degrade the quality of the surface water so much that the health of plants and animals within and surrounding the water body are affected. For this reason, the 1987 amendments to the Clean Water Act required the U.S. Environmental Protection Agency (EPA) to develop regulations for stormwater discharges associated with municipal and industrial activity.

PLANNING CONSIDERATIONS

The EPA regulations require some stormwater discharges to be authorized under a National Pollutant Discharge Elimination System (NPDES) permit. In 1992, the EPA delegated authority to the Minnesota Pollution Control Agency (MPCA) to administer the storm water NPDES program.

The MPCA currently regulates the stormwater runoff from a variety of activities, including construction activities, municipal separate storm sewer systems (MS4s) in populated areas and certain industrial stormwater discharges. Phase I of the NPDES stormwater program already covers large and medium MS4s, 10 industrial categories and construction activity that disturbs five or more acres. The final Storm Water Phase II rule, signed on October 29, 1999, and published in the *Federal Register* on December 8, 1999 (63 FR 1536), expanded the NPDES program to cover all small MS4s within urbanized areas as well as construction sites that disturb one to five acres. Cities may also be required to obtain permits for some industrial, construction and other activities. Contact the MPCA for the latest requirements.

IMPLEMENTATION

Most management of stormwater runoff can be accomplished through the use of best management practices (BMPs), which, for the purposes of this manual, have been classified in two groups: nonstructural and structural.

Nonstructural BMPs focus on changing behavior and management. These measures can be described as “good common sense” and can include such practices as moving materials inside to reduce exposure, prohibiting certain practices, training, and employing spill-prevention plans.

Table 7.00-1

Mandatory Facilities

Mining, Oil & Gas Operations

1011	1041	1081	1221	1231	1311	1382	1411	1442	1474	1481
1021	1044	1094	1222	1241	1321	1389	1422	1446	1475	1499
1031	1061	1099			1381		1423	1455	1479	
							1429	1459		

Manufacturing

2411	2449	2812	2843	2891	3111	3261	3281	3313	3339	3365
2421	2451	2813	2844	2892		3262	3291	3315	3341	3366
2426	2452	2816	2851	2893	3211	3263	3292	3316	3351	3369
2429	2491	2819	2861	2895	3221	3264	3295	3317	3353	3398
2431	2493	2821	2865	2899	3229	3269	3296	3321	3354	3399
2435	2499	2822	2869	2911	3241	3271	3297	3322	3355	
2436		2823	2873	2951	3251	3272	3299	3324	3356	3441
2439	2611	2824	2874	2952	3253	3273		3325	3357	
2441	2621	2841	2875	2992	3255	3274	3312	3331	3363	3731
2448	2631	2842	2879	2999	3259	3275		3334	3364	3732

Automobile Recycling

5015	5093
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Discretionary Facilities

Manufacturing

2011	2079	2281	2394	2678	3087	3452	3542	3592	3676	3827
2013	2082	2282	2395	2679	3088	3462	3543	3593	3677	3829
2015	2083	2284	2396		3089	3463	3544	3594	3678	3841
2021	2084	2295	2397	2711		3465	3545	3596	3679	3842
2022	2085	2296	2399	2721	3131	3466	3546	3599	3691	3843
2023	2086	2297		2731	3142	3469	3547		3692	3844
2024	2087	2298	2434	2732	3143	3471	3548	3612	3694	3845
2026	2091	2299		2741	3144	3479	3549	3613	3695	3851
2032	2092		2511	2752	3149	3482	3552	3621	3699	3861
2033	2095	2311	2512	2754	3151	3483	3553	3624		3873
2034	2096	2321	2514	2759	3161	3484	3554	3625	3711	
2035	2097	2322	2515	2761	3171	3489	3555	3629	3713	3911
2037	2098	2323	2517	2771	3172	3491	3556	3631	3714	3914
2038	2099	2325	2519	2782	3199	3492	3559	3632	3715	3915
2041		2326	2521	2789		3493	3561	3633	3716	3931
2043	2111	2329	2522	2791	3231	3494	3562	3634	3721	3942
2044	2121	2331	2531	2796		3495	3563	3635	3724	3944
2045	2131	2335	2541		3411	3496	3564	3639	3728	3949
2046	2141	2337	2542	2833	3412	3497	3565	3641	3743	3951
2047		2339	2591	2834	3421	3498	3566	3643	3751	3952
2048	2211	2341	2599	2835	3423	3499	3567	3644	3761	3953
2051	2221	2342		2836	3425		3568	3645	3764	3955
2052	2231	2353	2652		3429	3511	3569	3646	3769	3961
2053	2241	2361	2653	3011	3431	3519	3571	3647	3792	3965
2061	2251	2369	2655	3021	3432	3523	3572	3648	3795	3991
2062	2252	2371	2656	3052	3433	3524	3575	3651	3799	3993
2063	2253	2381	2657	3061	3442	3531	3577	3652		3996
2064	2254	2384	2671	3069	3443	3532	3578	3661	3812	3999
2066	2257	2385	2672	3081	3444	3533	3579	3663	3821	
2067	2258	2386	2673	3082	3446	3534	3581	3669	3822	
2068	2259	2387	2674	3083	3448	3535	3582	3671	3823	
2074	2261	2389	2675	3084	3449	3536	3585	3672	3824	
2075	2262	2391	2676	3085	3451	3537	3586	3674	3825	
2076	2269	2392	2677	3086		3541	3589	3675	3826	
2077	2273	2393								

Transportation and Warehousing

4011	4111	4141	4212	4221	4231	4412	4481	4492	4512	5171
4013	4119	4142	4213	4222		4424	4482	4493	4513	
	4121	4151	4214	4225	4311	4432	4489	4499	4522	
	4131	4173	4215	4226		4449	4491		4581	

Structural BMPs are measures that control or manage stormwater runoff and drainage. Examples of structural BMPs include enclosures used for covering exposed significant materials, swales, dikes or stormwater-treatment basins.

One of the highest priorities of stormwater regulations and BMPs is to improve the quality of surface waters by reducing or eliminating the contact of pollutants with storm water. Whenever significant materials are exposed to storm water, there is a potential for the pollutant stormwater runoff to degrade water quality. Significant materials can be any type of raw or finished items that are stored, handled, used, processed or generated at a site. (For a description of significant materials, see page 20 of the general permit for industrial activities, available from the MPCA.)

Previous regulations required certain industries to obtain permits on a mandatory or discretionary basis based on Standard Industrial Codes (SICs). See Table 7.00-1 for a list of mandatory and discretionary facilities. The Phase II rule conditionally exempts industrial facilities in all 10 categories that have “no exposure” of significant materials to storm water, thereby reducing application of the program to many industrial activities that had been previously required to get permits.

FOR MORE INFORMATION

The MPCA also has many regulatory and pollution-prevention programs that can affect storm water, such as the hazardous waste program, the above-ground and underground tanks programs, spills-response programs and even air quality rules. This manual cannot be all-inclusive. This chapter presents pollution-prevention principles and examples of how these issues can be handled. Many fact sheets have been developed to help individuals, industries and local governments to develop their pollution-prevention programs. Contact the MPCA for information related to your specific program.

The MPCA has fact sheets and staff to answer your questions about the programs affecting stormwater runoff, including the stormwater permit program for industrial activity, construction activities and municipalities. Hazardous waste, tanks or other programs also have significant resources and information available that may be applicable. For more information on how these programs may be helpful for your facilities, contact the MPCA office closest to your county (see Table 7.00-2).

Table 7.00-2 MPCA offices and phone numbers

Toll-free (all MPCA offices)	(800) 657-3864
Brainerd	(218) 828-2492
Detroit Lakes	(218) 847-1519
Duluth	(218) 723-4660
Marshall	(507) 537-7146
Rochester	(507) 285-7343
St. Paul	(651) 296-6300
Willmar	(320) 214-3791
MPCA web site:	http://www.pca.state.mn.us

7.01 Nonstructural Practices: PLAN DEVELOPMENT

When preparing a Stormwater Pollution Prevention Plan and making recommendations for BMPs, the following factors should be taken into account: implementability, cost effectiveness, and contaminant/pollutant removal effectiveness.

The Plan will only be valuable if it is effective, workable and affordable (*i.e.*, if it can and will be implemented).

The steps involved in the development of the plan, as well as the interaction between various phases, should be carefully spelled out. For example, observations made during the monitoring phase may indicate it is necessary to reconduct the site reconnaissance for a specific activity or material or to re-evaluate the BMPs originally selected. This “continuous loop” evaluation process will improve the Plan concepts and implementation

PLANNING AND ORGANIZATION

The planning and organization phase starts with designating a person to lay out the organization of the Plan. For larger projects or complex issues, the individual may want to form a pollution prevention team to research existing conditions, gather maps and drawings, develop procedures for spill and response plans, or gather materials safety data sheets and other documents that will be used to assist in preparing and implementing the Plan.

The Plan must specify roles and responsibility for the individual or each team member. Each responsibility indicated in the Plan must have an individual assigned to manage it. Whether required by Minnesota’s general stormwater permit regulations or not, the permit conditions can be a guide to development of a pollution-prevention plan.

A simple way to organize the pollution prevention team is to work from duty to responsible person. First, list all the responsibilities. Next, assign a title/position that is compatible with the responsibility. Then assign an individual to manage each task. Link the assignments to skills and abilities. This procedure will identify the pollution prevention team members and their respective responsibilities. All team members should have a title associated with their positions. The responsibility/title correlation makes it easier to re-assign team members as employees are promoted or leave the organization. The responsibilities assigned to a title can be used to define job descriptions for new employees.

Team responsibilities/tasks that should be assigned to titles/individuals include (if applicable):

- storm water manager (individual or director of the team),
- owner’s representative,
- individual to perform detailed site reconnaissance/assessment,
- personnel to maintain material inventory and to evaluate handling and storage practices,
- maintenance supervisor,
- director of housekeeping practices (litter control, lawn management and erosion control),

- fueling facility manager,
- de-icing practices manager,
- manager/coordinator of aerial spraying operations,
- spill/release coordinator,
- training/education program director,
- secretary for documentation of meetings and records, and
- Water quality monitoring coordinator.

The pollution prevention team will meet as often as required (daily, monthly, quarterly, semiannually or otherwise) to review the plan, discuss plan-implementation results and make revisions, as required, to meet the plan's goals and objectives. Discussions, meeting notes and revisions must be documented in stormwater-management files.

The following are general requirements of a plan:

1. Complete a drainage map. The map should indicate the following items at or adjacent to the facility:
 - a. drainage areas and directions of runoff (indicated by arrows);
 - b. discharge outfalls from the site (structures, such as ditches or storm sewers, that carry runoff from the facility);
 - c. the name and location of waters of the state that receive facility runoff (If waters of the state are too distant from the facility to be indicated on the site map, indicate the name, direction and shortest distance to the lake, river, stream or wetland that receives runoff from your site.);
 - d. areas where materials or waste produces (which may include solid waste or air emissions) are exposed;
 - e. locations of storm sewer inlets and an indication of which, if any, structures have floor drains or loading dock drains that are connected to storm sewers;
 - f. locations and types of BMPs currently installed at the facility to reduce or eliminate pollutants; and
 - g. location of water quality monitoring point(s), if needed.
2. Complete an inventory of exposed materials. Indicate the types of materials handled or stored at the site. The following are examples of materials that, if exposed, must be included in the inventory:
 - a. raw materials, such as fuels, solvents, petroleum products, detergents, plastic pellets, materials used in food processing or production, stockpiled sand, salt or coal;
 - b. by-products or intermediate products, such as wood dust, chips or bark, screened limestone, taconite or gravel by-product, recycled blacktop;
 - c. finished materials, such as metallic products, including scrap metal and recycled or scrap motor vehicle parts, old process equipment/machinery, taconite pellets;
 - d. waste products, such as ashes, sludge, solid and liquid waste, slag;
 - e. hazardous substances designated under section 101(14) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA);

- f. any chemical the facility is required to report under section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA).
3. Evaluate facility areas for exposure of materials. In creating the inventory of exposed materials, the person or team developing the plan must, at a minimum, evaluate the following areas at the industrial site (as well as other areas where appropriate) to determine whether or not materials are exposed in these areas:
 - a. vehicle and equipment maintenance, parking and storage areas, including fueling and washing/cleaning areas, to determine whether there is discolored soil in these areas as a result of fuel or lubricant leaks or spills;
 - b. liquid storage tanks and other bulk material stockpile areas;
 - c. loading and unloading areas;
 - d. outdoor manufacturing, processing or storage areas and industrial plant yards, to determine whether there is discolored soil in these areas as a result of leaked or spilled solvents, fuels or lubricants;
 - e. dust- or particulate-generating areas, including dust-collection devices that may release dust;
 - f. rooftops contaminated by industrial activity or operation of a pollution-control device;
 - g. on-site waste disposal areas, such as waste ponds, dumpsters, solid waste storage or management areas; and
 - h. exposed (nonvegetated) soil areas where there is a potential for erosion to occur.
4. Describe appropriate BMPs, including structural and nonstructural BMPs, that will be used at the facility to minimize, eliminate or control pollution at the site. The description must include an objective for each BMP, as well as a description of how to evaluate proper functioning of the BMP and any maintenance requirements of the BMP. BMPs should target materials and areas identified in the site plan. The following general categories of BMPs shall be considered and one or more shall be incorporated into the facility's Plan if materials are exposed to storm water on site:
 - a. Source reduction: Reduce or eliminate the materials that are exposed. Materials-management practices should be evaluated to determine whether inventories of exposed materials can be reduced or eliminated. This can include cleanup of old equipment yards, periodic checking of dust-control equipment to ensure there is no accumulation of dust in the area around the control equipment, removal and treatment of petroleum-contaminated soil, consolidation of materials from many areas into one area, and training employees regarding proper handling and disposal of materials. Materials may also be moved indoors or covered with a tarp or structure to eliminate contact with precipitation.
 - b. Diversion: Divert drainage away from exposed materials through the use of curbing, berms, sewers or other forms of drainage control or elevate exposed material above surrounding drainage.
 - c. Treatment: Where contact of materials is unavoidable, use treatment devices to reduce the concentration and amount of pollutants in the discharge. Such devices include oil/water separators, detention/retention ponds and vegetated swales.
5. Evaluate all discharge conveyances from the site (storm sewers, pipes, tile lines, ditches, etc.) to determine whether liquids other than uncontaminated storm water are being discharged from

these devices. This should be done during dry weather when stormwater discharge is not occurring. The evaluation should cover sewer inlets and floor drains to determine which inlets/drains are connected to sanitary sewer lines, storm sewer lines, or septic tanks/drainage fields. Appropriate methods, such as dye or smoke testing or video imaging, should be used to determine the source of discharges. The Plan must certify that discharges from the site have been evaluated for the presence of non-stormwater discharges. The certification shall indicate the date of testing, location of testing, the methods used to determine the source of discharges and the results of testing. Discharge of non-storm water (such as sanitary sewer or floor drain connections to storm sewers) is *not* authorized. Before such discharge may continue, authorization under an appropriate NPDES permit must be obtained.

6. Develop a preventive maintenance program. The program must require regular inspection and maintenance of management devices (*e.g.*, cleaning oil/water separators and catch basins), as well as inspecting and testing plant equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants (*e.g.*, hydraulic leaks, torn baghouse filters) to surface waters.
7. Develop a spill-prevention-and-response procedure. In order to develop this procedure, the person or team developing the Plan should evaluate where spills have occurred and where they have the potential to occur. Determine drainage points for potential spill areas and develop appropriate spill-prevention-and-containment measures. Detailed procedures for cleaning up spills shall be identified and made available to appropriate personnel. If the facility has any other spill contingency plan that satisfies the above requirements, that plan may be incorporated by reference into this Plan to satisfy this requirement.
8. Develop and implement an employee training program to inform appropriate personnel of the components and goals of the Plan. Training shall address spill response, good housekeeping and materials-management practices. The Plan shall identify periodic dates for such training.
9. Identify personnel responsible for managing and implementing the Plan as well as those responsible for the reporting requirements of the permit. This should include the facility contact person as indicated on the permit application. Identified personnel must be available at reasonable times of operation.

Table 7.01-1 indicates recommended BMPs that would eliminate, reduce contact, or would treat pollutants with potential to discharge. Other appropriate methods that will eliminate or reduce contact or treat pollutants are acceptable. Facilities must collect and dispose of wastes in accordance with appropriate federal, state and local requirements.

See - Minnesota General Storm Water Permit, Industrial Activity (page 8 of 20).

Table 7.01-1

Material, Area, or Activity	Synopsis of Recommended BMPs to Reduce or Eliminate Contact or Treat Runoff
Storage Areas/Stockpiled Materials (for Materials Including Raw, Intermediate and Finished Product)	<ul style="list-style-type: none"> • See Section 7.50 and following • Cover and/or enclose stored materials to prevent contact. • Divert around storage areas. • Stack/pile material to minimize surface area exposed to precipitation. • Practice good housekeeping measures such as frequent removal of debris. • Install treatment measures to remove pollutants from runoff prior to discharge from the site.
Waste Storage Areas	<ul style="list-style-type: none"> • See Section 7.21 • Minimize waste generated at the site. • Store indoors or in covered dumpsters or under other types of cover. • Divert around areas. • Install treatment devices to remove pollutants from runoff prior to discharge from the site.
Loading/Unloading and Other Material Handling Areas	<ul style="list-style-type: none"> • See Section 7.44 • Cover loading and unloading areas. • Divert around areas. • Where dust is likely to be generated during material handling, install equipment or change methods of handling to minimize or eliminate dust generation. • If liquid materials are being loaded or unloaded and if loading/unloading areas drain to storm sewer inlets, prevent material from getting into the storm sewer inlets. • Install treatment measures to remove pollutants from runoff prior to discharge from the site.
Outdoor Storage Tanks or Drums of Fuel, Lubricants, Solvents.	<ul style="list-style-type: none"> • See section 7.60 and following • Store drums inside (if allowed by Fire Marshall or insurer). • Prepare and train appropriate employees in dealing with spills and leaks properly, use dry clean-up methods when possible. • Install impervious surface underneath drums. • Prevent run-on to and runoff from tank and drum storage areas, provide adequate containment to hold spills and leaks.

Table 7.01-1 (cont.)

<p>Obsolete Equipment Stored Outside</p>	<ul style="list-style-type: none"> • See section 7.43 • When possible, dispose of unused equipment properly, or move indoors. • Drain and recycle fluids from equipment. • Cover equipment. • Divert around equipment.
<p>Floor, Sink, or Process Wastewater Connected to a Storm Sewer</p>	<ul style="list-style-type: none"> • See Section 7.30 and following • Inspect and test floor, sink and process wastewater drains for proper connections and remove any connections to storm sewers or waters of the state.
<p>Exterior Vehicle and Equipment Washing</p>	<ul style="list-style-type: none"> • See Section 7.42 • Conduct washing indoors or in a covered area. • Contain and recycle wash waters. • Discharge wash waters to sanitary sewer with permission of the receiving wastewater treatment authority. • Do not allow off-site discharge of wastewater. • Evaluate wastewater from steam cleaning of parts contaminated with oils, greases or solvents that is not recycled to determine if it is hazardous. Dispose of hazardous sludge and wastewater appropriately.
<p>Fueling Areas</p>	<ul style="list-style-type: none"> • See Section 7.44 • Minimize run-on into the fueling area. • Use dry clean-up methods for fuel area rather than hosing down the fuel area. • Train appropriate employees on proper fueling practices. • Install treatment devices to remove pollutants from runoff before it discharges from the site.
<p>Vehicle and Equipment Dismantling and Maintenance</p>	<ul style="list-style-type: none"> • Promptly transfer used fluids to the proper closed container for recycling; empty drip pans when they fill.
<p>Spills of Liquid Material</p>	<ul style="list-style-type: none"> • See Section 7.22 • Stop the source of the spill immediately. • Contain the liquid until cleanup is complete. • Deploy oil containment booms if the spill may reach waters of the state or drainageways to waters of the state. • Cover the spill with absorbent material. • Dispose of cleanup materials properly. • Report the spill to the Duty Officer, when appropriate.

Table 7.01-1 (cont.)

Areas of the Facility with Unstabilized Soils Subject to Erosion.	<ul style="list-style-type: none">• See Chapter 6.00 and following• Minimize run-on from adjacent areas.• Seed and mulch or sod low traffic areas.• Stabilize high traffic areas including vehicle entrances, exits, loading, unloading and vehicle storage areas.• Prevent sediment from unstabilized areas from leaving the site.• Install treatment devices to remove pollutants from the runoff prior to discharge from the site.
Surface Preparation, Paint Removal and Paint Spraying	<ul style="list-style-type: none">• See Section 7.45• Enclose, cover, or contain blasting, sanding, and spray painting activities to the extent practical.• Collect spent abrasives routinely and store under a cover to await proper disposal. Evaluate spent abrasives and removed paint to determine if it is hazardous. Test waste material for lead content and dispose of waste material properly.

7.02 Nonstructural Practices: EMPLOYEE TRAINING

Successful waste-reduction activities need support from all employees, including top management and production personnel.

Less waste is generated if employees are trained to operate equipment and handle materials safely and correctly. Occupational and safety hazards are reduced as well.

ISSUES

Employees should be made aware of the costs and environmental issues related to hazardous waste generation and disposal. One way to do this is to post these costs and any waste-reduction savings on bulletin boards throughout the company.

Waste reduction usually happens in production processes. Explain how waste is generated by each process so employees understand that they share the responsibility for waste generation. Employees that are well informed can make valuable waste-reduction suggestions.

Incentive programs can be useful in encouraging employees to participate in waste-reduction activities.

IMPLEMENTATION

Employees should be trained to look for practices which:

- generate less waste by making existing processes more efficient.
- are common-sense measures that apply to the human side of business rather than to the technological side; therefore, they can be used in all areas of production.
- are easy and inexpensive to implement, and practical for your operations.
- have health and safety benefits for employees, the general public and the environment.

Good operating practices include:

- improved inventory management;
- waste segregation;
- improved production scheduling;
- preventive maintenance;
- spill and leak prevention;
- employee training and education;
- employee participation in planning;
- materials usage, handling and storage; and
- clear labeling.

7.03 Nonstructural Practices: INSPECTIONS AND MAINTENANCE

1. Site inspections should be conducted at least once every two months by an appropriately trained person. The purpose of these inspections is to (1) determine whether structural and nonstructural BMPs require maintenance or changes, and (2) to evaluate the completeness and accuracy of the Plan. Inspections should be documented using an inspection form provided by the owner. The following compliance items should be inspected, and documented where appropriate:
 - a. Evaluate the facility to determine that the Plan accurately reflects site conditions as described in Part II.A. of the permit, documenting any inaccuracies;
 - b. evaluate the facility to determine whether new exposed materials have been added to the site since completion of the Plan, documenting any new materials;
 - c. during the inspection conducted during the runoff event, observe the runoff to determine whether it is discolored or otherwise visibly contaminated, documenting observations; and
 - d. determine whether the nonstructural and structural BMPs as indicated in the Plan are installed and functioning properly in accordance with the implementation schedule.
2. On the inspection form, indicate the date and time of the inspection as well as the name of the inspector.
3. If conditions are observed at the site that require changes in the Plan, the changes should be made as soon as possible
4. If the findings of a site inspection indicate that BMPs are not meeting the objectives, corrective actions must be initiated within 30 days and the BMP restored to full operation as soon as field conditions allow.

RECORDS

A copy of the Plan should be retained on the site, and be available upon request. The following records should be maintained:

- dates of inspections;
- findings of inspections;
- corrective actions taken;
- documentation of all changes to the Plan; and
- a copy of annual reports.

NOTIFICATION

If a spill, bypass or release occurs, it must be reported to the appropriate authority. The spill plan must specify who shall report and where the report shall be made.

7.04 Nonstructural Practices: MONITORING AND EVALUATION

The monitoring phase involves conducting periodic site observations, stormwater characterization and voluntary stormwater sampling and analytical data. Based on the results of the monitoring program, the effectiveness of the BMPs can be evaluated. If necessary, more appropriate BMPs may be implemented to replace existing practices. Appropriate revisions should be made to the Plan to document BMP changes.

ROUTINE SITE OBSERVATIONS

A site reconnaissance must be performed at least once every two months with at least one performed after a significant storm event (generally any event that produces runoff, but at least as stated in the Minnesota general storm water permit regulations). See page 11 of Part II - Minnesota General Storm Water Industrial Permit.

EVALUATION AND UPDATE

The Plan is required to be updated when changes occur in physical site conditions, on-site operations, material-handling and -storage methods or other characteristics or activities. In addition to the changes, the observer must clearly document the results of the implemented BMPs and the condition of the structural BMPs.

Stormwater runoff observations made during a rainfall event and collection of stormwater samples for visual characterization is very useful in determining effectiveness of BMPs. One method for collecting stormwater samples for visual characterization is jar sampling. By dipping a clear glass jar into the stormwater outfall (*i.e.*, ditch, culvert, etc.), the observer can obtain samples of stormwater discharge. (**Safety note:** All jar sample collections should be performed from the ground surface. Do not enter manholes or catch basins to observe stormwater conditions or to collect samples. If necessary, the jar may be taped to a pole to obtain flows from storm sewer pipes). Stormwater observation results should be documented.

The first 10 to 20 minutes of an intense storm event are commonly known as “first flush” conditions. Sampling of this portion of the storm is critical. The first flush represents the high concentration of pollutants due to the buildup that has occurred on the surface areas since the last rainfall event. Additional jar samples should be taken at regular intervals (20 or 30 minutes) during the storm event. The jars should be allowed to sit a while to allow sediment to accumulate at the bottom of the jar. Some indicators of water quality are color, odor, oil sheen and sediment. The visual observation of storm water allows for qualitative description of storm water quality. For quantitative data, stormwater sampling and laboratory analysis are the only effective methods.

ANNUAL REPORTS

For permitted sites, the MPCA will send copies of a fill-in-the-blank annual report to the facility each year during the first week of January. Reports must be submitted to the MPCA no later than March 31 and may be sent as early as January 1 of each year. The facility's first annual report will cover the time period since the facility received coverage through December 31 of the reporting year. Subsequent annual reports will cover the calendar year January 1 through December 31. Information required in the annual report includes:

- a brief summary of the pollution prevention plan,
- list of any spills that occurred during the reporting period and corrective actions taken,
- description of inspections, and
- description of implemented structural and nonstructural BMPs.

If you are not required to submit a report, the process or a similar process may be helpful in evaluating the effectiveness of your Plan.

7.20 GENERAL PRACTICES

Pollution-prevention practices include good housekeeping/site maintenance BMPs, such as litter pick-up, lawn-management practices, sweeping, erosion control and maintenance of stormwater-conveyance systems. These practices usually take a minimal amount of effort compared to cleanup efforts, and should be part of the routines of businesses, personnel and users.

7.21 General Practices: WASTE-HANDLING AND WASTE-STORAGE AREAS

MANAGING SOLID WASTE

Litter not only ruins the beauty of Minnesota's waters and the environment, it can also injure and kill aquatic life. Encourage people to collect their trash and return it to proper disposal facilities by providing solid waste disposal service as part of normal practice. Post signs to encourage disposal of wastes in the proper waste containers. Separate waste streams, such as recycled water and solid waste.

HAZARDOUS WASTES

If storing hazardous wastes, mark each container with the words "Hazardous Waste" and the date you first placed waste in the container.

Examples:

- Hazardous Waste, Waste Paint Thinner 04-24-1999
- Hazardous Waste, Sanding/Blasting Waste 05-17-1999

Store the container on an impermeable surface. Coated concrete is a good choice. Coated asphalt is also acceptable. Uncoated asphalt is unacceptable for storing solvents, such as gasoline or paint thinners, because the solvents will dissolve the asphalt.

Seal any floor drains in the storage area to prevent spills from escaping. Provide storage devices to contain spills. Acceptable methods include curbs or cover, or covered spill pallets. Secure the area from access by unauthorized persons. If you are storing ignitable wastes, such as paint thinners or other solvents, outdoors, protect them from heat to prevent expansion and explosion; if water-based, such as latex, protect from freezing to prevent container expansion and possible leaks.

Metal or polyethylene drums should be used as appropriate for the type of wastes being stored. Keep the container closed unless adding or removing waste. Mark each container with a clear description of the contents.

Examples:

- Used Oil
- Waste Antifreeze
- Spent Absorbent Materials

Lead-Acid Batteries

Facilities that accept or store lead-acid batteries for recycling must store them on an impermeable surface, such as coated concrete or asphalt. If stored outdoors, the surface must also be curbed to contain leaks and covered to prevent snow and rain from entering. In many cases, covered pallets or secondary cases made of durable and chemical-resistant materials are a better option than curb and cover. Send spent batteries with a battery hauler for recycling. For more information on battery storage, request MPCA fact sheet #4.06, *Managing Spent Lead-Acid Batteries*.

MORE TIPS TO HELP YOU PREVENT POLLUTION

- Inspect parts, such as rubber fuel lines, regularly; replace before they break.
- Use cleaners only when absolutely necessary.
- When changing oil, wipe up spills immediately and catch all used oil in a container for recycling.
- Drain old antifreeze and other recyclable materials into a container for recycling.
- If using a boom or pillow to remove oil, replace it periodically and place it with other oil-soaked sorbents destined to be burned for energy recovery.

7.22 General Practices: SPILL PLANS

DESCRIPTION

Some facilities may already have a Spill Prevention Control and Countermeasures (SPCC) Plan which addresses the proper handling and storage of materials and the availability of equipment needed to prevent or respond to a spill. The Pollution Prevention Plan should incorporate parts of the SPCC and other management plans located at a site. If you witness a spill, call the Minnesota Duty Officer at (800) 422-0798 or (651) 649-5451.

PREVENTING SPILLS

- Do regular preventive maintenance on tanks and fuel lines.
- Train employees in proper management of hazardous materials, hazardous wastes and tanks.
- In facility leases, include a clause that allows employees to enter and conduct emergency measures.
- Keep hazardous product and waste containers closed when not in use.
- Do not fill gasoline tanks to the very top.
- Post signs or provide information on spill prevention and clean-up methods to patrons.

RESPONDING TO SPILLS

Even with the best care and training, accidental spills will happen. Be prepared to contain and clean them up as quickly as possible.

If a spill happens:

1. Contain the spill.
2. Call the Minnesota Duty Officer at (800) 422-0798 or (651) 649-5451.
3. Clean up the spill.

Stop the source of the spill immediately. Contain the liquid until cleanup is complete. Deploy oil-containment booms if the spill may reach waters of the state or drainageways to waters of the state. Cover the spill with absorbent material. Dispose of cleanup materials properly. Report the spill to the Minnesota Department of Public Safety Duty Officer (call 800/422-0798 or 651/649-5451) when there is a release of a reportable quantity (five gallons or more for petroleum spills). Spills of all other chemicals or materials of any quantity may be reportable. If in doubt, report, or contact the MPCA.

7.23 General Practices: LITTER CONTROL

DESCRIPTION AND PURPOSE

Litter can include scraps of paper, building materials, construction wastes, industrial scraps, leaves, grass clippings and other trash. Litter control involves the removal of litter from streets and other surfaces before runoff or wind moves these materials to surface waters.

PLANNING CONSIDERATIONS

A recycling program and/or proper disposal of waste will help reduce the volume of waste generated and assist in minimizing pollution.

Educational programs that explain the environmental benefits of litter control and leaf collection are helpful.

Ordinances, especially those that prevent debris and litter at construction and industrial sites, can be particularly useful and effective.

Maintaining a clean, litter-free facility includes street sweeping and picking up of debris and garbage on a regular basis or as necessary. Trash containers should be available and of adequate size. Containers should be covered to prevent wind from blowing their contents out and rain water from entering the container. It is best to locate trash containers a significant distance from the nearest storm sewer inlet.

Ultimate disposal of trash should be to an approved disposal or recycling facility.

7.24 General Practices: LAWN MANAGEMENT

DESCRIPTION

Improper lawn-management programs can result in release of pollutants, such as fertilizers, herbicides and eroded soil, into runoff waters. In addition, excessive use of fertilizers and pesticides is an expense that produces no benefit to the facility. On the other hand, inadequate fertilization can result in poor vegetative cover, which may result in soil erosion.

CONSIDERATIONS

Lawn-management BMPs involve proper fertilization, mowing, watering, and pesticide-application procedures. Applying fertilizers only at the rates necessary to maintain lawn areas will minimize potential pollution from lawns. Using the proper fertilizer composition, appropriate application rates, and avoiding spreading fertilizers on impervious surfaces will also minimize the potential runoff into the storm sewer system.

Significant nutrient loads can result from overapplication of lawn fertilizer in urban areas. Fertilizer management can be an effective practice. It involves controlling the type, rate, timing and method of fertilizer application in urban areas so that plant nutrient needs are met while the chance of polluting surface or ground water is minimized. Specifically, this practice is directed at control of phosphorus and nitrogen in runoff from landscaped areas. Nitrogen is of special concern because of potential ground water contamination from nitrates.

Phosphorus is a major water quality concern because it is a primary cause of lake enrichment leading to excessive growth of aquatic plants and algae. Although misuse or misapplication of phosphorus fertilizer can cause water-quality problems, it may be needed initially to establish a healthy stand of vegetative cover. Phosphorus is essential to seedling germination and growth. If a seeding fails or is sparse because of a phosphorus deficiency, the resulting erosion can cause sediment pollution, which carries a large nutrient load with it. In this case, the proper use of phosphorus fertilizer can actually reduce long-term nonpoint-source pollution. In new seedings, phosphorus fertilizer should be incorporated into the soil during seedbed preparation. The soil should then be protected with appropriate erosion-control practices.

Existing lawns should be aerated with a coring machine before the fertilizer is applied. Phosphorus fertilizer recommendations should be based upon a soil test. In some areas of Minnesota, soils are naturally high in phosphorus and other areas may have high levels because of a build-up from previous fertilizer applications. In these cases, fertilizers that do not contain phosphorus should be used.

Nitrogen is the fertilizer element that generally brings about the greatest response in plants. It is found in soils in the ammonium form, the nitrate form and as a component of soil organic matter. In all but very wet or dry soils, the ammonium form is readily converted to the nitrate form. This nitrate form is completely soluble and is not held tightly by soil particles. Therefore, nitrate can readily leach downward and contaminate ground water. Ground water contamination is most likely

when excess nitrogen fertilizer is applied on highly permeable sandy soils. Because of the mobility of nitrate in most soils, nitrogen soil tests are not generally used for making nitrogen fertilizer recommendations in Minnesota. Nitrogen fertilizer guidelines for lawns and gardens follow:

- To avoid nitrogen loss on sandy soils, apply fertilizer at one-half the recommended rate but twice as often. Another option to avoid nitrogen loss on sandy soils is the use of slow-release nitrogen fertilizers or natural organic nitrogen sources. Applying no more than the recommended rate of nitrogen fertilizer will minimize the chance of ground-water-pollution problems.
- Leaving grass clippings on turf areas will provide nutrients to the soils and reduce the amount of fertilizer required to maintain the lawn. When mowing lawns or raking leaves, do not pile clippings or leaves in the street or on an impervious surface. Leaves should be composted.
- Overwatering lawns may result in soil, fertilizers pesticides or herbicides being washed off the lawn surface and discharged into the storm sewer conveyance system.

BMPs FOR FERTILIZER APPLICATION AND LANDSCAPE MAINTENANCE

- Have the soil tested and follow soil test recommendations. In some areas, city governments have passed ordinances regulating fertilizer use on lawns. Homeowners should be aware of any local regulations before applying fertilizer.
- For more information on calculating fertilizer rates and methods of fertilizer application, contact the University of Minnesota Extension Service.
- Water your lawn after fertilizing, but do not allow water to run off into streets or other direct conduits to water bodies.
- Promptly clean up any fertilizer spilled on roads or sidewalks.
- Never apply fertilizer to frozen ground.
- Do not deposit fertilizer in the water or onto street or sewer systems that discharge directly to water.

7.25 General Practices: DUST CONTROL

DESCRIPTION

Dust from smokestacks and vents as well as from stockpiles, cleared ground and open areas, often called “fugitive dust,” is a form of air pollution. The surface and air movement of dust from disturbed surfaces may cause off-site damage, health hazards and traffic problems. Industries and local governments sometimes use various methods to control this dust. Filters and scrubbers are often used on regulated discharges, so this BMP is directed more toward fugitive dust, which may or may not be regulated by permit. Construction activities that disturb soil also can be a significant source of fugitive dust; large quantities of dust can be generated, especially in “heavy” construction activities, such as land grading for road construction and commercial, industrial or subdivision development.

This BMP also emphasizes some of the water-quality issues you should consider when using dust-control treatments on construction sites, roads, industrial sites and other disturbed areas, so that your air pollution solution doesn’t turn into water pollution. For general guidance on road maintenance and water pollution control, consult the September 1992 EPA publication, *Rural Roads: Pollution Prevention and Control Measures (F15)*, available by calling the Terrene Institute at (800) 726-4853.

Industry-specific measures can vary widely, depending on the products and the physical properties of the materials used. Industrial associations are often a good source of information regarding pollution prevention. Flexibility is important because concerns regarding dust control need to address site-specific needs and changing circumstances.

PLANNING CONSIDERATIONS

- The greatest dust problems occur when the probability of rainfall erosion is lowest. Therefore, do not expose large areas of soil, especially during drought conditions. Maintain dust control measures through dry weather periods until all disturbed areas have been stabilized.
- Schedule construction operations so that the least area is disturbed at one time.
- Leave undisturbed buffer areas between graded areas wherever possible.
- Install temporary or permanent surface-stabilization measures immediately after completing land grading.
- For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see: Surface Stabilization).
- When properly applied, mulch (including gravel mulch) offers a fast, effective means of controlling dust. Stone used to stabilize construction roads can also be effective for dust control.
- Use measures, such as roofs, tarps or other covers, and progressing to filters and scrubbers or surface treatments to minimize impacts.
- Deep plow large, open disturbed areas and bring clods to the surface. Tillage is a temporary emergency measure that can be used as soon as soil blowing starts. Begin plowing on the windward edge of the site.

