APPENDIX E

Suggested Best Management Practices for Selected Industries

SUGGESTED STORM WATER BEST MANAGEMENT PRACTICES FOR: MANUFACTURERS OF ELECTRONIC AND ELECTRICAL EQUIPMENT AND COMPONENTS, PHOTOGRAPHIC AND OPTICAL GOODS

Activity	Best Management Practices
Outdoor Unloading and Loading	-Confine loading/unloading activities to a designated area. -Consider performing loading/unloading activities indoors or in a covered area. -Consider covering loading/unloading area with permanent cover (e.g., roofs) or temporary cover (e.g., tarps). -Close storm drains during loading/unloading activities in surrounding areas. -Avoid loading/unloading materials in rain. -Inspect the loading/unloading areas to detect problems before they occur. -Inspect all containers prior to loading/unloading of any raw or spent materials. -Consider berming, curbing, or diking loading/unloading areas. -Dead-end sump where spilled materials could be directed. -Drip pans under hoses. -Use dry clean-up methods instead of washing the areas down. -Train employees on proper loading/unloading techniques and spill prevention and response.
Outdoor Material Storage (including waste, and particulate emission management)	-Confine storage of materials, parts, and equipment to designated areas. -Consider secondary containment using curbing, berming, or diking all liquid storage areas. -Train employees in spill prevention and response techniques. -Train employees on proper waste control and disposal. -Consider covering tanks. -Ensure that all containers are closed (e.g., valves shut, lids sealed, caps closed). -Wash and rinse containers indoors before storing them outdoors. -If outside or in covered areas, minimize runon of storm water by grading the land to divert flow away from containers. -Leak detection and container integrity testing. -Direct runoff to onsite retention pond. -Inventory all raw and spent materials. -Clean around vents and stacks. -Place tubs around vents and stacks to collect particulate. -Inspect air emission control systems (e.g., baghouses) regularly, and repair or replace if necessary. -Store wastes in covered, leak proof containers (e.g., dumpsters, drums). -Consider shipping all wastes to offsite landfills or treatment facilities. -Ensure hazardous waste disposal practices are performed in accordance with Federal, State, and local requirements.

Source: USEPA Final National Pollutant Discharge Elimination System Storm Water Multi-Sector General Permit for Industrial Activities, Notice. Federal Register, September 29, 1995.

SUGGESTED STORM WATER BEST MANAGEMENT PRACTICES FOR: ACTIVITIES AT VEHICLE AND EQUIPMENT MAINTENANCE SHOPS

Activity	BMPs
Fueling	-Use spill and overflow protection. -Minimize runon of storm water into the fueling area by grading the area such that storm water only runs off. -Reduce exposure of the fuel area to storm water by covering the area. -Use dry cleanup methods for fuel area rather than hosing the fuel area down. -Use proper petroleum spill control. -Perform preventive maintenance on storage tanks to detect potential leaks before they occur. -Inspect the fueling area to detect problems before they occur. -Train employees on proper fueling techniques.
Vehicle and equipment maintenance	-Maintain an organized inventory of materials used in the maintenance shop. -Dispose of greasy rags, oil filters, air filters, batteries, spent coolant, and degreasers properly. -Label and track the recycling of waste material (e.g., used oil, spent solvents, batteries). -Drain oil filters before disposal or recycling. -Drain and contain all fluids from wrecked vehicles and "parts" cars. -Store cracked batteries in a nonleaking secondary container. -Promptly transfer used fluids to the proper container; do not leave full drip pans or other open containers around the shop. Empty and clean drip pans and containers. -Do not pour liquid waste down floor drains, sinks, or outdoor storm drain inlets. -Plug floor drains that are connected to the storm or sanitary sewer; if necessary, install a sump that is pumped regularly. -Inspect the maintenance area regularly for proper implementation of control measures. -Train employees on proper waste control and disposal procedures.
Outdoor vehicle and equipment storage and parking	-Use drip pans under all vehicles and equipment waiting for maintenance. -Cover the storage area with a roof. -Inspect the storage yard for filling drip pans and other problems regularly. -Train employees on procedures for storage and inspection items.
Painting areas	-Keep paint and paint thinner away from traffic areas to avoid spills. -Spray paint in an Occupational Safety and Health Act (OSHA) approved hood. -Use effective spray equipment that delivers more paint to the target and less over-spray. -Avoid sanding in windy weather and collect and dispose of waste properly. -Recycle paint, paint thinner, and solvents. -Inspect painting procedures to ensure that they are conducted properly. -Recycle paint, paint thinner, and solvents. -Inspect painting procedures to ensure that they are conducted properly. -Train employees on proper sanding, painting, and spraying techniques.
Vehicle or equipment washing	-Avoid washing parts or equipment outside.

SUGGESTED STORM WATER BEST MANAGEMENT PRACTICES FOR: ACTIVITIES AT VEHICLE AND EQUIPMENT MAINTENANCE SHOPS

Activity	BMPs
areas	-Use phosphate-free biodegradable detergents. -Designate an area for cleaning activities. -Contain and recycle washwaters. -Ensure that washwaters drain well. -Inspect cleaning area regularly. -Train employees on proper washing procedures.
Liquid storage in above ground storage	-Maintain good integrity of all storage containers. -Install safeguards (such as diking or berming) against accidental releases at the storage area. -Inspect storage tanks to detect potential leaks and perform preventive maintenance. -Inspect piping systems (pipes, pumps, flanges, couplings, hoses, and valves) for failures or leaks. -Train employees on proper filling and transfer procedures.
Cold weather activities	-Minimize salt application. -Use uncontaminated dirt or ash, if use is necessary. -Train employees on proper salt, dirt, sand, or ash application.
Improper connections to storm sewer	-Plug all floor drains connected to sanitary or storm sewer or if connection is unknown. Alternatively, install a sump that is pumped regularly -Perform smoke or dye testing to determine if interconnections exist between sanitary water system and storm sewer system. -Update facility schematics to accurately reflect all plumbing connections. -Install a safeguard against vehicle washwaters entering the storm sewer unless permitted. -Maintain and inspect the integrity of all underground storage tanks; replace when necessary. -Train employees on proper disposal practices for all materials.

Source: USEPA Final National Pollutant Discharge Elimination System Storm Water Multi-Sector General Permit for Industrial Activities, Notice. Federal Register, September 29, 1995.

SUGGESTED STORM WATER BEST MANGEMENT PRACTICES FOR FACILITIES WHICH: MANUFACTURE TRANSPORTATION EQUIPMENT, INDUSTRIAL, OR COMMERCIAL MACHINERY

Activity	Best Management Practices
Outdoor Unloading and Loading	-Confine loading/unloading activities to a designated area. -Consider performing loading/unloading activities indoors or in a covered area. -Consider covering loading/unloading area with permanent cover (e.g., roofs) or temporary cover (e.g., tarps) -Close storm drains during loading/unloading activities in surrounding areas. -Avoid loading/unloading materials in the rain. -Inspect the unloading/loading areas to detect problems before they occur. -Inspect all containers prior to loading/unloading of any raw or spent materials. -Consider berming, curbing, or diking loading/unloading areas. -Use dry clean-up methods instead of washing the areas down. -Train employees on proper loading/unloading techniques.
Outdoor Material Storage (including waste, and particulate emission management)	-Confine storage materials, parts, and equipment to designated areas. -Consider curbing, berming, or diking all liquid storage areas. -Train employees on proper waste control and disposal. -Consider covering tanks. -Ensure that all containers are closed (e.g., valves shut, lids sealed, caps closed). -Wash and rinse containers indoors before storing them outdoors. -If outside or in covered areas, minimize runon of storm water by grading the land to divert flow away from containers. -Inventory all raw and spent materials. -Clean around vents and stacks. -Place tubs around vents and stacks to collect particulate. -Inspect air emission control systems (e.g., baghouses) regularly, and repair or replace when necessary. -Store wastes in covered, leak proof containers (e.g., baghouses, drums). -Consider shipping all wastes to offsite landfills or treatment facilities. -Ensure hazardous waste disposal practices are performed in accordance with Federal, State, and local requirements.

Source: USEPA Final National Pollutant Discharge Elimination System Storm Water Multi-Sector General Permit for Industrial Activities, Notice. Federal Register, September 29, 1995.

SUGGESTED STORM WATER BEST MANAGEMENT PRACTICES FOR: MINERAL MINING AND PROCESSING FACILITIES

Activity	Best Management Practices
Fueling	-Use spill and overflow protection. -Minimize runon of storm water into the fueling area by grading the area such that storm water only runs off. -Reduce exposure of the fuel area to storm water by covering the area. -Use dry cleanup methods for fuel area rather than hosing the fuel area down. -Use proper petroleum spill control. -Perform preventive maintenance on storage tanks to detect potential leaks before they occur. -Inspect the fueling area to detect problems before they occur. -Train employees on proper fueling techniques.
Vehicle and equipment maintenance	-Maintain an organized inventory of materials used in the maintenance shop. -Dispose of greasy rags, oil filters, air filters, batteries, spent coolant, and degreasers properly. -Label and track the recycling of waste material (e.g., used oil, spent solvents, batteries). -Drain oil filters before disposal or recycling. -Drain and contain all fluids from wrecked vehicles and "parts" cars. -Store cracked batteries in a nonleaking secondary container. -Promptly transfer used fluids to the proper container; do not leave full drip pans or other open containers around the shop. Empty and clean drip pans and containers. -Do not pour liquid waste down floor drains, sinks, or outdoor storm drain inlets. -Plug floor drains that are connected to the storm or sanitary sewer; if necessary, install a sump that is pumped regularly. -Inspect the maintenance area regularly for proper implementation of control measures. -Train employees on proper waste control and disposal procedures.
Outdoor vehicle and equipment storage and parking	-Use drip pans under all vehicles and equipment waiting for maintenance. -Cover the storage area with a roof. -Inspect the storage yard for filling drip pans and other problems regularly. -Train employees on procedures for storage and inspection items.
Haul Road and Access Roads	-Placement of haul roads should occur as far as possible from natural drainage areas, lakes, ponds, wetlands, or floodplains. -Maintain as much vegetation as possible near haul roads. -The width and grade of haul or access roads should be minimal and should be designed to match natural contours of the areas. -Construction of haul roads should be supplemented by BMPs that divert runoff from the road surfaces, minimize erosion, and direct flow to the appropriate channels for discharge to treatment areas. DISCHARGE DIVERSIONS: Dikes, curbs, and berms CONVEYANCE SYSTEMS: Channels, gutters, culverts, rolling dips, road sloping, roadway water deflectors RUNOFF DIVERSIONS: Check dams, rock outlet protection, level spreaders,

SUGGESTED STORM WATER BEST MANAGEMENT PRACTICES FOR: MINERAL MINING AND PROCESSING FACILITIES

Activity	Best Management Practices
	drop structures SEDIMENT CONTROL & COLLECTION: Gabions, riprap, native rock, retaining walls, straw bale barriers, sediment traps, catch basins, vegetated buffer strips, sediment settling ponds, siltation berms. VEGETATION: seeding, willow cutting establishment
Pits or Quarries	-Excavation of a pit or quarry must be accompanied by BMPs to minimize impacts to area surface waters. DISCHARGE DIVERSIONS: dikes, curbs, and berms CONVEYANCE SYSTEMS: channels, gutters RUNOFF DIVERSIONS: serrated slopes, benched slopes, contouring SEDIMENT CONTROL & COLLECTION: straw bale barriers, sediment settling ponds, siltation berms VEGETATION: seeding CONTAINMENT: plugging and grouting
Overburden waste rock and raw material piles	-Overburden, topsoil, and waste rock, as well as raw material and intermediate and final product stockpiles should be located away from surface waters and other sources of water. -If it is not possible to located materials away from surface waters, water should be diverted around the piles. -As many of the piles as possible should be revegetated, even if only on a temporary basis. -At closure, piles should be reclaimed. DISCHARGE DIVERSIONS: dikes, curbs, and berms CONVEYANCE SYSTEMS: channels, gutters RUNOFF DIVERSIONS: SERRATED slopes, benched slopes, contouring SEDIMENT CONTROL & COLLECTION: plastic matting, plastic netting, erosion control blankets, mulch-straw compaction, sediment/settling ponds, silt fences, siltation berms VEGETATION: top soiling, seedbed preparation, seeding CONTAINMENT: capping CONTAINMENT: plugging and grouting
Reclamation	-Reclaim in accordance with State and Federal standards -Restabilize any disturbed areas including haul or access roads, pits or quarries, sedimentation ponds, or work-out pits, and any overburden piles. DISCHARGE DIVERSIONS: dikes, curbs, and berms CONVEYANCE SYSTEMS: channels, gutters RUNOFF DIVERSIONS: check dams, rock outlet protection, level spreaders DIVERSIONS: SERRATED slopes, benched slopes, contouring, drain fields

SUGGESTED STORM WATER BEST MANAGEMENT PRACTICES FOR: MINERAL MINING AND PROCESSING FACILITIES

Activity	Best Management Practices
	SEDIMENT CONTROL & COLLECTION: gabions, riprap, native rock retaining walls, straw bale barriers, sediment traps, catch basins, vegetated buffer strips, sediment traps, siltation berms, catch basins, siltation berms, brush sediment barriers. VEGETATION: top soiling, seedbed preparation, seeding, willow cutting establishment.

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SUGGESTED STORM WATER BEST MANAGEMENT PRACTICES FOR: PRINTING AND PUBLISHING FACILITIES

Activity	Best Management Practices
Plate Preparation	-Use aqueous-developed lithographic plates or wipe-on plates.
Printing	-Use press wipes as along as possible before discarding or laundering; dirty ones for the first pass, clean ones for the second pass. -Squeeze or centrifuge solvent out of dirty rags. -Set up an in-house dirty rag cleaning operation if warranted or send to approved industrial laundries, if available. -Dedicated press for inks with hazardous pigments/solvents. -Segregate used oil from solvents or other materials. -Use water-based inks in gravure and flexographic printing process.
Clean up	-Label sinks as to proper disposal of liquids. -Keep equipment in good condition. -Use doctor blades and squeegees to remove as much ink as possible prior to cleaning with solvent and rags. -Control solvent use during equipment cleaning, use only what you need. -Designate special areas for draining or replacing fluids. -Substitute nontoxic or less toxic cleaning solvents. - Recover waste solvents onsite with batch distillation if warranted or utilize professional solvent recycling. -Centralize liquid solvent cleaning in one location. -Have refresher courses in operating and safety procedures.
Stencil Preparation for Screen Printing	-Recapture excess ink form silkscreen process before washing the screen to decrease amount of ink used and cleaning emulsion used.
Material Handling and Storage Areas	-Store containerized materials (fuel, paints, inks, solvents, etc.) in a protected, secure location and away from drains. -Store reactive, ignitable, or flammable liquids in compliance with the local fire code. -Identify potentially hazardous materials, their characteristics, and use. -Eliminate/reduce exposure to storm water. -Control excessive purchasing, storage, and handling of potentially hazardous materials. -Keep records to identify quantity, receipt date, service life, users, and disposal routes secure and carefully monitor hazardous materials to prevent theft, vandalism, and misuse of materials. -Educate personnel for proper storage, use, cleanup, and disposal of materials. -Maintain good integrity of all storage tanks. -Inspect storage tanks to detect potential leaks and perform preventive maintenance. -Provide sufficient containment for outdoor storage areas for the larger of either 10 percent of the volume of all containers or 110 percent of the volume of the largest tank. -Use temporary containment where required by portable drip pans. -Use spill throughs for drums with taps. -Train employees on proper filling and transfer procedures. -Inspect piping systems (pipes, pumps, flanges, couplings, hoses, valves) for failures or leaks. -Handle solvents in designated areas away from drains, ditches, and surface waters. Locate designated areas preferably indoors or under a shed. -If spills occur: • Stop the source immediately • Contain the liquid until cleanup is complete • Deploy oil containment booms if the spill may reach the water. • Cover the spill with absorbent material. • Keep the area ventilated. • Dispose of cleanup material properly • Do not use emulsifier or dispersant.

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