

INDUSTRIAL STORMWATER

FACT SHEET SERIES

Sector U: Food and Kindred Products Facilities



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What is the NPDES stormwater permitting program for industrial activity?

Activities, such as material handling and storage, equipment maintenance and cleaning, industrial processing or other operations that occur at industrial facilities are often exposed to stormwater. The runoff from these areas may discharge pollutants directly into nearby waterbodies or indirectly via storm sewer systems, thereby degrading water quality.

In 1990, the U.S. Environmental Protection Agency (EPA) developed permitting regulations under the National Pollutant Discharge Elimination System (NPDES) to control stormwater discharges associated with eleven categories of industrial activity. As a result, NPDES permitting authorities, which may be either EPA or a state environmental agency, issue stormwater permits to control runoff from these industrial facilities.

What types of industrial facilities are required to obtain permit coverage?

This fact sheet specifically discusses stormwater discharges from food and kindred products facilities as defined by Standard Industrial Classification (SIC) Major Code 20. This includes facilities manufacturing or processing foods, beverages, and related products for human consumption and prepared feeds for animals and fowls. Establishments engaged in manufacturing cigarettes, cigars, and other tobacco products are also included. Facilities and products in this group fall under the following categories, all of which require coverage under an industrial stormwater permit:

- ◆ Meat Products (SIC 2011, 2013, and 2015)
- ◆ Dairy Products (SIC 2021, 2022, 2023, 2024, and 2026)
- ◆ Canned, Frozen, and Preserved Fruits, Vegetables, and Food Specialties (SIC 2032, 2033, 2034, 2035, 2037, and 2038)
- ◆ Grain Mill Products (SIC 2041, 2043, 2044, 2045, 2046, 2047, and 2048)
- ◆ Bakery Products (SIC 2051, 2052, and 2053)
- ◆ Sugar and Confectionery Products (SIC 2061, 2062, 2063, 2064, 2066, 2067, and 2068)
- ◆ Fats and Oils (SIC 2074, 2075, 2076, 2077, and 2079)
- ◆ Beverages (SIC 2082, 2083, 2084, 2085, 2086, and 2087)
- ◆ Miscellaneous Food Preparations and Kindred Products (SIC 2091, 2092, 2095, 2096, 2097, 2098, and 2099)
- ◆ Tobacco Products (SIC 2111, 2121, 2131, and 2141)

What does an industrial stormwater permit require?

Common requirements for coverage under an industrial stormwater permit include development of a written stormwater pollution prevention plan (SWPPP), implementation of control measures, and submittal of a request for permit coverage, usually referred to as the Notice of Intent or NOI. The SWPPP is a written assessment of potential sources of pollutants in stormwater runoff and control measures

that will be implemented at your facility to minimize the discharge of these pollutants in runoff from the site. These control measures include site-specific best management practices (BMPs), maintenance plans, inspections, employee training, and reporting. The procedures detailed in the SWPPP must be implemented by the facility and updated as necessary, with a copy of the SWPPP kept on-site. The industrial stormwater permit also requires collection of visual, analytical, and/or compliance monitoring data to determine the effectiveness of implemented BMPs. For more information on EPA’s industrial stormwater permit and links to State stormwater permits, go to www.epa.gov/npdes/stormwater and click on “Industrial Activity.”

What pollutants are associated with my facilities activities?

Pollutants conveyed in stormwater discharges from facilities involved with the manufacturing of food and kindred products will vary. There are a number of factors that influence to what extent industrial activities and significant materials can affect water quality.

- ◆ Geographic location
- ◆ Topography
- ◆ Hydrogeology
- ◆ Extent of impervious surfaces (i.e., concrete or asphalt)
- ◆ Type of ground cover (e.g., vegetation, crushed stone, or dirt)
- ◆ Outdoor activities (e.g., material storage, loading/unloading, vehicle maintenance)
- ◆ Size of the operation
- ◆ Type, duration, and intensity of precipitation events

Each of these factors interacts to influence the quantity and quality of stormwater runoff. For example, flour/oil particulate emissions from vents (e.g., from baking operations) may be a significant source of pollutants at some facilities, while material storage may be a primary source at others. Similarly, a facility with all stormwater from exposed industrial activity diverted to the sanitary sewer would have less of an impact than a facility not practicing this control option. In addition, sources of pollutants other than stormwater, such as illicit connections, spills, and improperly dumped materials, may increase the pollutant loadings discharged in the receiving stream.

The nature of the business, and the required sanitary conditions, require that raw materials through final product be protected from stormwater. As such, the contamination of stormwater from these activities are primarily from the loading and unloading of products and raw materials; spillage and leaks from tanks and containers stored outdoors; waste management practices; pest control; and improper connections to the storm sewer.

The activities, pollutant sources, and pollutants detailed in Table 1 are commonly found at food and kindred products facilities.

Table 1. Common Activities, Pollutant Sources, and Associated Pollutants at Food and Kindred Product Facilities

Activity	Pollutant Source	Pollutant
Raw material unloading/ product loading	Container defects (bags, drums, bottles, crates)	Biochemical oxygen demand (BOD), total suspended solids (TSS), oil and grease, pH, nitrogen (TKN)
	Spills and leaks during unloading/loading (tanks, rail cars)	
	Failed connections (hoses and couplings)	
	Washdown of unloading/loading area	
Liquid storage containers (i.e., above ground storage tanks)	Failed piping and connections (couplings, flanges, hoses, and valves)	BOD, TSS, oil and greases, pH
	External corrosion and structural failure	
	Spills and overflows due to operator error	

Table 1. Common Activities, Pollutant Sources, and Associated Pollutants at Food and Kindred Product Facilities (continued)

Activity	Pollutant Source	Pollutant
Liquid storage containers (drums, carboys, and gallon jugs)	Outside containers	BOD, TSS, oil and greases, pH
	Open containers	
	External corrosion of the containers	
	Operator handling and transporting	
	Spills and leaks from damaged containers	
Solid storage containers (soils, holding bins, fiber drums, etc.)	Dust and particulates	BOD, TSS, pH
	Operator handling and transporting	
	Spills and leaks	
Air emissions	Oven emissions	BOD, TSS, oil and greases, pH
	Vents	
	Fine solids handling	
Solid waste	Dumpsters and trash cans	
Spent equipment, scraps, etc	BOD, TSS, oil and greases, pH, copper, manganese	
Wastewater	Treatment processes (e.g., hydraulic overflow)	BOD, TSS, oil and greases, pH, fecal coliform
	Outside piping and connections (couplings, flanges, hoses, valves, and pumps)	
Pest control	Outside application of pesticides, rodenticides, and insecticides	Miscellaneous insecticides, rodenticides, pesticides, etc., TKN
Illicit connections to the storm sewer	Process wastewaters	BOD, TSS, oil and greases, pH
	Process floor drains	
	Sanitary sewers	
	USTs	

What BMPs can be used to minimize contact between stormwater and potential pollutants at my facility?

A variety of BMP options may be applicable to eliminate or minimize the presence of pollutants in stormwater discharges from food and kindred products facilities. You will likely need to implement a combination or suite of BMPs to address stormwater runoff at your facility. Your first consideration should be for pollution prevention BMPs, which are designed to prevent or minimize pollutants from entering stormwater runoff and/or reduce the volume of stormwater requiring management. Prevention BMPs can include regular cleanup, collection and containment of debris in storage areas, and other housekeeping practices, spill control, and employee training. It may also be necessary to implement treatment BMPs, which are engineered structures, intended to treat stormwater runoff and/or mitigate the effects of increased stormwater runoff peak rate, volume, and velocity. Treatment BMPs are generally more expensive to install and maintain and include oil-water separators, wet ponds, and proprietary filter devices.

BMPs must be selected and implemented to address the following:

Good Housekeeping Practices

Good housekeeping is a practical, cost-effective way to maintain a clean and orderly facility to prevent potential pollution sources from coming into contact with stormwater. It includes establishing

protocols to reduce the possibility of mishandling materials or equipment and training employees in good housekeeping techniques. Common areas where good housekeeping practices should be followed include trash containers and adjacent areas, material storage areas, vehicle and equipment maintenance areas, and loading docks. Good housekeeping practices must include a schedule for regular pickup and disposal of garbage and waste materials and routine inspections of drums, tanks, and containers for leaks and structural conditions. Practices also include containing and covering garbage, waste materials, and debris. Involving employees in routine monitoring of housekeeping practices has proven to be an effective means of ensuring the continued implementation of these measures.

Minimizing Exposure

Where feasible, minimizing exposure of potential pollutant sources to precipitation is an important control option. Minimizing exposure prevents pollutants, including debris, from coming into contact with precipitation and can reduce the need for BMPs to treat contaminated stormwater runoff. It can also prevent debris from being picked up by stormwater and carried into drains and surface waters. Examples of BMPs for exposure minimization include covering materials or activities with temporary structures (e.g., tarps) when wet weather is expected or moving materials or activities to existing or new permanent structures (e.g., buildings, silos, sheds). Even the simple practice of keeping a dumpster lid closed can be a very effective pollution prevention measure.

Erosion and Sediment Control

BMPs must be selected and implemented to limit erosion on areas of your site that, due to topography, activities, soils, cover, materials, or other factors are likely to experience erosion. Erosion control BMPs such as seeding, mulching, and sodding prevent soil from becoming dislodged and should be considered first. Sediment control BMPs such as silt fences, sediment ponds, and stabilized entrances trap sediment after it has eroded. Sediment control BMPs should be used to back-up erosion control BMPs.

Management of Runoff

Your SWPPP must contain a narrative evaluation of the appropriateness of stormwater management practices that divert, infiltrate, reuse, or otherwise manage stormwater runoff so as to reduce the discharge of pollutants. Appropriate measures are highly site-specific, but may include, among others, vegetative swales, collection and reuse of stormwater, inlet controls, snow management, infiltration devices, and wet retention measures.

A combination of preventive and treatment BMPs will yield the most effective stormwater management for minimizing the offsite discharge of pollutants via stormwater runoff. Though not specifically outlined in this fact sheet, BMPs must also address preventive maintenance records or logbooks, regular facility inspections, spill prevention and response, and employee training.

All BMPs require regular maintenance to function as intended. Some management measures have simple maintenance requirements, others are quite involved. You must regularly inspect all BMPs to ensure they are operating properly, including during runoff events. As soon as a problem is found, action to resolve it should be initiated immediately.

Implement BMPs, such as those listed below in Table 2 for the control of pollutants at food and kindred facilities, to minimize and prevent the discharge of pollutants in stormwater. Identifying weaknesses in current facility practices will aid the permittee in determining appropriate BMPs that will achieve a reduction in pollutant loadings. BMPs listed in Table 2 are broadly applicable to food and kindred facilities; however, this is not a complete list and you are recommended to consult with regulatory agencies or a stormwater engineer/consultant to identify appropriate BMPs for your facility.

Table 2. BMPs for Potential Pollutant Sources at Food and Kindred Product Facilities

Pollutant Source	BMPs
Raw material unloading/product loading	<ul style="list-style-type: none"> <input type="checkbox"/> Situate loading/unloading areas indoors or in a covered area. <input type="checkbox"/> Confine loading/unloading activities to designated areas outside drainage pathways and away from surface waters. <input type="checkbox"/> Ensure that a facility representative is present during unloading/loading activities. <input type="checkbox"/> Close storm drains during loading/unloading activities in surrounding area. <input type="checkbox"/> Use a dead-end sump where materials could be directed. <input type="checkbox"/> Use rubber seals in truck loading dock areas to contain spills. <input type="checkbox"/> Inspect all containers for leaks or damage prior to unloading/loading of any raw or spent materials. <input type="checkbox"/> Avoid loading/unloading materials in the rain or provide cover or other protection for loading docks. <input type="checkbox"/> Provide diversion berms, dikes or grassed swales around the perimeter of the area to limit run-on. <input type="checkbox"/> Cover loading and unloading areas and perform these activities on an impervious pad to enable easy collection of spilled materials. Provide overhangs or door skirts to enclose trailer ends at truck loading/unloading docks. <input type="checkbox"/> For rail transfer, a drip pan shall be installed within the rails to collect spillage from the tank. <input type="checkbox"/> Where liquid or powdered materials are transferred in bulk to/from truck or rail cars, ensure hose connection points at storage containers are inside containment areas, or drip pans are used in areas where spillage may occur which are not in a containment area. <input type="checkbox"/> Drain hoses back into truck, railcar, etc. after loading/unloading materials. <input type="checkbox"/> Install high level alarm on tanks to prevent overfilling. <input type="checkbox"/> Use dry cleanup methods rather than washing the areas down.
Raw material unloading/product loading (continued)	<ul style="list-style-type: none"> <input type="checkbox"/> Regularly sweep area to minimize debris on the ground. <input type="checkbox"/> Provide dust control if necessary. When controlling dust, sweep and/or apply water or materials that will not impact surface or ground water. <input type="checkbox"/> Train employees in spill prevention, control, cleanup, and proper materials management techniques. <input type="checkbox"/> Train employees on proper unloading/loading techniques. <input type="checkbox"/> Initiate an inventory control for all raw and spent materials.
Liquid storage	<ul style="list-style-type: none"> <input type="checkbox"/> Cover and/or enclose storage areas to minimize exposure of tanks and the collection of stormwater inside the curbed/diked area. <input type="checkbox"/> If area is uncovered, connect sump outlet to sanitary sewer (if possible) or an oil/water separator, catch basin filter, etc. If connecting to a sanitary sewer check with the system operator to ensure that the discharge is acceptable. <input type="checkbox"/> Surround above-ground liquid storage tanks with curbs/dikes to provide secondary containment storage. The enclosed volume should be the greater of either 10% of the total tank volume or 110% of the volume contained in the largest tank. <input type="checkbox"/> If containment structures have drains, ensure that the drains have valves, and that valves are maintained in the closed position. <input type="checkbox"/> Institute protocols for checking/testing stormwater in containment areas prior to discharge.

Table 2. BMPs for Potential Pollutant Sources at Food and Kindred Product Facilities (continued)

Pollutant Source	BMPs
Liquid storage (continued)	<ul style="list-style-type: none"> <input type="checkbox"/> Install impervious surface for the floor of the storage area and slope it to a lined sump for the collection of spills. <input type="checkbox"/> Use drip pans when loading and unloading liquid materials and place at locations where spillage may occur (hose connections, hose reels, filler nozzles, and opened tanks/drums). <input type="checkbox"/> Bulkhead liquid storage tanks indoors (i.e., tank outlets located inside buildings). <input type="checkbox"/> Inspect the external condition (corrosion, leaks) of the containers. <input type="checkbox"/> Inspect the general area around the containers. <input type="checkbox"/> Use double-walled tanks. <input type="checkbox"/> Develop and implement spill plans. <input type="checkbox"/> Train employees in spill prevention, control, proper storage, handling and transportation techniques (e.g., filling and transferring contents).
Liquid storage (drums, carboys, and gallon jugs)	<ul style="list-style-type: none"> <input type="checkbox"/> Store containers indoors when possible. <input type="checkbox"/> Store containers, including empty or used containers, in secondary containment with a roof or cover (including temporary cover such as a tarp that prevents contact with precipitation). <input type="checkbox"/> Store containers, including empty or used containers, in secondary containment with a roof or cover (including temporary cover such as a tarp that prevents contact with precipitation). <input type="checkbox"/> Provide secondary containment, such as dikes or portable containers, with a height sufficient to contain a spill (the greater of 10 percent of the total enclosed tank volume or 110 percent of the volume contained in the largest tank). <input type="checkbox"/> Clearly label containers with its contents. <input type="checkbox"/> Ensure that all containers are closed (e.g., valves shut, lids and manways sealed, caps closed). <input type="checkbox"/> Wash containers indoors before storing empty containers outdoors. <input type="checkbox"/> If outside or in a covered area, minimize run-on of stormwater into a storage area by grading area to ensure that stormwater runs "off" and not "on." <input type="checkbox"/> Maintain an inventory control of all raw and spent materials. <input type="checkbox"/> Employ measures to protect against spillage from the overflows (e.g., high level sensors, alarms). <input type="checkbox"/> Train employees in spill prevention and control.
Waste management - wastewater	<ul style="list-style-type: none"> <input type="checkbox"/> Develop a leak prevention program for valves, pumps, and piping equipment. <input type="checkbox"/> Inspect the outside pipe connections (couplings, valve seals and gaskets, flanges, etc.) of the treatment system for leaks, corrosion, and poor maintenance upkeep. <input type="checkbox"/> Use dry cleanup methods.
Waste management - solid waste (paper, wood pellets, scrap metals, refuse, etc.)	<ul style="list-style-type: none"> <input type="checkbox"/> Inspect the general area around the solid waste storage (e.g., look for signs of leaching). <input type="checkbox"/> Store waste so that it is physically contained (dumpsters, drums, bags). Store waste in an enclosed/covered area. <input type="checkbox"/> If outside or in a covered area, minimize exposure to stormwater by grading the area to ensure that stormwater runs "off" and not "on." <input type="checkbox"/> Ensure hazardous waste disposal practices are performed in accordance with federal, state, and local requirements. <input type="checkbox"/> Route trash compactor leakage to treatment system or sanitary sewer.

Table 2. BMPs for Potential Pollutant Sources at Food and Kindred Product Facilities (continued)

Pollutant Source	BMPs
Waste management - air emissions	<ul style="list-style-type: none"> <input type="checkbox"/> Clean around vents and stacks to atmosphere from process and storage areas. <input type="checkbox"/> Place tubs around vents and stacks for easy collection of settling particles. <input type="checkbox"/> Remove fugitive dust accumulations on ledges, walls, floors, and equipment. If you use compressed air to clean up dust, shut down your machinery and other potential ignition sources. <input type="checkbox"/> Inspect air emission control systems (e.g., baghouses) regularly and repair and replace as necessary. <input type="checkbox"/> Route overflows/condensates from process vents to on-site treatment system or to the sanitary sewer. <input type="checkbox"/> Minimize free-fall height to reduce fugitive-dust losses. <input type="checkbox"/> Locate fabric dust-filter collectors outside the facility if possible. If fabric dust-filter collectors are inside the facility, place them in an area protected by an explosion-protection system.
Pest control	<ul style="list-style-type: none"> <input type="checkbox"/> Follow manufacturer's directions for application of pest control materials to site. <input type="checkbox"/> Time application for dry weather conditions. <input type="checkbox"/> Store partially full containers indoors or undercover. <input type="checkbox"/> Apply insecticides during breeding months. <input type="checkbox"/> Protect rat bait houses from stormwater.
Improper connections to the storm sewer	<ul style="list-style-type: none"> <input type="checkbox"/> Perform smoke or dye testing to determine if interconnections exist between the sanitary and storm sewers. <input type="checkbox"/> Plug all floor drains leading to storm sewers. <input type="checkbox"/> Update facility schematics to accurately reflect all plumbing connections.
Meat products - operation of meat packaging plants including animal holding pens (beef, chicken)	<ul style="list-style-type: none"> <input type="checkbox"/> Enclose/cover fowl hanging area. <input type="checkbox"/> Enclose/cover the animal holding pens. <input type="checkbox"/> Grade the areas around the animal holding pens to ensure stormwater "runs off" and not "on" to the holding pen. And regularly inspect area around animal holding pens for stormwater runoff or run-on. <input type="checkbox"/> Store materials from cleanup activities in appropriate containers in an enclosed/covered area. <input type="checkbox"/> Area for trailers holding empty bird cages should have stormwater run-on/runoff controls in place. <input type="checkbox"/> Use mechanical sweepers around site to clean up fugitive feathers, dust, and manure. <input type="checkbox"/> Decrease total lot area when animal numbers are low to decrease total stormwater runoff. <input type="checkbox"/> Direct run-off to storage lagoons and holding ponds until it can be land applied or evaporated or discharged to a municipal treatment system. If connecting to a sanitary sewer check with the system operator to ensure that the discharge is acceptable. <input type="checkbox"/> Train employees on proper material (i.e., hide, hair, feathers, and animal parts) cleanup procedures around and within the animal holding pens.
Manure management	<ul style="list-style-type: none"> <input type="checkbox"/> Place animal manure in grassy area as far as possible from water courses so seepage has a chance to be filtered and absorbed by the grass before entering creek or stream. For land with a slope of greater than one percent, plant a dense, sod forming grass at least 20 feet wide around the downgradient side of any manure stockpile. <input type="checkbox"/> Use grass filter strips, filter fencing, or straw bales to filter solids and nutrients from runoff. <input type="checkbox"/> Store manure in bermed or covered areas.

Table 2. BMPs for Potential Pollutant Sources at Food and Kindred Product Facilities (continued)

Pollutant Source	BMPs
Dairy products - manufacturing and storage of packaged dairy products (including spoiled and broken product containers)	<ul style="list-style-type: none"> <input type="checkbox"/> Store aged/spoiled dairy products in enclosed storage area on an impervious or contained pad and under a roof or canopy where possible. <input type="checkbox"/> Use dry cleanup methods instead of washing the areas down. <input type="checkbox"/> Ensure that all aged/spoiled products (e.g., bottles, cartons, plastic containers) are disposed of in a proper manner (bagged, covered). <input type="checkbox"/> Keep foam from going into sewers because it contains milk solids. Common sources of excessive foaming are open-type separators, splashing when filling tanks, air sucked in through leaky connections in lines under partial vacuum, through leaky packing and through faulty rotary seals or pumps. <input type="checkbox"/> Inspect storage area for leaks and spills and to monitor housekeeping and runoff prevention practices. <input type="checkbox"/> Train employees on spill prevention, control and proper disposal methods for all aged/spoiled dairy products.
Canned frozen and preserved fruits, vegetables, and frozen specialties - fruit and vegetable storage and disposal	<ul style="list-style-type: none"> <input type="checkbox"/> Store all fruits and vegetables in appropriate containers (e.g., bins, bushels, baskets, buckets) and in enclosed/covered areas. <input type="checkbox"/> Minimize fruit and vegetable storage time outdoors. <input type="checkbox"/> Store empty fruit and vegetable containers in an enclosed/covered area. <input type="checkbox"/> Use particulates emission control systems for all cooking processes to reduce particulate matter. <input type="checkbox"/> Inspect all fruit and vegetable storage areas to monitor BMP implementation. <input type="checkbox"/> Train employees on proper handling/disposal methods for fresh/rotten fruits and vegetables.
Grain mills - grain handling, storage, and mixing	<ul style="list-style-type: none"> <input type="checkbox"/> Store all grain in appropriate containers (e.g., silos, hoppers) in an enclosed/covered area. <input type="checkbox"/> Use a vacuum control system in all grain mixing areas to minimize fugitive dust. <input type="checkbox"/> Inspect the general area around the grain storage to monitor BMP implementation. <input type="checkbox"/> Train employees on grain handling procedures.
Bakery products - ingredient storage and mixing	<ul style="list-style-type: none"> <input type="checkbox"/> Store all ingredients (e.g., corn sweeteners, flour, shortening, syrup, vegetable oils) in appropriate containers (e.g., tanks, drums, bags) in an enclosed/covered area. <input type="checkbox"/> Inspect ingredient storage areas for BMP implementation.
Bakery products - baking process	<ul style="list-style-type: none"> <input type="checkbox"/> Remove flour/oil dust accumulation around ventilation exhaust systems. <input type="checkbox"/> Install an air emission control system for all baking processes to reduce particulate matter.
Sugar and confectionery - sugar handling	<ul style="list-style-type: none"> <input type="checkbox"/> Use a vacuum control system in all granular and powdered processing areas.
Fats and oils - storage and disposal	<ul style="list-style-type: none"> <input type="checkbox"/> Store all fats and oils, (e.g., butcher shop materials, hair, hide, tallow, bone meal, and offal) in enclosed/covered areas. <input type="checkbox"/> Ensure all fats and oils are physically contained. <input type="checkbox"/> Inspect all fats and oils storage areas for BMP implementation.
Beverages - materials storage and mixing	<ul style="list-style-type: none"> <input type="checkbox"/> Ensure grain is stored in enclosed/covered area. <input type="checkbox"/> Use a particulates emission control system for all grain handling and brewing processes. <input type="checkbox"/> Protect reusable beverage containers that are stored outdoors from stormwater contact.

What if activities and materials at my facility are not exposed to precipitation?

The industrial stormwater program requires permit coverage for a number of specified types of industrial activities. However, when a facility is able to prevent the exposure of ALL relevant activities and materials to precipitation, it may be eligible to claim no exposure and qualify for a waiver from permit coverage.

If you are regulated under the industrial permitting program, you must either obtain permit coverage or submit a no exposure certification form, if available. Check with your permitting authority for additional information as not every permitting authority program provides no exposure exemptions.

Where do I get more information?

For additional information on the industrial stormwater program see www.epa.gov/npdes/stormwater/msgp.

A list of names and telephone numbers for each EPA Region or state NPDES permitting authority can be found at www.epa.gov/npdes/stormwatercontacts.

References

Information contained in this Fact Sheet was compiled from EPA's Multi-Sector General Permits and from the following sources:

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