

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY

FACT SHEET

GENERAL PERMIT NCG240000
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT TO DISCHARGE STORMWATER AND WASTEWATER

Permit No. NCG240000

Date: February 10, 2011

(Revised September 29, 2011; December 8, 2011)

1. TYPES OF DISCHARGES COVERED

a. Industrial Activities Covered by this General Permit

Coverage under the NCG240000 General Permit is applicable to owners or operators of both stormwater and process wastewater discharges associated with activities classified as compost manufacturing, SIC 2875. Coverage is limited to those facilities classified as large Type 1, Type 2, and small Type 3 composting operations as described in regulations administered by the North Carolina Division of Waste Management (DWM) and found at 15A NCAC 13B .1402(f).

In addition, the Division of Water Quality (DWQ) may require coverage under the General Permit for stormwater and process wastewater discharges from like industrial activities deemed by DWQ to be similar to composting operations in the process, or the discharges, or the exposure of raw materials, intermediate products, by-products, products, or waste products.

Except upon DWQ determination of similarity as provided immediately above, the following activities and associated discharges are excluded from coverage under the General Permit:

- Composting operations classified in 15A NCAC 13B .1402(g) as small Type 1 Facilities. *Rationale: DWQ has determined that limited DWQ resources might achieve better state-wide protection of water quality by first focusing on the other portions of the industry with more problematic feedstocks or larger physical extent. Although the small Type I facilities are captured by the NPDES rules, DWQ intends to regulate the small yard waste facilities on a substantiated complaint basis, rather than a state-wide blanket approach via the General Permit for at least the first five-year permit cycle.*
- Backyard composting and on-farm composting as described in 13B .1402(g). *Rationale: These facilities are not captured by the NPDES regulations, and are not subject to the permitting required under those regulations.*
- Composting operations classified in 13B .1402(f) as Type 4 Facilities and large Type 3 Facilities. *Rationale: DWQ's judgment is that this subsector processes feedstocks of greater potential for water quality impacts, and consequently should be permitted under the increased scrutiny attendant with individual permits, rather than under the General Permit.*

- Composting operations for residuals management as described in regulations administered by DWQ and found at 15A NCAC 2T .1100. *Rationale: DWQ's judgment is that this subsector processes feedstocks of greater potential for water quality impacts, particularly with respect to the potential for the concentration of heavy metals, and consequently should be permitted under the increased scrutiny attendant with individual permits, rather than under the General Permit.*
- Composting operations with discharges to especially protected receiving waters classified as ORW, HQW, trout waters, PNA waters, areas with special water quality management strategies established in North Carolina rules at 15A NCAC 2B .0200, and zero-flow streams as described in 15A NCAC 2B .0206. *Rationale: North Carolina rules include prohibitions on waste discharges to some of these receiving water classifications. In general, all of these classifications deserve the extra administrative attention and regulatory protection available through the individual permitting process, rather than through the General Permit.*
- ***Stand-alone mulching-only operations are not regulated by NCG240000. Where mulching operations are co-located at composting facilities and function to provide feedstocks to the composting operations, they are included with the rest of the composting operations, and are subject to regulation by NCG240000. (Added 9/14/2011 per public comment.)***

Generally, composting operations that are not eligible for coverage under the General Permit may apply for separate coverage under an individual stormwater discharge permit and an individual wastewater discharge permit.

b. Types of Operations Covered

Basis for coverage: The federal NPDES program rules at 40CFR122.26(b)(14) specifically define the industrial activities that are subject to regulation for storm water discharges associated with industrial activity. These rules at 40CFR122.26(b)(14)(ii) and (xi) capture all of SIC Major Group 28. Composting is a listed industrial activity in SIC 2875, part of Major Group 28, and is subject to NPDES stormwater permitting. The General Permit covers all on-site activities and features associated with the compost manufacturing activity. Covered industrial activities and site features may include, but are not limited to: scales, receiving, staging, grinding, screening, rejects piles, storage, composting, turning, aeration, moisture addition, curing, blending, packaging, labeling, warehousing, loading, and other related on-site manufacturing activities. Also covered are stormwater runoff flows from on-site vehicle and equipment maintenance areas.

c. Characteristics of Discharged Stormwater and Wastewater

The composting process might be described as accelerated biological decomposition of organic materials. Basic process control parameters include temperature, moisture content, particle size, aeration rate, bulk porosity, feedstock selection, salts content, and carbon to nitrogen ratio. Feedstocks vary greatly across the industry, and can include leaves, wood chips, grass clippings, pre-consumer food wastes, post-consumer food wastes, manures, sludges, septage, and specialized industrial wastes. The flows

resulting from the manufacturing process activities and from contact with on-site materials can be highly variable in pollutant strength.

DWQ reviewed two published studies of untreated compost discharges, as well as pollutant monitoring results collected under three DWQ stormwater permits previously issued to composting operations. The very limited data set available, along with the inherent high variability of feedstocks, do not allow for a single definitive characterization of the pollutant concentrations in discharge flows. However, several categories of pollutants consistently appeared at high levels in the literature, in permittee monitoring, or in independent DWQ testing at compost manufacturing sites. See Appendix A for a tabulation of compost site monitoring data. *Absent a larger and more differentiated data set, DWQ concludes that the following categories of pollutants may potentially appear in both stormwater and wastewater discharges associated with composting activities.*

1. **BOD/COD**: These measures of oxygen demand were highly variable. The highest were reported at levels several times greater than general characterizations of raw sewage.
2. **TSS**: The highest levels of TSS were similarly reported at levels well above raw sewage, and well above the stormwater permitting benchmark for North Carolina.
3. **Fecal coliform/E. coli**: While reported bacteriological contamination *was not as high as raw sewage*, it was still reported as several orders of magnitude greater than North Carolina water quality standards.
4. **Nitrogen/TKN/NO3-NO2/NH3**: Again, highly variable results. In one published study, ammonia, an especially problematic form of nitrogen in the aquatic environment due to its toxicity, was reported at levels many times greater than general characterizations of raw sewage.
5. **Phosphorus**: Again, reported at levels several times greater than general characterizations of raw sewage, and well beyond the North Carolina stormwater discharge benchmark value.
6. **Metals – Cu, Pb, Zn, Al, Fe, K**: DWQ found limited data even within the limited data set we reviewed. For Cu, Pb, and Zn there were some reports of discharge levels above the stormwater discharge benchmark values for North Carolina. Industry representatives reported to DWQ that woody feedstocks can sequester metals, and are a probable source in discharged flows.
7. **Oil & grease**: Limited data.
8. **pH**: The limited data included some pH values below North Carolina Water Quality Standards, but most values were within water quality standards.
9. **Conductivity/TDS/salts content**: Limited data. At one North Carolina site high conductivity was implicated in observed impacts to the receiving water.

Despite the potential for high absolute concentrations of pollutants in compost site discharges, two aspects of the discharges may serve to moderate the impact on receiving waters. First, discharges are typically associated with rain events. This means that the delivery of pollutants is not typically continuous, and that receiving waters may have the benefit of increased flows and increased pollutant dilution at the

time of discharge. Second, industry representatives report that for many composting sites, and under good conditions, small rain events may be substantially absorbed by the composting materials, reducing the discharge volume. These moderating factors are of course very site specific, and the degree of the impact of the moderating factors has not been quantifiable.

A consistent element in other DWQ stormwater discharge permits has been the additional focus at industrial sites on vehicle and equipment maintenance activities. Where these activities are present to a significant degree, DWQ imposes stormwater monitoring for total petroleum hydrocarbons (**TPH**), total suspended solids (**TSS**), and **pH**. DWQ believes that the monitoring and control of stormwater discharges from those activities continues to benefit and improve water quality in North Carolina.

d. Geographic Area Covered by this General Permit

Discharges covered by this general permit are located at any place within the political boundary of the State of North Carolina. However, discharges located on the Cherokee Indian Tribal Reservation are subject to permitting by the U.S. Environmental Protection Agency, rather than NC DWQ, and are not eligible for coverage under this General Permit.

e. Receiving Waters

As suggested by the potential pollutant strengths noted above, composting operations directly or indirectly discharging to especially protected receiving waters (receiving waters classified as ORW, HQW, trout waters, PNA waters, areas with special water quality management strategies established in North Carolina rules at 15A NCAC 2B .0200, and zero-flow streams as described in 15A NCAC 2B .0206) are not eligible for coverage under this General Permit. *DWQ believes that while exceptions to this prohibition may be warranted on a case-by-case basis, individual permits should be strongly preferred for such facilities.*

2. AUTHORIZATION TO CONSTRUCT AND OPERATE A TREATMENT FACILITY

North Carolina rules in 15A NCAC 2H .0138 provide for DWQ to issue an Authorization to Construct (ATC) upon satisfactory review of final plans and specifications for the construction and operation of water pollution control facilities necessary to comply with the terms and conditions of an NPDES permit. For this General Permit, DWQ will implement the ATC review when treatment facilities for process wastewater are included in the applicant's application for coverage under NCG240000. The ATC review will be performed concurrently with the review of the NOI application to allow the discharge of process wastewater. Final plans and specifications will be a requirement of a complete application.

Note: Session Law 2011-394 was enacted on July 1, 2011. It amended G.S. 143-215.1, and directed that no Authorization to Construct permit may be required for industrial wastewater treatment discharges already covered under an existing discharge permit. DWQ has amended draft NCG240000 to comply with this requirement of law by

*excluding existing facilities from the ATC requirement previously in the draft version of the permit since they will be covered by the permit before it is reasonable to expect development of plans for treatment facilities. However, for new facilities seeking coverage under NCG240000, we note that the law is applied conditionally to those facilities already covered by a discharge permit, and new composting facilities will not meet this condition. (Added 9/14/2011 in response to the revisions to G.S. 143-215.1) **Further Note (added 12/8/2011):** In further development in response to the requirements of SL 2011-394 Section 9, DWQ has determined to eliminate the ATC review and requirement from our procedures and permit, irrespective of whether the composting facility qualifies as an existing facility or a new facility.*

3. PROPOSED DISCHARGE CONTROLS AND LIMITATIONS

Stormwater Discharges

Benchmark concentrations: *Rationale: DWQ's permitting program strategy addresses the potential to pollute. Permittees must be able to demonstrate that on-site industrial materials are not reaching receiving waters or becoming water pollutants, and must be able to show that pollutant loads from on-site industrial runoff are not increased above levels of concern. DWQ's methodology for achieving this is through scheduled self-monitoring by each permittee.* The General Permit requires quarterly monitoring, and incorporates benchmark concentrations for stormwater discharges in order to provide compost facilities with a tool with which to assess the effectiveness of best management practices (BMPs). The benchmark concentrations are not effluent limits, but provide guidelines to enable site management's continuing and responsive implementation of a facility's Stormwater Pollution Prevention Plan (SPPP or Plan). Numerical exceedences of benchmark values require the permittee to increase monitoring, increase management actions, increase record keeping, and/or install stormwater BMPs in a tiered program. Four (4) benchmark exceedences trigger notification to the DWQ Regional Office and may prompt additional requirements (Tier 3). DWQ has been phasing in the benchmark and tiered permit structure for industrial stormwater permits since 2007. See Appendix B for identification of the bases for the numerical benchmark values applicable in this General Permit.

Stormwater Pollution Prevention Plan: *Rationale: DWQ's perspective is that the permittee's effective control of the pollutants potentially present in industrial site runoff cannot occur without a deliberate management plan that serves that specific objective.* The General Permit requires the permittee to develop and implement a written plan to manage and control the discharge of pollutants in the stormwater flows leaving the site. The particular requirements are detailed in the permit text, but in summary the required elements of the plan are as follows.

1. Site Plan: a description of the physical facility and the pollutant sources that have the potential to contribute to contamination of stormwater discharges. At a minimum the site plan includes:

- (a) A general location map showing the facility's location in relation to transportation routes and surface waters, and whether each receiving water is **impaired** or is located in a **watershed for which a TMDL has been established**, and what the parameter(s) of concern are.
 - (b) A narrative description of the on-site industrial activities and a description of the potential pollutants that could be expected to be present in the stormwater discharge from each outfall.
 - (c) A site map drawn at a scale sufficient to clearly depict the physical features and location of industrial activities.
 - (d) A list of significant spills or leaks of pollutants, **as well as any wastewater treatment unit bypasses**, that have occurred during the previous three (3) years and any corrective actions taken to mitigate the impacts. **(Bypasses added 9/29/2011)**.
 - (e) And, annual certification that the stormwater outfalls have been evaluated for the presence of non-stormwater discharges.
2. Stormwater Management Plan: a description of the materials management practices employed which control or minimize the exposure of significant materials to stormwater. At a minimum, the stormwater management plan includes:
- (a) A feasibility study that reviews the economic and technical feasibility of changing the methods of operation or physical configuration of the site in order to reduce or eliminate the generation of highly contaminated stormwater and wastewater discharges.
 - (b) A list of the required secondary containment structures provided for bulk storage of liquid materials; storage of Section 313 water priority chemicals; and storage of hazardous substances, in order to prevent leaks and spills from contaminating stormwater runoff.
 - (c) A BMP summary section identifying all BMPs and the rationale for their implementation on site.
 - (d) A rain gauge and record of daily rainfall amounts.
3. Spill Prevention and Response Plan: an assessment of potential pollutant sources based on a materials inventory of the facility. It shall detail the permittee's spill prevention and spill response preparations and actions.
4. Preventative Maintenance and Good Housekeeping Program: including schedules of inspections, preventative maintenance, and housekeeping measures along with records evidencing implementation.
5. Annual Employee Training: for the prevention of stormwater and wastewater pollution.
6. Identification: of the on-site person responsible for implementation of the SPPP.

7. Requirement to amend the Plan: whenever there is a change affecting the potential for the discharge of pollutants to surface waters.
8. Requirement for regular facility inspections.
9. Requirement to implement the Plan.

Process Wastewater Discharges

Rationale: DWQ relies primarily on the definition of process wastewater found in the NPDES federal regulations at 40CFR122.2, "Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw materials, intermediate product, finished product, byproduct, or waste product." In addition, DWQ received an informal opinion in 2010, from the state's Attorney General's Office concluding that discharges from final product at a compost manufacturing facility meet the federal NPDES definitions of both wastewater discharges and stormwater discharges. The Attorney General's Office opinion was confined to finished product, and did not address feedstocks and other in-process materials. DWQ considers that those other materials give rise to process wastewater discharges per the federal definition cited above.

*DWQ has determined to identify under what circumstances a discharge from the final product at a compost facility may be permitted as a wastewater discharge, or instead a stormwater discharge. In 2010, DWQ enlisted the assistance of DWM to develop a new criterion for presumptively identifying the polluting potential for the final product produced by a composting operation, and to presumptively distinguish wastewater flows from stormwater flows. The term 'finished compost' has been adopted by DWM and DWQ, and is used in the General Permit to identify final products that have reached a higher degree of degradation and completion of the composting process. In the permitting process, DWQ will presumptively consider that *stormwater discharges arise from contact with 'finished compost.'* Not all final products produced at a compost facility go to the same end user market. Some final products can be delivered to the customer in less time, at less cost, and at a lesser degree of degradation. That means that more organic and nutrient pollution potential remains in the compost final product, compared to more mature 'finished compost.' In the permitting process, DWQ will presumptively consider that *flows originating from contact with these less effectively composted final products give rise to process wastewater discharges.**

Process wastewater discharges are subject to effluent limitations for the conventional pollutants of TSS, fecal coliform, BOD5, and pH. The General Permit requires quarterly sampling. DWQ considered that unlike many wastewater flows from other industrial activities, flows from composting operations are likely to be intermittent and to be associated with sporadic rainfall events.

DWQ intends that if our presumptive determination that a flow should be permitted as a stormwater does not lead to the permittee's effective control of pollutant discharges from

any particular site, we may on a case-by-case basis revisit that presumptive determination to assess whether such a flow might be more effectively controlled if re-classified as a process wastewater discharge, in accordance with the more inclusive scope of the 40CFR122.2 definition of process wastewater.

4. MONITORING AND REPORTING REQUIREMENTS

Stormwater Discharges

The draft General Permit specifies monitoring and reporting requirements for both quantitative and qualitative assessment of the stormwater discharge, and operational inspections of the entire facility. Specific pollutant parameters for which sampling must be performed and the frequency of the sampling are based upon the pollutants potentially generated from composting operations as reported in the literature and in site monitoring reports from current DWQ permittees. See section 1 c. above for a summary of pollutants potentially present at a composting operation.

The draft permit proposes specific monitoring requirements for the following parameters for stormwater discharges: TSS, COD, fecal coliform, total nitrogen, total phosphorus, total copper, total lead, total zinc, pH, total petroleum hydrocarbons (vehicle maintenance areas only), and total rainfall.

The draft permit incorporates a modified definition of a representative storm event, different from the definition used in most other stormwater General Permits. NCG240000 requires only a 48-hour period of no or little precipitation (less than 0.1 inch) instead of the standard 72-hour period that must precede a representative storm event required in most other stormwater permits. *Rationale: DWQ considered the different nature of most composting operations when compared to most other industrial manufacturing facilities, in that typically the source of exposure is expansive, and that successive rains may not readily deplete the pollutant sources: we judge that the source and concentration of the potential pollutants should differ little if collected from a rain event following a two-day, rather than a three-day dry period.* Further, we judge that the quarterly sampling requirement may be more readily complied with by the permittee if the three-day dry period constraint were reduced to just two days. This revised definition may also provide more opportunities to collect samples earlier in the work week, making hold time constraints on fecal coliform samples less of a concern for lab pick-up and analysis schedules. (Compost industry representatives have advised DWQ that not all labs will receive samples on weekends.)

The draft General Permit includes quarterly monitoring for stormwater discharges. Most other stormwater General Permits include semi-annual sampling. Quarterly sampling is more common in the individual stormwater permits issued by DWQ's Stormwater Permitting Unit. *Rationale: DWQ considered the different nature of most composting operations, when compared to other industrial manufacturing facilities, in that typically the compost manufacturing activity is largely, or wholly, exposed to precipitation. Further, typically to a large degree the footprint of compost manufacturing activities is not*

constrained by fixed walls that limit the configuration of site activities. A portion of the site might one month contain windrows; and later in the season might contain bagged and shrink-wrapped product; and later might contain just bare ground. DWQ judges that these changes in function and configuration can have a significant impact on the pollutant discharges from subdrainage areas at the facility. We judge that quarterly sampling is appropriate on composting sites given the potential for a very fluid site configuration over relatively short time periods. Quarterly sampling is a way for the site manager to be alerted to how changes in site activities and configuration may be related to the pollutants discharged from his site. Additionally, compost industry representatives have indicated that DWQ's permitting process might be informed and improved by more data on which to assess the industry's pollutant discharges and consequent impact on North Carolina receiving waters. DWQ concurs, and our intent is that after the first five-year permit cycle, DWQ will review the collected quarterly data and will revisit the quarterly sampling requirement, and assess its usefulness for site management and control of pollutant discharges.

The General Permit specifies qualitative (visual) monitoring of each stormwater outfall for the purpose of evaluating the effectiveness of the Stormwater Pollution Prevention Plan and assessing new sources of stormwater pollution. Qualitative monitoring parameters include color, odor, clarity, floating and suspended solids, foam, oil sheen, erosion or deposition, and other obvious indicators of stormwater pollution. Qualitative monitoring is a consistent feature of DWQ's other stormwater discharge permits.

The General Permit requires reporting the monitoring results on Discharge Monitoring Forms (DMR). The permit text also provides that the permittee may be excused from stormwater monitoring during extended periods of adverse weather, AND upon submittal of a DMR with the notation, "No Flow This Period" (in the case of extended drought), or like explanation. DWQ's practice in the past under other stormwater General Permits has been to advise permittees that failure to monitor due to extended drought throughout the entire monitoring period; or due to discharges only available from dangerous thunderstorms, hurricanes, or tropical storms; or due to discharges only available from night-time storms have all been excused. On the other hand, we do not consider that rainfall occurring only on weekends is a sufficient impediment to excuse failure to monitor during the monitoring period.

For stormwater only discharges, the draft permit provides that the permittee may petition DWQ for reduction in the sampling requirements when four consecutive quarters show analytical results below benchmark values. This provision for a 'step-down' in the sampling frequency for any parameter will be provisional: Any subsequent result that exceeds the benchmark value will re-instate the quarterly frequency.

Wastewater Discharges

The draft General Permit specifies monitoring and reporting requirements for quantitative assessment of the wastewater discharge. Specific pollutant parameters for which sampling must be performed and the frequency of the sampling are based upon the pollutants potentially generated from composting operations as reported in the literature and in site

monitoring reports from current DWQ permittees. See section 1 c. above for a summary of pollutants potentially present at a composting operation.

The draft permit proposes specific monitoring requirements for the following conventional parameters for wastewater discharges: BOD, TSS, fecal coliform, pH, and total flow. ***The process wastewater permit limits are taken from federal rule for the minimum level of effluent quality attainable by secondary treatment as established in 40CFR133.102. (Added 9/14/2011 in response to a verbal question during the permit public notice period.)***

Unlike stormwater discharges, a monitoring value for these wastewater discharge parameters higher than the permit limit constitutes a violation of the terms and conditions of the permit.

5. COMPLIANCE SCHEDULE

The draft permit text establishes the following schedule:

Existing facilities already operating, but applying for coverage under this General Permit for the first time: The Stormwater Pollution Prevention Plan shall be developed and implemented within 12 months of the effective date of the initial Certificate of Coverage issued pursuant to this General Permit and updated thereafter on an annual basis. Secondary containment, as specified in Part II, Section A, Paragraph 2(b) of this permit, shall be accomplished within 12 months of the effective date of the initial Certificate of Coverage.

New facilities applying for permit coverage for the first time and existing facilities previously permitted and applying for renewal under this General Permit: All requirements, conditions, limitations, and controls contained in this permit become effective immediately upon issuance of the Certificate of Coverage. The Stormwater Pollution Prevention Plan shall be developed and implemented prior to the beginning of discharges from the operation of the industrial activity and be updated thereafter on an annual basis. Secondary containment, as specified in Part II, Section A, Paragraph 2(b) of this permit shall be accomplished prior to the beginning of discharges from the operation of the industrial activity.

Additionally, several commenters in the public comment period noted that existing facilities would be in violation of the permit upon issuance of the COC, and that a specific compliance schedule contained in the permit would serve to provide time for existing facilities to come into compliance. DWQ concurs with the comments and has amended NCG240000 with a compliance schedule. (Added 9/14/2011 in response to public comment.)

Outside of the draft permit text:

For the first five-year permit cycle only, DWQ proposes to implement the permitting program for all existing facilities by establishing a programmatic requirement that all existing facilities must apply for the appropriate DWQ water quality permit not later than July 1, 2012. Existing composting facilities otherwise eligible for the General Permit would receive coverage under the General Permit. Composting facilities operating under a DWM composting permit as of January 1, 2011 will be considered existing facilities. This programmatic schedule requirement does not appear in the General Permit text.

Similarly for new facilities, DWQ will use the same programmatic implementation date of January 1, 2011 as the differentiation between new and existing facilities. Proposed facilities not operating under a DWM composting permit on that date must apply for the appropriate DWQ water quality permit before discharges from the site may be authorized.

6. SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE

There are no proposed special conditions in the draft general permit.

7. BASIS FOR CONTROLS AND LIMITATIONS

Stormwater Discharges

The conditions of this general permit has been designed using best professional judgment to achieve water quality protection through compliance with the technology-based standards of the Clean Water Act (Best Available Technology [BAT] and Best Conventional Pollutant Control Technology [BCT]). Where the Director determines that a water quality violation is occurring and water quality-based controls or effluent limitations are required to protect the receiving waters, coverage under the general permit may be terminated and an individual permit may be required. Based on a consideration of the appropriate factors for BAT and BCT requirements, and a consideration of the factors discussed below in this fact sheet for controlling pollutants in stormwater discharges associated with the activities as described in Item 1 (Types of Discharge Covered), this permit contains a set of requirements for developing and implementing stormwater pollution prevention plans, and specific requirements for monitoring and reporting on stormwater discharges.

The permit conditions reflect the Environmental Protection Agency’s (EPA) and North Carolina’s pollution prevention approach to stormwater permitting. The quality of the stormwater discharge associated with an industrial activity will depend on the availability of pollutant sources. This permit reflects the Division’s position that implementation of Best Management Practices (BMPs) and traditional stormwater management practices which control the source of pollutants meets the definition of BAT and BCT. For stormwater discharges the permit conditions are not numeric effluent limitations, but rather are designed to be flexible requirements for developing and implementing site

specific plans to minimize and control pollutants in the stormwater discharges associated with the industrial activity.

Title 40 Code of Federal Regulations (CFR) Part 122.44(k)(2) authorizes the use of BMPs in lieu of numeric effluent limitations in NPDES permits when the agency finds numeric effluent limitations to be infeasible. The agency may also impose BMP requirements which are "reasonably necessary" to carry out the purposes of the Act under the authority of 40 CFR 122.44(k)(3). The conditions of the renewal permit are based on the authority of both of these regulatory provisions. The pollution prevention requirements (BMP requirements) in this permit operate as limitations on effluent discharges that reflect the application of BAT/BCT. The basis is that the BMPs identified require the use of source control technologies which, in the context of these general permits, are the best available of the technologies economically achievable (or the equivalent BCT finding).

All facilities covered by this General Permit must prepare, retain, implement, and (at a minimum of annually) update a stormwater pollution prevention plan. The term "pollution prevention" distinguishes this source reduction approach from traditional pollution control measures that typically rely on end-of-pipe treatment to remove pollutants in the discharges. The plan requirements are based primarily on traditional stormwater management, pollution prevention and BMP concepts, providing a flexible basis for developing site-specific measures to minimize and control the amounts of pollutants that would otherwise contaminate the stormwater runoff.

The pollution prevention approach adopted in the stormwater pollution prevention plans in this permit focuses on two major objectives: 1) to identify sources of pollution potentially affecting the quality of stormwater discharges associated with industrial activity from the facility; and 2) to describe and ensure that practices are implemented to minimize and control pollutants in stormwater discharges associated with industrial activity from the facility and to ensure compliance with the terms and conditions of the permit.

The Division believes that it is not appropriate, at this time, to require a single set of effluent limitations or a single design or operational standard for all facilities which discharge stormwater associated with industrial activity. This permit instead establishes a framework for the development and implementation of site-specific stormwater pollution prevention plans. This framework provides the necessary flexibility to address the variable risk for pollutants in stormwater discharges associated with the industrial activities that are addressed by this permit, while ensuring procedures to prevent stormwater pollution at a given facility are appropriate given the processes employed, engineering aspects, functions, costs of controls, location, and age of facility (as discussed in 40 CFR 125.3). This approach allows flexibility to establish controls which can appropriately address different sources of pollutants at different facilities.

In 1979, EPA completed a technical survey of industry best management practices (BMPs) which was based on a review of practices used by industry to control the non-routine discharge of pollutants from non-continuous sources including runoff, drainage from raw

material storage areas, spills, leaks, and sludge or waste disposal. This review included analysis and assessment of published articles and reports, technical bulletins, and discussions with industry representatives through telephone contacts, written questionnaires and site visits. The technical survey identified two classes of pollution control measures.

The first class of controls are those management practices which are generally considered to be essential to the development of an effective and efficient BMP program, low in cost, and applicable to broad categories of industries and substances. These controls include the following: developing a Spill Control Committee and implementing spill reporting, material inventorying and compatibility reviews, employee training, visual inspections, preventative maintenance programs, good housekeeping, and addressing security issues. These practices are broadly applicable to all industries and can be implemented by each facility independent of the category of industry, ancillary sources, specific chemicals used at different sites, and/or plant site locations. The survey concluded that these controls should be minimum requirements for any effective BMP program.

The second class of controls includes management practices which provide for a second line of defense against the release of pollutants. These controls include prevention measures, containment measures, mitigation and cleanup measures and treatment methods. The types of chemicals, industrial operations and various ancillary sources specify the controls applicable to an individual facility.

The EPA and NPDES States have, on a case-by-case basis, imposed BMP requirements in NPDES permits. The EPA has also continued to review and evaluate case studies involving the use of BMPs and the use of pollution prevention measures associated with spill prevention and containment measures for oil. The development of the NPDES permit application requirements for stormwater discharges associated with industrial activity resulted from the evaluation and identification of the potential contaminants and the resultant water quality impacts of stormwater discharges from industrial sites. Public comments received during the rule making provided additional insight regarding stormwater risk assessment, as well as appropriate pollution prevention and control measures and strategies. During that time EPA again reviewed stormwater control practices and measures. These experiences have shown the Division that pollution prevention measures such as BMPs can be appropriately used and that permits containing BMP requirements can effectively reduce pollutant discharges in a cost-effective manner. BMP requirements are being appropriately imposed in general permits in lieu of numeric effluent limitations pursuant to 40 CFR 122.44(k)(2).

8. REQUESTED VARIANCES OR ALTERNATIVES TO REQUIRED STANDARDS

There are no requested variances or alternatives to required standards. Facilities requesting variances to required standards will not be covered under this General Permit but will instead be required to seek coverage under an individual permit.

9. THE ADMINISTRATIVE RECORD

The administrative record, including the draft permit, fact sheet, public notice, comments received, and additional information is available by writing to:

Stormwater Permitting Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

The above documents are available for review and copying at:

Archdale Building, 9th Floor
Surface Water Protection Section
Stormwater Permitting Unit
512 N. Salisbury Street
Raleigh, North Carolina

between the hours of 8:00 AM and 5:00 PM Monday through Friday. Copies will be provided at DWQ's currently established estimate of the cost of reproduction.

10. DWQ CONTACT

Additional information about the draft permit may be obtained at the above address between the hours of 8:00 AM and 5:00 PM Monday through Friday by contacting: **Ken Pickle** at (919) 807-6376. Email: ken.pickle@ncdenr.gov

11. SCHEDULE OF PERMIT ISSUANCE

Draft Permit Public Notice – **Statewide notice published February 8, 2011;**
Draft available on DWQ website February 8, 2011;
Comment Period Ends March 18, 2011.

Permit Scheduled to Issue – **April 1, 2011 (Effective May 1, 2011).**

12. PROCEDURE FOR THE FORMULATION OF FINAL DETERMINATIONS

a. *Comment Period*

The Division of Water Quality proposes to issue an NPDES General Permit for the above described stormwater and process wastewater discharges subject to the outlined controls, limitations, benchmarks, management practices, and special conditions. These determinations are open to comment from the public.

Interested persons are invited to submit written comments on the General Permit or on the Division of Water Quality’s proposed determinations to the following address:

Stormwater Permitting Unit
 Division of Water Quality
 1617 Mail Service Center
 Raleigh, North Carolina 27699-1617
 Attn: **Ken Pickle**
Ken.pickle@ncdenr.gov

All comments received within thirty days following the date of public notice are considered in the formulation of final determinations.

b. Public Meeting

The Director of the Division of Water Quality may hold a public meeting if there is a significant degree of public interest in a proposed permit or group of permits. Public notice of such a meeting will be circulated in newspapers in the geographical area of the discharge and to those on the Division of Water Quality mailing list at least thirty days prior to the meeting.

c. Appeal Hearing

An applicant whose permit is denied, or is granted subject to conditions he deems unacceptable, shall have the right to a hearing before the Commission upon making written demand to the Office of Administrative Hearing within 30 days following issuance or denial of the permit.

d. Issuance of a Permit When No Hearing is Held

If no public meeting or appeal hearing is held, after review of the comments received, and if the Division of Water Quality determinations are substantially unchanged, the permit will be issued and become effective on the first day of the month following the issuance date. This will be the final action of the Division of Water Quality.

If a public meeting or appeal hearing is not held, but there have been substantial changes, public notice of the Division of Water Quality revised determinations will be made. Following a 30-day comment period, the permit will be issued and will become effective on the first day of the month following the issuance date. This will be the final action of the Division of Water Quality unless a public meeting or appeal hearing is granted.

APPENDIX A
DWQ Report to the Compost Stakeholder Advisory Group
Revised 4/19/2010

DWQ Report to the Compost Operation Stakeholder Advisory Group,
DWQ Report #3: Data characterizing runoff from composting facilities
February 15, 2010

In response to: In our first stakeholder meeting in December 2009, stakeholders requested that DWQ provide any available data relevant to our current posture on water quality permitting in the composting industry. DWQ accepted that homework assignment, and provides the following data summaries for discussion in the February 17, 2010 meeting.

Mecklenburg Co. Compost Central (Type 1 feedstock)
DWQ stormwater permit #NCS000382
DMR Data 2002, 2003, 2007, 2008, 2009

	2002 (outfalls 01, 02)	2003 (outfalls 01, 02)	2007 ¹ (outfall 01)	2008 ¹ (outfall 02)	2008 (outfalls 01, 02)	2009 (outfalls 01, 02)	Raw sewage range*
Biological Oxygen Demand, BOD (mg/L)	14.3, 50.8	22.3, 31.4	28	3.6	19, 32	130, 90	110-400
Chemical Oxygen Demand, COD (mg/L)	486, 244	842, 247	270	98	700, 310	480, 290	250-1000
Fecal coliform, (#/100 ml)		44,000, 43,000	170,000	1600	300,000, 74,000	93,000 5,900	1,000,000– 10,000,000
Ammonia, (mg/L)	0.61, 0.10	0.42, 0.77	0.46	<0.10	0.34, 0.14	0.012, 0.12	12-50
TKN (mg/L)	15, 5.3	19, 5.8	5.9	2.0	8.2, 6.6	7.0, 3.3	
Nitrate + Nitrite (mg/L)	0.14, 0.59	0.24, 0.25	0.15	0.16	0.48, 7.0	<0.05, <0.05	
Phosphorus (mg/L)	3.61, 1.76	10.4, 1.95	2.5	0.11	3.6, 1.7	4.2, 2.8	4-15
pH (SU)			-	6.38	6.5 (02)	6.75 (02)	
Oil &Grease (mg/L)			14	<5.0	6.6, 6.3	<6.0	
Total Suspended Solids, TSS (mg/L)			49	2.6	290, 110	89, 23	100-350

* Wastewater Engineering, Third Edition, Metcalf and Eddy, 1991, p.109-110.

1 Drought conditions in late 2007 prevented the collection of a sample from outfall #02. Compost Central successfully collected a sample in early 2008, for the year 2007, from outfall #02.

Brooks Farm Composting Facility (Type 3 feedstock)
DWQ stormwater permit #NCS000371
Permit Application and DMR Data

	1998¹, 1999	2000	2001² (two events)	2003³, 2004	Raw sewage range*
Biological Oxygen Demand, BOD (mg/L)	160, 130	250	<11, <14	482, 122	110-400
Chemical Oxygen Demand, COD (mg/L)	1220, 1600	1360	3130, 372	4040, 1960	250-1000
Fecal coliform, (#/100 ml)	>600,000 13x10e6	>1600	164,000, 6500	82,000, 206,000	1,000,000 – 10,000,000
Ammonia, (mg/L)	- 104	91.3	69, 15	11.3, 96.5	12-50
TKN (mg/L)	156, 87.1	119	157, 29.2	175, 158	
Nitrate + Nitrite (mg/L)	124, 91.5	14.9	32.8, 21.4	17.3, 15.8	
Phosphorus (mg/L)	1.19, 1.75	0.96	1.5, 0.7	3.5, 1.1	4-15
pH (SU)	7.6, 7.6	7.9	7.7, 7.1	7.6, 7.62	
Oil & Grease (mg/L)	<5.0 -				
Total Suspended Solids, TSS (mg/L)	57 -		28, 114	518, 204	100-350

* Wastewater Engineering, Third Edition, Metcalf and Eddy, 1991, p.109-110.

1 This 1998 data was submitted with the initial permit application. Samples were received at the laboratory at 13 degrees C, instead of required 6 degrees C; consultant directed the lab to complete the analyses, and the applicant submitted the data.

2 Drought conditions in the next year, 2002, prevented collection of discharge samples.

3 A second sampling event in 2003 is not reported in this data set because the consultant reported that he sampled from a ditch on site, rather than from a discharging flow.

Wallace Farm Composting Facility (Type 3 feedstock)
DWQ stormwater permit #NCS000525
DMR Data

	Dec 2008	June 2009	Raw sewage range*
Biological Oxygen Demand, BOD (mg/L)	5	7.1	110-400
Chemical Oxygen Demand, COD (mg/L)	153	101	250-1000
Fecal coliform, (#/100 ml)	2200	6000	1,000,000 – 10,000,000
Ammonia, (mg/L)			12-50
TKN (mg/L)	4.9		
Nitrate + Nitrite (mg/L)	0.98		
Phosphorus (mg/L)	1.1	0.59	4-15
pH (SU)	7.8	6.7	
Oil & Grease (mg/L)			
Total Suspended Solids, TSS (mg/L)	400	510	100-350

* Wastewater Engineering, Third Edition, Metcalf and Eddy, 1991, p.109-110.

Sun Gro Composting Facility (Type 2 feedstock)
No DWQ permits
DWQ Sampling Data
August 19, 2009

	Upstream on Knobs Creek	Outlet ditch 1	Outlet ditch 2	Downstream on Knobs Creek	Water Quality Standards for Knobs Creek*
Dissolved Oxygen (mg/L)	1.7	0.73	0.28	1.02	4.0
pH	6	5.2	7	5.8	6 - 9
Fecal coliform (#/100ml)	540	6000 (TNC)	6000 (TNC)	1400	400
BOD (mg/L)	3	1500	42	3.1	
COD (mg/L)	59	5600	1500	95	
Ammonia, (mg/L)	0.51	2.9	18	0.47	
TKN (mg/L)	1.9	38	91	2.4	
Conductivity	241	3197	1396	184	
Phosphorus (mg/L)	0.33	30	47	0.6	
TSS (mg/L)	23	44	75	17	

*North Carolina Administrative Code Title 15A 2B .0211 Fresh Surface Water Quality Standards for Class C Waters. Knobs Creek is a Class C Sw water. As such, the Class C water quality standards apply. The additional classification of Sw denotes a swamp water classification, and some relaxation of water quality standards for pH and for DO may apply, if based on natural conditions.

Clean Washington Center study data¹
Published January 2000

	'Yard debris' ² contact runoff ³ range	Raw sewage range*
BOD (mg/L)	390 – 32,000	110-400
COD (mg/L)		250-1000
Fecal coliform, (#/100 ml)	110 – 4,900,000	1,000,000 – 10,000,000
Ammonia, (mg/L)	23 - 1600	12-50
TKN (mg/L)	85 - 2600	
Nitrate + Nitrite (mg/L)		
Phosphorus (mg/L)	10 - 170	4-15
pH (SU)		
Oil & Grease (mg/L)		
TSS (mg/L)	2000 – 20,000	100-350
Copper (mg/L)	0.07 – 0.8	
Potassium (mg/L)	170 - 4500	
Zinc (mg/L)	0.1 – 1.5	

* Wastewater Engineering, Third Edition, Metcalf and Eddy, 1991, p.109-110.

- 1 Compost Facility Requirements Guideline, British Columbia Ministry of Water, Land and Air Protection, March 2004, p. 6-2. This guideline was produced to assist composters in complying with the British Columbia Organic Matter Recycling Regulation, 2002. British Columbia cites the earlier work by the Clean Washington Center, and reproduces their data in this Guideline.

The source documents are, Evaluation of Compost Facility Run off for Beneficial Reuse – Phase 1, and same title - Phase 2, Clean Washington Center, January 2000.

- 2 The data here is reported as originating from 'yard debris composting' sites; however it appears that the British Columbia Ministry of Water, Land and Air Protection defines yard debris sites more broadly than we do in North Carolina. The sites are described as: a large yard debris and food waste composter, a yard debris site, a site composting manures and brush, and a zoo manure composting site.
- 3 In this Guideline British Columbia treats non-contact runoff as stormwater, and all other contact waters as 'leachate'.

Oregon study by CH2M Hill ¹
Published May 2004

	Compost Leachate²	Compost Runoff³	Compost Stormwater⁴	Raw sewage range*
BOD (mg/L)	>41	20 - 3200	4 – 940	110-400
COD (mg/L)	56			250-1000
Fecal coliform, (#/100 ml)	<0.02 – 50,000	200 – 24,000,000	12 – 400,000 (E. Coli)	1,000,000 – 10,000,000
Ammonia, (mg/L)	0.44 – 34.3	0.43 - 1600		12-50
TKN (mg/L)		14 - 3000		
Nitrate +Nitrite (mg/L)	0.96 – 120	0 - 8		
Phosphorus (mg/L)	0.07 - 9	4 - 170	0.57 – 250	4-15
pH (SU)	7.8	6.7 – 9.5	5.3 – 8.2	
Oil &Grease (mg/L)			ND – 23	
TSS (mg/L)		1100 – 20,000	18 - 5000	100-350
Aluminum (mg/L)	0.33			
Copper (mg/L)		0.033 - 0.82	ND – 0.45	
Iron (mg/L)	0.57			
Lead (mg/L)	0.01		0.02 -0.53	
Potassium (mg/L)	2.7	170 - 4600		
Zinc (mg/L)	0.11	0.1 – 1.5	ND – 2.4	

* Wastewater Engineering, Third Edition, Metcalf and Eddy, 1991, p.109-110.

- 1 Commercial Composting Water Quality Permit Development, prepared for Oregon DEQ Land Quality and Water Quality Divisions, by CH2M Hill, May 12, 2004.
- 2 Data reported in this column is combined from Tables 2-2, 2-3, and 2-4 on pages 7-9. Several types of facilities are represented in the data, including facilities receiving yard waste, food waste, and manure.
- 3 Data reported in this column is combined from Tables 2-5 and 2-6 on pages 11-12 from several types of facilities receiving yard waste, food waste, and manure. Note that in the Oregon study, 'runoff' is a non-specific catch all description of the ultimate disposal of the fluids, not a description of the source of the fluids. Runoff is specifically defined in the study as potentially containing stormwater, process stormwater, leachate, and washwater.
- 4 Data reported in this column is from Table 2-7 on page 13. This is data from multiple years of sampling at a 'green feedstock' site (yard debris, wood waste, vegetative food waste) in Oregon. We note that the table is labeled "Stormwater Data", but it is not clear from the study whether this data is from what North Carolina would call, 'non-contact' stormwater only, or whether it includes both of the Oregon categories of Stormwater (non-contact) and Process Stormwater (contact). North Carolina currently considers contact flows (Oregon's Process Stormwater) as wastewater.

END

APPENDIX B Discussion of Benchmark Values

a) An explanation of the benchmarks concept in stormwater permitting

(This information was originally compiled for the Monitoring Committee of the Compost Operation Stakeholders Advisory Group, and was presented to the Committee on June 6, 2010.)

Many permittees are familiar with wastewater permit limits, but not all permittees have experience with stormwater permit benchmarks. The use of permit limits and permit benchmarks is widespread throughout DWQ's permitting programs. It may be useful to generally compare and contrast these two types of numerical triggers in DWQ permits.

- A test value greater than a wastewater permit limit is a violation of the terms and conditions of the wastewater permit. DWQ may issue a Notice of Violation, and the permittee is subject to enforcement action for that violation. The permittee must subsequently act to prevent a recurrence of the violation.

A test value greater than a stormwater permit benchmark is not a permit violation. The 'exceedence' of the benchmark is intended to **prompt the permittee**: to acknowledge the high result, to investigate the cause or source, to evaluate whether economically feasible and environmentally effective response actions are available, and if so to implement those response actions in order to bring subsequent test results below the benchmark.

- DWQ assumes a different perspective for these two numerical triggers. A wastewater permit limit may be viewed as a numerical performance requirement on the permittee.

A stormwater permit benchmark is intended to be an aid to effective site management in order to reduce the pollutant content in stormwater runoff.

- **DWQ** would rarely grant relief based on a permittee's assertion that he cannot reasonably achieve a wastewater permit limit. Compliance with the wastewater permit limit is required.

DWQ has in the recent past, and will in the future, grant relief from meeting stormwater permit benchmarks when it is apparent that site circumstances so dictate. The language authorizing this provision is in our standard template for stormwater permits.

- In most cases a **single test value** is the basis for establishing a wastewater permit limit violation.

DWQ’s stormwater permit benchmarks are set up in a tiered system that only involves DWQ intervention (management assistance) on the occasion of the fourth test value exceedence. Even at that point, there is no permit violation based on the exceedence of the stormwater benchmark.

b) Pending revisions to existing stormwater permit benchmarks

- Stormwater benchmark values are derived from several sources, including North Carolina’s water quality standards. Those standards and the methodology for calculating them undergo a periodic review within DWQ and by EPA Region IV. The Triennial Review is currently in progress, and is not expected to be complete by the time this General Permit will be published in final form.
- DWQ expects that three benchmark values in this General Permit will be affected upon completion of the Triennial Review.
 - We anticipate that the **copper benchmark** will be revised upward from the current benchmark value of 0.007 mg/L to 0.0105 mg/L.
 - We anticipate that the **lead benchmark** will be revised upward from the current benchmark value of 0.03 mg/L to 0.126 mg/L.
 - We anticipate that the **zinc benchmark** will be revised upward from the current benchmark value of 0.067 mg/L to 0.075 mg/L.
- DWQ intends to implement the revised metals benchmarks within this General Permit when the Triennial Review process is completed and the revised benchmarks are finalized.

c) Technical basis for current stormwater permit benchmarks

The Total Suspended Solids (TSS) benchmark is 100 mg/L. The benchmark reflects a median concentration from the 1983 National Urban Runoff Program (NURP) study. In addition, the value is consistent with an equivalent secondary wastewater treatment level for the wastewater discharge limit of 90 mg/L for lagoon systems.

The Chemical Oxygen Demand (COD) benchmark is 120 mg/L. A ratio of 4:1 has been adopted as within the characteristic range for COD:BOD in domestic wastewaters. The benchmark for BOD₅ is based on the Secondary Treatment Regulation specified in the Code of Federal Regulations, Title 40, Part 133 (40 CFR §133). This regulation defines the minimum level of effluent quality attainable by secondary wastewater treatment as 30 mg/L for the 30-day average of BOD₅.

The Fecal Coliform benchmark is 1000 col/100 mL. This value is based on BPJ and was consistent with the maximum (one-sample) threshold specified in Virginia’s older Water Quality Standards. The N.C. Water Quality Standard (for all Class C waters, based on human health) provides that fecal coliforms shall not exceed a geometric mean of 200/100mL (MF count) based upon at least five consecutive samples examined during any 30-day period, nor exceed 400/100mL in more than 20 percent of the samples examined during such

period. The SPU does not consider these values practical for a stormwater benchmark. In addition, the N.C. Standard, 2B .0211, specifies that violations of that standard "are expected during rainfall events."

The Total Nitrogen benchmark is 30 mg/L. The benchmark for total nitrogen is the sum of the (nitrate + nitrite) and TKN benchmarks. The National Primary Drinking Water Regulation (40 CFR §141.11) specifies a maximum contaminant level of 10 mg/L nitrate. This value is the same as the N.C. water quality standard for water supply (WS) waters in the T15A NCAC 2B .0200 rules.

The benchmark for TKN (organic nitrogen) is based on an approximate equivalency to secondary treatment of wastewater. This is reasonable, given that the majority of TKN found in stormwater is unlikely to be directly bio-available. Organic nitrogen, in the form of decaying leaves and twigs for example, will exert less demand on in-stream dissolved oxygen (DO) than TKN from domestic wastewater. Furthermore, low DO in receiving streams is rarely attributed to rainfall events. The lack of documented water quality problems, coupled with the sporadic nature of rainfall events, justifies the use of a TKN benchmark of 20 mg/L.

The Total Phosphorus benchmark is 2.0 mg/L, and is based on BPJ and is consistent with wastewater permit limits imposed on NSW dischargers.

Total Copper, Total Lead, and Total Zinc benchmarks:

Because of the sporadic nature of rainfall, acute (short-term) effects are considered when establishing stormwater benchmarks for toxicants. Toxicant benchmarks are set at one half the Final Acute Value (1/2 FAV) for constituents like arsenic, chromium, cyanide, lead, nickel, and silver. NCDENR uses the 1/2 FAV to set daily maximum wastewater limits for toxicants in conjunction with weekly average limits. The FAV is estimated by a statistical analysis of acute toxicity data and protects 95 percent of the species in the most sensitive genera that has been tested. A safety factor of two is applied for water quality protection purposes. EPA's recommended Criteria Maximum Concentrations [CMC = 1/2 FAV] are based on dissolved criteria, but N.C. translates the values into total. Where metal values are hardness-dependent, the value is based on a hardness of 50 mg/L.

The SPU recognizes that acute values for these metals are low, and that their toxicity is highly variable (depending on the amount dissolved, which is affected by many factors). One of the primary factors influencing toxicity for Cu and Zn is hardness. North Carolina currently uses 50 mg/L hardness when calculating toxicity values for these metals. This value is under review, however, and DWQ anticipates that the benchmark values for Cu, Pb, and Zn may change in the future.

The Total Copper benchmark is 0.007 mg/L, and is based on 1/2 FAV reported in EPA's National Recommended Water Quality Criteria, 2006.

The Total Lead benchmark is 0.03 mg/L, and is based on 1/2 FAV reported in EPA's 1980 Ambient Water Quality Criteria for Lead.

The Total Zinc benchmark is 0.067 mg/L, and is based on ½ FAV and is converted to total zinc from dissolved zinc as reported in EPA’s National Recommended Water Quality Criteria, 2006.

The pH benchmark is in the range of 6.0 – 9.0 standard units. The benchmark for pH is based on water quality standards for freshwater classes, which specify a pH range of 6.0 – 9.0 standard units.

The Total Petroleum Hydrocarbons (TPH) benchmark is 15 mg/L. The TPH benchmark is based on review of other states’ maximum daily benchmark concentrations, and is equal to one-half of the similar Oil & Grease benchmark. TPH is more specific for petroleum hydrocarbons in that some of the fatty animal compounds are excluded from the analysis in the lab preparation steps. We would expect only stormwater discharges with significant oil contamination (ex. concentrated parking lot runoff) to exceed a 15 mg/L concentration.

END