

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: March 18, 2022

Entire permit organization has changed to improve the usability of the permit.

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 and SIC 2879). SIC 2875 is fertilizers, mixing only, but the definition includes composting operations. Similarly, SIC 2879 is pesticides and agricultural chemicals, not classified elsewhere, but the definition includes soil conditioners of which compost can be considered one. 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). Coverage is also applicable to stormwater point source discharges **from like industrial activities** deemed by the Division of Energy, Mineral, and Land Resources (DEMLR) to be similar to these operations in the process, or the discharges, or the exposure of raw materials, intermediate products, by-products, products, or waste products.

Except upon DEMLR 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: DEMLR has determined that limited DEMLR 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 areal extent. although the small Type 1 facilities are captured by the NPDES rules, DEMLR intends to continue to regulate the small yard waste facilities on a substantiated complaint basis, rather than a state-wide blanket approach via the General Permit. In January 2022, it was confirmed by DWM that these facilities do not require a permit, but must complete a [notification process](#) that also includes annual notification.*
- Backyard composting and on-farm composting as described in 13B .1402(g). *Rationale: These facilities are not captured by NPDES regulations and are not subject to permitting required under those regulations.*
- Composting operations classified in 13B .1402(f) as Type 4 Facilities and large Type 3 Facilities. *Rationale: DEMLR'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. The Division has allowed some large Type 3 and Type 4 facilities when circumstances were appropriate (ex. Only having a stormwater discharge; and no wastewater).*
- Composting operations for residuals management as described in regulations administered by DWR and found at 15A NCAC 2T .1100. *Rationale: DEMLR'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, SA 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.*
- Mulching only operations are not regulated by NCG240000. Where mulching operations are co-located at composting facilities and function to provide feedstocks to composting operations, they are included with rest of the composting operations, and are subject to regulation by NCG240000.

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, compost mixing and 2879, manufacturing soil conditioners, part of Major Group 28, and is subject to NPDES stormwater permitting. SIC 2875 is fertilizers, mixing only, but the definition includes composting operations. Similarly, SIC 2879 is pesticides and agricultural chemicals, not classified elsewhere, but the definition includes soil conditioners of which compost can be considered one. 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 the following: 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.

In accordance with NC General Statute [143-214.7A](#), “stormwater is water that does **not** contact anything considered a feedstock, intermediate product, or final product of composting operations”. Water that contacts any of these items would be considered process wastewater. **It should be noted that later in this same statute, a Type 1 solid waste compost facility shall not be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharge of process wastewater based solely on the discharge of stormwater that has come into contact with feedstock, intermediate product, or final product at the facility.** For purposes of that G.S., "Type 1 solid waste compost facilities" are facilities that may receive yard and garden waste, silvicultural waste, untreated and unpainted wood waste and any combination thereof.

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.

During initial permit development in 2011, DWQ (now DEMLR) reviewed two published studies of untreated compost discharges, as well as pollutant monitoring results collected under three DWQ (now DEMLR) 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 Appendices A and B for a tabulation of compost site monitoring data. Appendix A includes 1998-2009 data and Appendix B includes 2014-2021 data. *Absent a larger and more differentiated data set, DWQ concluded 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. As stated earlier in this factsheet, in accordance with NC General Statute [143-214.7A](#), “**stormwater is water that does not contact anything considered a feedstock, intermediate product, or final product of composting operations**”. Water that contacts any of these items would be considered process wastewater. **It should be noted that later in this same statute, a Type 1 solid waste compost facility shall not be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharge of process wastewater based solely on the discharge of stormwater that has come into contact with feedstock, intermediate product, or final product at the facility.** For purposes of that G.S., "Type 1 solid waste compost facilities" are facilities that may receive yard and garden waste, silvicultural waste, untreated and unpainted wood waste and any combination. Examination of monitoring data appear to indicate that the majority (all?) of the compost facilities covered under NCG24 are Type 1 and not monitoring for process wastewater. BOD5 has been required to be monitored in process wastewater, but not stormwater. With no facilities monitoring process wastewater, there are no data to indicate whether BOD5 is occurring at concentrations of concern. For this next permit cycle BOD5 will be added to the stormwater monitoring discharge, so that there will be BOD5 stormwater discharge data to examine.
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 and Enterococcus:** 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. 2013 Benchmarks Rational document recommends Enterococcus monitoring.
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. More recent data indicate only a few TN exceedances.
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. More recent data also indicate several TP exceedances above the benchmark.
6. **Metals – Cu, Pb, Zn:** DWQ found limited data even within the limited data set 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. DEMLR reviewed 2014-2021 stormwater discharge data from about ten composting facilities permitted under NCG24. Please see Appendix B at the end of this factsheet. At all the facilities examined, Pb was either below the benchmark value or not detected and Zn was only detected above the benchmark value twice. Data support removing Pb and Zn monitoring from the permit. Another reason to remove Zn monitoring is because background Zn levels sometimes cause problems at facilities. Cu monitoring will remain in the permit because there were several instances of stormwater discharges with Cu levels above the benchmark.
7. **Non Polar Oil & grease:** Limited data, but Non-Polar Oil and Grease was incorporated as a standard monitoring parameter for all SDOs, not just those with vehicle or equipment maintenance areas. With this change, we have removed the separate monitoring requirements for outfalls only associated with vehicle/equipment maintenance areas.

8. **pH:** The limited data included some pH values outside North Carolina Water Quality Standards range, but most values were within water quality standards.

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 site specific, and the degree of the impact of the moderating factors has not been quantifiable.

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 DEMLR, 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, SA 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. SA waters was added to this list because it is a more highly sensitive classification that was previously omitted. *DEMLR 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. CONSTRUCTING AND OPERATION OF A TREATMENT FACILITY

An “Authorization to Construct” (ATC) permit for new or expanding wastewater treatment facilities was once required by 15A NCAC 02H .0100 for the construction and operation of water pollution control facilities necessary to comply with NPDES permit conditions. That authorization was incorporated into the NCG240000 General Permit to streamline the permitting process. In 2011, [Session Law 2011-394](#), Section 9 eliminated the ATC requirement for industrial wastewater treatment facilities.

Also now absent from the revised General Permit is the authorization to construct and operate a Closed-Loop Recycle System (CLRS) that meets the requirements of the 15A NCAC 02T .1000 Rules. (*Requirements for these recycle systems are driven by a State program and were not impacted by SL 2011-394’s changes to the State Statute.*) **Facilities that construct and operate CLRS facilities must apply and obtain the necessary permits or approvals through the Non-Discharge Permitting Program in the Division of Water Resources (DWR).** This change was prompted by the Stormwater Permitting Program’s move out of DWR into DEMLR and helps ensure appropriate Division oversight of these systems. Systems **not designed as closed-loop and have the potential to discharge** to surface waters are still covered by NCG240000.

The Session Law did not remove authority for the Division to require that permittees notify the DEMLR Regional Office in advance of operation of newly installed or expanded wastewater treatment facilities. This directive remains a condition of this proposed permit (Part K – Permit Administration, K-3 – Planned Changes). *The rationale is that this notification alerts NC DEQ of potentially significant changes to wastewater discharges and allows the opportunity for an inspection to verify compliance with the NPDES permit.*

3. PROPOSED DISCHARGE CONTROLS AND LIMITATIONS

a. Stormwater Pollution Prevention Plan

As in the previous version of this General Permit, stormwater pollution must be controlled by the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). DEMLR continues to believe that effective control of the pollutant content in industrial stormwater discharges can only be achieved when site management implements a written, site-specific management plan serving that objective. The revised draft permit contains several minor improvements in the SWPPP largely related to improved clarity of language in the permit text. See the draft permit for the proposed new version of the SWPPP requirements. All facilities covered under this General Permit must develop and implement an SWPPP.

b. Qualitative (Visual) monitoring of stormwater discharges

As in previous versions of this General Permit, the permittee must perform **quarterly** qualitative (visual) monitoring at all stormwater discharge outfalls. The proposed revised permit requires visual monitoring to coincide with analytical monitoring.

c. Stormwater discharges from vehicle maintenance areas (VMA)

In the previous version of this General Permit and like most other industrial general permits, permittees were required to separately monitor stormwater discharges originating from site areas where vehicle maintenance activities are conducted. With this renewal, Non-Polar Oil and Grease was incorporated as a standard monitoring parameter for all SDOs, not just those with vehicle or equipment maintenance areas. With this change, we have removed the separate monitoring requirements for outfalls only associated with vehicle/equipment maintenance. DEMLR's view continues to be that monitoring discharges from qualifying vehicle maintenance areas contributes to the prevention of stormwater pollution from those activities.

d. Stormwater discharge analytical monitoring

As in the previous version of this General Permit, all permittees must perform quarterly analytical monitoring of the stormwater discharges, must respond to any exceedances of the numerical benchmark values for the monitored parameters, must keep records of the monitoring results and the permittee's response actions, and must report the monitoring results to DEMLR. As before, the permittee has the option of applying and obtaining Representative Outfall Status (ROS) for one or more outfalls to reduce the obligation to monitor all stormwater discharge outfalls (SDOs) on site. ROS designation is handled outside of the permit and is **not available for wastewater outfalls**.

The renewal permit maintains the analytical monitoring requirements for all stormwater discharge outfalls associated with industrial activity. As mentioned in the previous section, the following change has been made to the analytical monitoring requirements: Non-Polar Oil and Grease was incorporated as a standard monitoring parameter for all SDOs, not just those with vehicle or equipment maintenance areas. With this change, we have removed the separate monitoring requirements for outfalls only associated with vehicle/equipment maintenance.

e. Numerical benchmarks and tiered response structure

As in the previous version of this General Permit, the permittee must respond to benchmark exceedances with increased monitoring, increased management actions, increased record keeping, and/or the installation of stormwater BMPs in a tiered program. The exceedance of a numerical benchmark is not considered a violation of the permit conditions, although failure to respond as per the Tiered response structure would be. In that context, the benchmark value is not a numerical 'permit limit', but rather a management action level value. It provides guidelines to enable site management's continuing and responsive implementation of a facility's Stormwater Pollution Prevention Plan (SWPPP). Four (4) benchmark exceedances require the permittee to notify the DEMLR

Regional Office and may prompt additional requirements under provisions of Tier Three. See Appendix C for identification of the basis for the numerical benchmark values applicable in this General Permit.

f. Wastewater discharge analytical monitoring and limitations

The draft permit specifies monitoring and reporting requirements for process wastewater discharges. DEMLR 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, DEMLR 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 final product and did not address feedstocks and other in-process materials. DEMLR considers that those other materials give rise to process wastewater discharges per the federal definition cited above.

DEMLR has sought to identify under what circumstances a discharge from the final product at a compost facility may be permitted as a wastewater discharge, or a stormwater discharge. In 2010, DEMLR 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 DEMLR 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, DEMLR 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, DEMLR 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, [Enterococcus](#), BOD5, and pH. 2013 Benchmark Rational document recommends Enterococcus monitoring for discharge to saltwaters. The General Permit requires quarterly sampling. DEMLR 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.

DEMLR 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

This General Permit specifies monitoring and reporting requirements for both qualitative (visual) and quantitative (analytical) assessment of the **stormwater discharges**, and operational inspections of the entire facility. Sample parameters and sample frequency are based upon pollutants potentially generated from composting operations as reported in the literature and in on-site monitoring reports from current DEMLR permittees.

The draft permit proposes specific monitoring requirements for the following parameters for stormwater discharges: TSS, COD, BOD5, fecal coliform, Enterococcus, total nitrogen, total phosphorus, total copper, pH, Non-Polar Oil and Grease, and total rainfall.

As stated earlier in the factsheet, examination of monitoring data appear to indicate that the majority (all?) of the compost facilities covered under NCG24 are Type 1 and not monitoring for process wastewater. BOD5 has been required to be monitored in process wastewater, but not stormwater. With no facilities monitoring process wastewater, there are no data to indicate whether BOD5 is occurring at concentrations of concern. For this next permit cycle BOD5 will be added to the stormwater monitoring discharge, so that there will be BOD5 stormwater discharge data to examine.

In addition, DEMLR reviewed 2014-2021 stormwater discharge data from about ten composting facilities permitted under NCG24. Please see Appendix B at the end of this factsheet. At all the facilities examined, Pb was either below the benchmark value or not detected and Zn was only detected above the benchmark value twice. Data support removing Pb and Zn monitoring from the permit. Another reason to remove Zn monitoring is because background Zn levels sometimes cause problems at facilities. Cu monitoring will remain in the permit because there were several instances of stormwater discharges with Cu levels above the benchmark.

2013 Benchmark Rational document recommended Enterococcus monitoring, so it has been added to this permit for facilities discharging to saltwater. Since compost facilities are not allowed to discharge to SA waters, this monitoring will only pertain to facilities discharging to SB or SC waters.

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: DEMLR 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 DEMLR that not all labs will receive samples on weekends.)

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 DEMLR's other stormwater discharge permits.

The draft General Permit includes quarterly monitoring for stormwater discharges. Quarterly sampling is now required in most of the other General Permits and is also more common in the individual stormwater permits issued by DEMLR's Stormwater Permitting Unit. *Rationale: DEMLR 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. DEMLR judges that these changes in function and configuration can have a significant impact on the pollutant discharges from subdrainage areas at the facility. Quarterly sampling is appropriate on composting sites given the potential for a very fluid site configuration over relatively short time periods. It is also 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 DEMLR’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

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 discharge” (in the case of extended drought), or like explanation. DEMLR’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.

In addition, outfalls not sampled during the first measurable storm event in the monitoring period shall be sampled during the next measurable storm event in the monitoring period until a sample has been collected. If during the entire monitoring period, there is no discharge from an outfall during any measurable storm event then the permittee shall report “No discharge” in the DMR.

For stormwater only discharges, the draft permit provides that the permittee may petition DEMLR 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.

The permit section exempting basins or ponds designed to contain the 25-year, 24-hour storm without discharging that can regain capacity to hold such an event within five (5) days’ time through means other than discharge to surface waters from analytical monitoring has been removed. If designed and operated properly, these ponds would likely only discharge during very heavy rainfall events that could be considered adverse weather events in which case monitoring would not be required. If there was heavy rainfall during a nonadverse weather event, it may be valuable to get the stormwater discharge monitoring data in those cases.

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 on site monitoring reports from current DEMLR 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: BOD5, TSS, fecal coliform, Enterococcus, Nonpolar Oil and Grease, pH, and total flow. 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 Section B-9 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 Section B-9 of this permit shall be accomplished prior to the beginning of discharges from the operation of the industrial activity.

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 Energy, Mineral and Land Resources
 1612 Mail Service Center
 Raleigh, North Carolina 27699-1612

The above documents are available for review and copying at:

Archdale Building, 6th Floor
 Stormwater Permitting Branch
 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. DEMLR 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: Paul Clark at (919) 707-3642. Email: paul.clark@ncdenr.gov

11. SCHEDULE OF PERMIT ISSUANCE

Draft Permit Public Notice – **Statewide notice published 2022;**
Draft available on DWQ website 2022;
Comment Period Ends 2022.

Permit Scheduled to Issue – **June 30, 2022 (Effective July 1, 2022).**

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 Energy, Mineral and Land Resources
 1612 Mail Service Center
 Raleigh, North Carolina 27699-1612
 Attn: Paul Clark
paul.clark@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) | 2007¹ (outfall 01) | 2008¹ (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 runoff³ 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 ½ 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