


**DENR/DEMLR
FACT SHEET FOR NPDES STORMWATER PERMIT DEVELOPMENT**

NPDES No. NCS000549

Facility Information			
Applicant/Facility Name:	Duke Energy Carolinas, LLC – Riverbend Steam Station		
Applicant Address:	P.O. Box 1006, Mail Code EC13K; Charlotte, North Carolina 28201		
Facility Address:	175 Steam Plant Road; Mount Holly, North Carolina 28120		
Permitted Flow:	N/A (Stormwater Discharges Only)		
Industrial Activities:	Primary SIC Code: 4911 – Electric Services		
Permit Status:	New NPDES Stormwater Permit		
County:	Gaston County		
Miscellaneous			
Receiving Stream:	Catawba River (Mt. Island Lake)	Regional Office:	Mooreville
Stream Classification:	WS-IV and B	State Grid / USGS Quad:	F15Sw
303(d) Listed?	Hg, statewide	Permit Writer:	B. Georgoulas
Subbasin:	03-08-33	Date:	March 5, 2015
			
Facility Location: Lat. 35° 21' 40" N Long. 80° 58' 32" W			

BACKGROUND

Duke Energy’s Riverbend Steam Station was a coal fired steam electric plant in Gaston County. Electricity generation was discontinued on April 1, 2013. One stormwater outfall has been abandoned (SW009), and SW013 will be grouted and abandoned (per info. submitted by company on December 15, 2014); SW007 and an outfall west of SW007 are scheduled to be removed. During a site visit in June 2013, Stormwater Permitting Program (SPP) staff determined that SW005 was not a potential point source discharge regulated under NPDES. Some outfalls were not included in the original application and are described as “unidentified outfalls” in the draft permit.

In addition to NPDES wastewater discharge permit NC0004961, the facility also holds 0388R20 (air permit) and NCD024717423 (Hazardous wastes). The facility is subject to federal requirements of 40 CFR §423 – Steam Electric Power Generation. This category is subject to federal NPDES stormwater discharge permit requirements per 40 CFR §122.26 (b)(14)(vii).

The company originally applied to the Stormwater Permitting Program (SPP) for a separate NPDES stormwater discharge permit for this facility in May 2011. A draft permit was proposed and sent to public notice in July 2011. A subsequent revised draft went to the company in March 2012 but was never re-noticed or finalized. On May 15, 2014, in response to NCDENR actions following the coal ash spill at Dan River in Eden, NC earlier that year, the company submitted materials to revise information in the original application. The new proposed draft permit is based on more recent site activity information, sampling results, and visits by NCDENR staff.

This facility discharges to the Catawba River (Mountain Island Lake), upstream of Lake Wylie. Mountain Island Lake is not impaired, but dischargers upstream of Lake Wylie are subject to the

nutrient management strategy developed for that watershed (Lake Wylie TMDL, 1995). There is also a statewide total maximum daily load (TMDL) for mercury (Hg), approved in September 2012. No specific reductions or Hg limits are required from NPDES stormwater permittees at this time. Duke Energy has developed a decommissioning plan for ash ponds on the site, submitted to the Division of Water Resources (DWR) at the end of 2014.

The facility historically had a temperature variance for its NPDES wastewater discharge permit. To maintain the variance, the facility had to conduct annual biological and chemical monitoring of the receiving stream to demonstrate that it has a balanced and indigenous macroinvertebrate and fish community. The latest BIPA (Balanced and Indigenous Population Assessment) report was submitted to DWQ (now DWR) in August of 2009. The Environmental Sciences Section (ESS) reviewed the report and concluded that Mountain Island Lake near Riverbend Station has a balanced and indigenous macroinvertebrate and fish community.

WHY THIS FACILITY IS SUBJECT TO A PERMIT

Federal NPDES regulations define **stormwater discharge associated with industrial activity** in 40 CFR §122.26 (b)(14) as:

“the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program under this part 122. For the categories of industries identified in this section, the term includes, but is not limited to, storm water [sic] discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at part 401 of this chapter); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and **areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water**. For the purposes of this paragraph, material handling activities include storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water [sic] drained from the above described areas.”

Although electricity generation at Riverbend has ceased, coal ash and other materials are still present at the site. Concentrations of copper, zinc, mercury, and selenium from SW001 and SW002 discharges already dropped significantly after the company cleaned out oil trap tanks controlling these areas (see May 2014 and July 2014 sample results). Coal ash will likely be disturbed and/or transported as ash pond close-out procedures are carried out. Equipment decommissioning and deconstruction activities will disturb areas with potential to release contaminants.

PROPOSED MONITORING FOR STORMWATER DISCHARGES

The Division considered potential pollutants from past and present industrial activities (coal-fired electric generation, plant decommissioning, and future ash removal) and data submitted in both May 2011 (collected June 2008) and in May 2014 (collected the same month). Sampling included O&G, COD, Cl, Fl, SO₄, Hg, Al, As, Ba, B, Ca, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Se, Sb, Tl, Zn, TDS, TSS, conductivity, and pH. In 2008, Ag, Co, Ti, BOD, ammonia, TN, TP, and phenol were also sampled.

Sampling results were submitted with EPA Form 2F as part of the NPDES stormwater permit application in 2014. Outfalls SW001 and SW002 were resampled in June and July 2014. *See attached information for sampling results.* SW001 currently includes a non-stormwater discharge (likely groundwater), which may be permitted separately under the wastewater permit for this facility.

Unlike most stormwater permits in its program, the Division is proposing a permit structure with outfall-specific monitoring for discharges. Parameters are based on potential pollutants in the drainage area, sampling results, and in some cases, dependent upon future activities (e.g., ash removal through the drainage area). Below is a table of the proposed monitoring for each outfall at the Riverbend site. **All outfalls ultimately discharge to the Catawba River (Mountain Island Lake).**

Stormwater Discharge Outfall (SDO) Monitoring	
<i>SW001, SW002, SW003</i>	
<i>Draining powerhouse and switchyard areas</i>	
Polychlorinated Biphenyls (PCBs)	Monitored semi-annually; may be discontinued after the first year (two samples) if not detected. BASIS: Electrical equipment in these drainage areas (powerhouse and switchyard areas) may have contained PCBs, which persist in the environment if ever released. (An empty Used PCB Mineral Oil Storage Tank elsewhere on the property stored this material at one time.) If all PCBs have been removed and past releases cleaned up, these compounds should not be detected.
Copper	Semi-annual monitoring. BASIS: Coal combustion waste (CCW) constituent; very high concentrations measured in discharge from SW001 and SW002 in 2008 and 2014 (order of magnitude above stormwater benchmark value based on acute impacts). Discharge concentrations were also significantly higher than up and downstream values in the lake between 2011-2014 (<2 µg/l), as reported in the NPDES WW permit application.
Selenium	Semi-annual monitoring. BASIS: Coal combustion waste (CCW) constituent; concentrations above stormwater benchmark measured in discharge from SW001 and SW002 in 2008 and 2014.
Mercury	Semi-annual monitoring with Method 1631E. BASIS: Coal combustion waste (CCW) constituent; 60 ng/l concentration recorded from SW001 in 2014 (above the quantitation level (QL) of EPA Method 245.1, much less sensitive than low level method 1631E). Other results for these outfalls were reported <50 ng/l. The low-level Hg method provides the lowest minimum level of EPA approved analytical methods for this parameter and will be able to quantify levels below 50 ng/l (sufficiently sensitive test procedure, consistent with recent modifications to federal rule 40 CFR §122.44).
Zinc	Semi-annual monitoring. BASIS: Coal combustion waste (CCW) constituent; very high concentrations measured in discharge from SW001 and SW002 in 2008 and 2014 (order of magnitude above stormwater benchmark value based on acute threshold). Discharge concentrations were also significantly higher than up and downstream values in the lake between 2011-2014 (<2 µg/l), as reported in the NPDES WW permit application.
Total Suspended Solids (TSS)	Semi-annual monitoring. BASIS: Potential pollutant from drainage area and BMP effectiveness indicator. SW001 and SW002 had highest values of all SDOs on site in 2014 sampling.
Non-polar Oil & Grease (Method 1664 SGT-HEM)	Semi-annual monitoring. BASIS: Potential pollutant from lubricants; Method 1664 SGT-HEM targets petroleum-based O&G.

Stormwater Discharge Outfall (SDO) Monitoring	
pH	Semi-annual monitoring. BASIS: Pollutant indicator and important to interpreting toxicity potential of metals.
<i>SW004</i> <i>Draining Horseshoe Bend Beach Road access road area</i>	
Total Suspended Solids (TSS)	Semi-annual monitoring (<i>quarterly if coal or ash transport</i>). BASIS: Potential pollutant from drainage area and BMP effectiveness indicator. This outfall will be impacted by Phase I of the Coal Ash Excavation Plan (hauling ash from Ash Stack).
Priority Pollutant Metals Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, and Zn.	Quarterly monitoring <i>only if coal or coal ash transported through this drainage area</i> . BASIS: Coal combustion waste (CCW) constituents; includes metals incorporated into the coal ash monofill constructed for the company's Mayo Steam Electric Plant (another site). Monitoring is quarterly because this outfall will be impacted by Phase I of the Coal Ash Excavation Plan.
Boron	Quarterly monitoring <i>only if coal or coal ash transported through this drainage area</i> . BASIS: Coal combustion waste (CCW) constituent / coal tracer. Monitoring is quarterly because this outfall will be impacted by Phase I of the Coal Ash Excavation Plan.
pH	Quarterly monitoring <i>only if coal or coal ash transported through this drainage area</i> . BASIS: Pollutant indicator and important to interpreting toxicity potential of metals. Monitoring is quarterly because this outfall will be impacted by Phase I of the Coal Ash Excavation Plan.
<i>SW005 (near entrance of Horseshoe Bend Beach Road)</i>	
Not a point source discharge of stormwater, as observed by SPP staff during June 20, 2014 site visit.	
<i>SW003A, the previously unidentified outfall between SW003 and SW006*</i> *Additional Information about this outfall was requested from the applicant on June 26, 2014. Proposed parameters may be modified based on details provided.	
Total Suspended Solids (TSS)	Semi-annual monitoring. BASIS: Potential pollutant from drainage area and BMP effectiveness indicator.
Non-polar Oil & Grease (1664 SGT-HEM)	Semi-annual monitoring. BASIS: Potential pollutant from lubricants; Method 1664 SGT-HEM targets petroleum-based O&G.
Priority Pollutant Metals Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, and Zn.	Semi-annual monitoring. BASIS: Coal combustion waste (CCW) constituents; includes metals incorporated into the coal ash monofill constructed for the company's Mayo Steam Electric Plant.
Boron	Semi-annual monitoring. BASIS: Coal combustion waste (CCW) constituent / coal tracer.
pH	Semi-annual monitoring. BASIS: Pollutant indicator and important to interpreting toxicity potential of metals.
<i>SW006</i> <i>Drains station yard areas and main fuel oil storage tank area</i>	
Polychlorinated Biphenyls (PCBs)	Monitored semi-annually; may be discontinued after the first year (two samples) if not detected . BASIS: Electrical equipment in this drainage area may have contained PCBs, which persist in the environment if ever released. (An empty Used PCB Mineral Oil Storage Tank elsewhere on the property stored this material at one time.) If all PCBs have been removed and past releases cleaned up, these compounds should not be detected.
Total Suspended Solids (TSS)	Semi-annual monitoring. BASIS: Potential pollutant from drainage area and BMP effectiveness indicator.
Non-polar Oil & Grease (1664 SGT-HEM)	Semi-annual monitoring. BASIS: Potential pollutant from lubricants; Method 1664 SGT-HEM targets petroleum-based O&G.

Stormwater Discharge Outfall (SDO) Monitoring	
pH	Semi-annual monitoring. BASIS: Pollutant indicator.
<p><i>SW007 and SW007A, the previously unidentified outfall west of SW007*</i></p> <p>*Additional Information about this outfall was requested from the applicant on June 26, 2014. Both of these outfalls are scheduled to be removed by the applicant and may not be included in the final permit.</p>	
Total Suspended Solids (TSS)	Semi-annual monitoring. BASIS: Potential pollutant from drainage area and BMP effectiveness indicator.
Priority Pollutant Metals Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, and Zn.	Semi-annual monitoring <i>only if coal or coal ash transported through this drainage area.</i> BASIS: Coal combustion waste (CCW) constituents; includes metals incorporated into the coal ash monofill constructed for the company's Mayo Steam Electric Plant.
Boron	Semi-annual monitoring <i>only if coal or coal ash transported through this drainage area.</i> BASIS: Coal combustion waste (CCW) constituent / coal tracer.
pH	Semi-annual monitoring <i>only if coal or coal ash transported through this drainage area.</i> BASIS: Pollutant indicator and important to interpreting toxicity potential of metals.
<p><i>SW008</i></p> <p><i>Draining all areas that drain to the cinder pit</i></p> <p><i>Monitoring only required if discharges occur from storm events less than the 25-year, 24-hour storm (5.7")</i></p>	
Total Suspended Solids (TSS)	Semi-annual monitoring (if applicable). BASIS: Potential pollutant from drainage area and BMP effectiveness indicator.
Priority Pollutant Metals Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, and Zn.	Semi-annual monitoring (if applicable). BASIS: Coal combustion waste (CCW) constituents; includes metals incorporated into the coal ash monofill constructed for the company's Mayo Steam Electric Plant.
Boron	Semi-annual monitoring (if applicable). BASIS: Coal combustion waste (CCW) constituent / coal tracer.
pH	Semi-annual monitoring (if applicable). BASIS: Pollutant indicator and important to interpreting toxicity potential of metals.
<p><i>SW010, SW011, SW012</i></p> <p><i>Draining areas from the Lark Maintenance Facility</i></p>	
Copper	Semi-annual monitoring. BASIS: Potential pollutant from maintenance facility; 2014 sampling results showed high Cu values from SW010 and SW011.
Zinc	Semi-annual monitoring. BASIS: Potential pollutant from maintenance facility; 2014 sampling results showed high Zn values from all three of these outfalls.
Total Suspended Solids (TSS)	Semi-annual monitoring. BASIS: Potential pollutant from maintenance facility and BMP effectiveness indicator.
Non-polar Oil & Grease (1664 SGT-HEM)	Semi-annual monitoring. BASIS: Potential pollutant from lubricants; Method 1664 SGT-HEM targets petroleum-based O&G.
pH	Semi-annual monitoring. BASIS: Pollutant indicator and important to interpreting toxicity potential of metals; low pH (5.37) recorded from SW012 in May 2014 sample.
<p><i>SW014 and other previously unidentified outfalls SW014A, SW014B, etc. from PVC pipes in Septic Tank Drainage Area*</i></p> <p>*Additional Information about this outfall was requested from the applicant on June 26, 2014. Proposed parameters may be modified based on details provided.</p>	
SW014 only	No analytical monitoring proposed. BASIS: Limited potential for

Stormwater Discharge Outfall (SDO) Monitoring	
	exposure. Septic tank overflow sealed and system receives minimal flow from so few employees on site. Also a small drainage area (<900 sq. feet) and no other industrial activities.
Total Suspended Solids (TSS)	Semi-annual monitoring at PVC pipe outfall(s) only. BASIS: Potential pollutant from drainage area and BMP effectiveness indicator; no information provided about what this outfall drains.
Non-polar Oil & Grease (1664 SGT-HEM)	Semi-annual monitoring at PVC pipe outfall(s) only. BASIS: Potential pollutant from lubricants; no information provided about what this outfall drains.
pH	Semi-annual monitoring at PVC pipe outfall(s) only. BASIS: Pollutant indicator; no information provided about what this outfall drains.

SPECIAL PROVISION FOR SW008 (CLOSED DRY ASH STACK AND CINDER PIT)

The company’s application indicated that SW008 (drainage from the ash stack into the cinder pit) rarely discharges. The heavily vegetated cinder pit area basically functions as a large dry detention pond, and water levels rarely build up to the CMP riser pipe that leads to the discharge outlet pipe. The draft permit proposes monitoring for this outfall only if a discharge results from a storm event less than the 25-year, 24-hour storm (approximately 5.7” inches in this area of NC, based on NOAA Precipitation Frequency Estimates). In the industrial stormwater permitting program, NCDEMLR considers holding ponds that do not discharge in response to smaller storms as equivalent to a non-discharging system (on the basis that more conservative design specifications for engineered non-discharge systems use that same design storm criterion). The proposed permit condition is consistent with that interpretation.

STORMWATER BENCHMARKS AND TIERED RESPONSE

Rather than limits, North Carolina NPDES Stormwater permits contain benchmark concentrations. Stormwater benchmarks are numerical action levels for stormwater monitoring. **Benchmarks are not effluent limits, and benchmark exceedances are not permit violations.** Benchmarks provide facilities a tool for assessing the significance of pollutants in stormwater discharges and the effectiveness of best management practices (BMPs). Benchmark concentrations are intended as guidelines for the facility’s development and implementation of the Stormwater Pollution Prevention Plan (SPPP).

Benchmark exceedances require the permittee to increase monitoring, increase management actions, increase record keeping, and/or install stormwater BMPs in a tiered program. The permit establishes a tiered approach to specify actions the permittee must take in response to analytical results above benchmark concentrations (Part II, Section B., following Table 10). The tiered structure of the permit provides the permittee and NCDEMLR wide flexibility to address issues that may arise with one or more parameters and/or outfalls.

Metals benchmarks are calculated to mimic acute water quality standards and with the guidance of NC’s Division of Water Resources (DWR). NC DWR follows established federal procedures for calculating acute standards when developing the benchmarks. Just like the acute standards, metals benchmarks normally reflect one half of the calculated Final Acute Value (the “½ FAV”). In most cases, translation into total recoverable values is based on an assumed hardness of 25 mg/l and a total suspended solids (TSS) concentration of 10 mg/l. Acute standards protect aquatic life from negative impacts of short-term exposure to higher levels of chemicals where the discharge enters a waterbody. The Stormwater Permitting Program applies this approach because of the ephemeral nature of rainfall events.

The Division may evaluate results to determine if a smaller suite of parameters for some outfalls is adequate to characterize potential pollution or BMP effectiveness. For example, one or more metals or other parameters may serve as an adequate tracer for the presence of ash pollution during disturbance or ash removal in specific drainage areas at this site. For parameters that do not have a stormwater benchmark, the Division may develop a benchmark value if appropriate toxicity data become available or if rising trends in concentrations suggest a persistent source.

A summary of the benchmarks in the draft permit, and their basis, is below:

Parameter	Benchmark	Basis
Antimony (Sb), mg/L (Total)	0.09	Acute Aquatic Criterion, ½ FAV
Arsenic (As), mg/L (Total)	0.34	Acute Aquatic Criterion, ½ FAV
Beryllium (Be), mg/L (Total)	0.065	Acute Aquatic Criterion, ½ FAV
Cadmium (Cd), mg/L (Total)	0.003	Acute Aquatic Criterion, ½ FAV
Chromium (Cr), mg/L (Total)	0.9	½ FAV, based on (Cr III + Cr VI) acute thresholds and assumption that industrial activities here are not a source of hexavalent chromium.
Copper (Cu), mg/L (Total)	0.010	Acute Aquatic Criterion, ½ FAV
Lead (Pb), mg/L (Total)	0.075	Acute Aquatic Criterion, ½ FAV
Mercury (Hg), ng/L (Total)	N/A	Monitoring only, CCW/Coal Constituent. Hg influenced by regional transport and wet deposition. Values above 12 ng/L (NC WQ standard) should be noted on the DMR but do not trigger Tier Responses.
Nickel (Ni), mg/L (Total)	0.335	Acute Aquatic Criterion, ½ FAV
Polychlorinated biphenyl compounds (PCBs), µg/L	Detected	NC Water Quality Standards vs. present Arochlors quantitation levels (higher than standard)
Selenium (Se), mg/L (Total)	0.056	½ FAV, NC-specific, based on 1986 Study on Se impacts in North Carolina
Silver (Ag), mg/L (Total)	0.0003	Acute Aquatic Criterion, ½ FAV. (The Division notes this value is below the practical quantitation level (PQL) of 1 µg/L of EPA Method 200.8)
Boron (B), mg/L	N/A	Monitoring only, CCW/Coal Constituent. Narrative National Recommended Water Quality Criterion.
Thallium (Tl), mg/L (Total)	N/A	Monitoring Only, CCW/Coal constituent. National Recommended Human Health Criterion.
Zinc (Zn), mg/L (Total)	0.126	Acute Aquatic Criterion, ½ FAV
Total Suspended Solids (TSS), mg/L	100	National Urban Runoff Program (NURP) Study, 1983
Non-Polar Oil & Grease, EPA Method 1664 (SGT-HEM), mg/L	15	Review of other state's daily maximum benchmark concentration for this more targeted O&G; NC WQ Standard that does not allow oil sheen in waters.
pH	6-9	NC Water Quality Standard (Range)

STORMWATER POLLUTION PREVENTION PLAN

The proposed permit conditions reflect the Environmental Protection Agency's (EPA) and North Carolina's pollution prevention approach to stormwater permitting. The Division maintains that implementation of Best Management Practices (BMPs) and traditional stormwater management practices that control the source of pollutants meets the definition of Best Available Technology (BAT) and Best Conventional Pollutant Control Technology (BCT). The permit conditions are not numeric effluent limitations but are designed to be flexible requirements for implementing site-specific plans to minimize and control pollutants in stormwater discharges associated with the industrial activity. Title 40 Code of Federal Regulations (CFR) §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 proposed in this draft permit are included under the authority of both of these regulatory provisions. In essence, the pollution prevention and BMP requirements operate as limitations on effluent discharges that reflect the application of BAT/BCT.

The permit proposes some language specific to coal fired power plants (and in particular, to those plants being decommissioned). Determining specific BMPs that are appropriate for the site and activities are the permittee's responsibility, and the permit strives not to limit what BMPs can be used. The permittee should also refer to the BMPs described in both EPA's Multi-Sector Permit (MSGP) and Industrial Stormwater Fact Sheet for Steam Electric Power Generating Facilities (Sector O) for guidance on pollution prevention measures.

It is important to note that the majority of stormwater at this facility is ultimately routed into the waste treatment system (ash pond), and those discharges are regulated by the NPDES *wastewater* permit.

MERCURY MONITORING REQUIREMENTS

The proposed permit requires mercury to be measured in stormwater samples by EPA Method 1631E, which can detect levels as low as 0.5 ng/l. This requirement is consistent with recent federal rule-making that requires NPDES permittees to monitor discharges with sufficiently sensitive test procedures approved under 40 CFR §136. Modifications to 40 CFR §122.44(i) require a method that has a minimum level (ML) at or below the effluent limit (not applicable here), or the lowest minimum level (ML) of EPA approved analytical methods for the measured parameter. Based on results, Method 1631E will be required to quantify levels in these discharges. NC DEMLR understands that this method is more costly and requires a more intensive sampling protocol than most other parameters, and that fish tissue sampling will be provided during the permit cycle. Therefore, no benchmark applies that would trigger tiered response actions. Proposed permit provisions also allow the permittee to use field blank and/or method blank concentrations to adjust reported mercury levels as long as documented is submitted with the Data Monitoring Report (DMR).

FLEXIBILITY IN TIER RESPONSES

Tier Two actions (upon two consecutive benchmark exceedances at an outfall) proposed in this draft permit differs slightly from the Program's standard template and includes **step 6**. That step provides an opportunity for the permittee to propose an **alternative monitoring plan for approval** by the Region:

5. *Alternatively*, in lieu of steps 2 and 3, the permittee may, after two consecutive exceedances, exercise the option of contacting the DEMLR Regional Engineer as provided below in Tier Three. The Regional Engineer may direct the response actions on the part of the permittee

as provided in Tier Three, including reduced or additional sampling parameters or frequency.

6. If pursuing the alternative above after two consecutive exceedances, the permittee may propose an **alternative monitoring plan** for approval by the Regional Engineer.

The permit therefore allows the permittee to petition the Regional Office for monitoring changes *sooner than Tier Three* (upon any four benchmark exceedances) and gives guidance on one option to take. For example, the permittee may request that mercury only be monitored semi-annually under the tiers, or that only parameters over the benchmark be monitored more frequently. In this way, changes to the monitoring scheme for any outfall could be handled outside of a permit modification.

OTHER PROPOSED REQUIREMENTS

- It is standard for Stormwater Pollution Prevention Plan (SPPP) requirements to include an annual certification that stormwater outfalls have been evaluated for the presence of *non-stormwater* discharges, and if any are identified, how those discharges are permitted or otherwise authorized. The draft permit requires this **facility to submit the first certification to DEMLR no later than 90 days after the effective date of the permit** (Part II, Section A.).
- Requirement to submit a request for permit modification if the facility identifies or creates any new outfalls, removes outfalls, or alters any drainage area that changes potential pollutants. This site may trigger this requirement during demolition or ash removal activities.
- Standard text that allows a permittee to forgo collecting samples outside of regular operating hours was omitted in Part II because this power plant is not currently operating. The Division expects the permittee to apply best professional judgment and consider the safety of its personnel in fulfilling sampling obligations under the permit.
- Proposed federal regulations will require electronic submittal of all discharge monitoring reports (DMRs). If a state does not establish a system to receive such submittals, then permittees must submit DMRs electronically to the Environmental Protection Agency (EPA). The Division anticipates that these regulations will be adopted and is beginning implementation. Permit provisions addressing this impending requirement is included in Part III, Section B. (General Conditions), 3.e.
- **Quarterly** Qualitative/Visual Monitoring to assure regular observation of outfalls throughout year.

INSTREAM MONITORING

The facility historically had several monitoring stations located upstream and downstream. Instream sampling has been for balanced and indigenous populations assessment (BIPA) in Mountain Island Lake near Riverbend Steam Station and for *wastewater permit* in-stream monitoring requirements. Upstream sampling for the **wastewater permit** is approximately 2-miles upstream of the ash pond discharge (station 278.0), and downstream sampling (station 277.5) is approximately 0.5-miles downstream of that discharge. Monitored parameters between years 2011-14 were As, Cd, Cr, Cu, Pb, Se, Zn (all by EPA Method 200.8), Hg (EPA Method 245.1), and Total Dissolved Solids (TDS, SM2540C). All constituents were below water quality standards for the six sampling events at each location. Refer to the document titled "Riverbend In-Stream Monitoring Plan 2011-Present" for a summary of results. Division of Water Resources' NPDES wastewater permitting staff has recommend that Duke Energy continues up- and downstream monitoring until wastewater discharges cease. That sampling is *not necessarily performed during rain events*.

Additional instream sampling in April 2014 for a broader list of metals and other parameters also did not show any results above water quality standards. Methods for metals analyses were the

same as noted above. In-stream monitoring is **not proposed** in this draft NPDES *stormwater* permit.

FISH TISSUE MONITORING

Wastewater permit NC0004961 required fish tissue monitoring for As, Se, and Hg near the ash pond discharge once every five years. Sunfish and bass tissue were analyzed. The results were below action levels for Se and Hg (NCDHHS) and screening value for As (NCDENR). The proposed stormwater permit requires the permittee to **submit a copy of future monitoring results to the DEMLR Stormwater Permitting Program** (Central Office) within 30 days of receiving results and indicate the location of sampling in relation to stormwater discharge outfalls. *DEMLR is requiring the fish tissue analysis results be submitted separately because the proposed NC0004961 permit does not require submittal to DWR until application for permit renewal.*

PROPOSED SCHEDULE FOR PERMIT ISSUANCE:

Draft Permit to Public Notice: March 2015 (est.)
Permit Scheduled to Issue: June 2015 (est.)

STATE CONTACT:

If you have any questions about any of the above information or the attached permit, please contact Bethany Georgoulis at (919) 807-6372 or bethany.georgoulis@ncdenr.gov.

STORMWATER SAMPLING RESULTS FROM RIVERBEND (MAY 2014):

		SW001	SW002	SW003	SW004	SW005	SW006	SW010	SW011	SW012
Oil & Grease	mg/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
COD	mg/L	33	42	69	42	21	< 20	40	31	< 20
Cl - Chloride (00940)	mg/L	1.4	3.3	5.7	3.5	1.5	5.1	1.4	< 1	< 0.13
Fluoride	mg/L	< 1	< 1	< 1	< 0.1	< 0.1	< 0.1	< 1	< 1	< 0.1
SO4 - Sulfate (00945)	mg/L	8	18	16	4.6	15	12	6.3	5.8	0.29
Hg - Mercury (71900)	ug/L	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Al - Aluminum (01105)	mg/L	0.941	0.804	0.185	0.423	0.512	0.128	0.203	0.082	0.143
Ba - Barium (01007)	mg/L	0.039	0.046	0.052	0.033	0.034	0.025	0.029	0.025	< 0.005
B - Boron (01022)	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Ca - Calcium	mg/L	6.92	15.7	26	8.41	10	21.1	9.23	7.74	0.662
Hardness	mg/L (CaCO3)	20.3	52.2	93.3	26.1	32.6	74	28.9	24.6	2.05
Fe - Iron (01045)	mg/L	1.2	1.15	0.994	0.597	0.709	1.4	0.389	0.117	0.14
Mg - Magnesium	mg/L	0.744	3.16	6.92	1.25	1.83	5.18	1.41	1.28	0.097
Mn - Manganese (01055)	mg/L	0.036	0.047	0.276	0.01	0.021	0.128	0.056	0.037	0.007
Zn - Zinc (01092)	mg/L	1.02	0.981	0.086	0.067	0.273	0.034	0.537	0.708	0.357
Sb - Antimony (01097)	ug/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
As - Arsenic (01002)	ug/L	11.2	2.11	1.09	5.53	2.13	< 1	< 1	3.46	< 1
Cd - Cadmium (01027)	ug/L	2.14	2.38	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cr - Chromium (01034)	ug/L	2.38	2.13	< 1	< 1	< 1	< 1	1.27	< 1	< 1
Cu - Copper (01042)	ug/L	109	66.9	9.07	9.77	7.57	3.11	36.7	26.7	3.04
Pb - Lead (01051)	ug/L	12.7	10.5	< 1	< 1	1.16	< 1	< 1	< 1	< 1
Molybdenum (Mo)	ug/L	< 1	< 1	1.18	< 1	1.17	< 1	3.18	1.74	< 1
Ni - Nickel (01067)	ug/L	2.32	1.82	1.23	1.89	1.2	< 1	4.94	2.8	< 1
Se - Selenium (01147)	ug/L	89.6	11.2	3.91	1.23	2.16	< 1	< 1	< 1	< 1
Tl - Thallium (01059)	ug/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
TDS - Total Diss. Solids (70300)	mg/L	55	110	210	87	88	160	77	58	< 25
TSS-Total Suspended Solids	mg/L	61	36	7	8	10	6	9	< 5	18
pH	s.us	7.09	7.59	7.98	6.7	6.63	7.05	7.68	7.12	5.37
Temperature	°C	21.1	21.4	19.5	20.4	22.1	16.5	17.7	18.9	22.8
Specific conductance	uS/cm	63	142	232	84	91	208	81	66	7

Calculation of Flow for RBSS Stormwater outfalls

Stormwater Collection Date	Event Total Precipitation (inches)	Average Event Precipitation Rate (inch/per hour)	Average Event Precipitation Rate (feet/second)	Drainage Area (acres)	Drainage Area (ft²)	Impervious area %	Runoff Coefficient*	sampling initiated	average event flow (cfs)	average event flow (gpm)	Total estimated event volume (gallons)	
SW001	5/9/2014	0.35	0.11666667	2.70062E-06	4.4	199584	100	0.93	2.5 hours after the initial 0.1 inches of rain fell	0.50	187.9	33828
SW002	5/9/2014	0.35	0.11666667	2.70062E-06	13.2	598752	35	0.65	2.5 hours after the initial 0.1 inches of rain fell	1.06	395.6	71200
SW003	5/9/2014	0.35	0.11666667	2.70062E-06	15.4	698544	5	0.44	2.5 hours after the initial 0.1 inches of rain fell	0.83	310.4	55872
SW004	5/15/2014	1.56	0.08666667	2.00617E-06	4.6	208656	15	0.31	6 hours after initial 0.1 inches of rain fell	0.13	48.8	52728
SW005	5/15/2014	1.56	0.08666667	2.00617E-06	3.5	158760	8	0.26	6 hours after initial 0.1 inches of rain fell	0.08	30.9	33424
SW006	5/15/2014	1.56	0.08666667	2.00617E-06	5.2	235872	35	0.52	6 hours after initial 0.1 inches of rain fell	0.24	91.5	98804
SW007	NA	NA	NA	NA	0.9	40824	0	0.30	NA	NA	NA	NA
SW008	NA	NA	NA	NA	70	3175200	2	0.31	NA	NA	NA	NA
SW010	5/9/2014	0.35	0.11666667	2.70062E-06	0.6	27216	50	0.63	2.5 hours after the initial 0.1 inches of rain fell	0.05	17.2	3090
SW011	5/9/2014	0.35	0.11666667	2.70062E-06	1.1	49896	70	0.78	2.5 hours after the initial 0.1 inches of rain fell	0.11	39.3	7083
SW012	5/15/2014	1.56	0.08666667	2.00617E-06	0.1	4536	100	0.95	6 hours after initial 0.1 inches of rain fell	0.01	3.2	3489
SW014	NA	NA	NA	NA	0.02	907.2	0	0.15	NA	NA	NA	NA

* estimated using SWPPP detailed descriptions of drainage areas
 estimated using rational method, with rainfall precipitation from Mt Island dam

STORMWATER SAMPLING RESULTS FROM RIVERBEND (JUNE-JULY 2014):

**Riverbend Stormwater Results
May - July 2014**

	Oil & Grease	COD	Cl - Chloride (00940)	Fluoride	SO4 - Sulfate (00945)	Hg - Mercury (71900)	Al - Aluminum (01105)	Ba - Barium (01007)	B - Boron (01022)	Ca-Calcium	Hardness	Fe - Iron (01045)	Mg-Magnesium	Mn - Manganese (01055)	Zn - Zinc (01092)	Sb - Antimony (01097)	As - Arsenic (01002)	Cd - Cadmium (01027)	Cr - Chromium (01034)	Cu - Copper (01042)	Pb - Lead (01051)	Molybdenum (06)	Ni - Nickel (01067)	Se - Selenium (01147)	Tl - Thallium (01059)	TDS - Total Diss. Solids (70300)	TSS - Total Suspended Solids	pH	Temperature	Specific conductance
	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L (CaCO3)	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	us/cm		
Draft Benchmark Limits from 2014 draft Permit	15														0.126	90	340	3	900	10	75		335	56		100		6 - 9		
SW001 5-9-2014	< 5	33	1.4	1	8	0.06	0.941	0.039	< 0.05	6.92	20.3	1.2	0.744	0.036	1.02	1	11.2	2.14	2.38	109	12.7	< 1	2.32	89.6	< 0.2	55	61	7.09	21.1	63
SW001 6-11-2014	< 20	0.89	0.14	< 1	7.8	< 0.05	0.264	0.021	< 0.05	6.26	18.1	0.357	0.604	0.043	0.551	1	3.01	1.42	1	49.5	2.28	< 1	1.67	5.1	< 0.2	49	6.33	22.3	50	
SW001 7-21-2014	< 5	< 20	< 1	< 1	3.8	< 0.05	0.123	0.01	< 0.05	2.88	8.25	0.13	0.257	0.007	0.479	not analyzed	2.01	1.27	1	29.4	2.82	< 1	1	21.6	< 0.2	5	not sampled	not sampled	not sampled	
SW002 5-9-2014	< 5	42	3.3	< 1	18	< 0.05	0.804	0.046	< 0.05	15.7	52.2	1.15	3.16	0.047	0.981	1	2.11	2.38	2.13	66.9	10.5	< 1	1.82	11.2	< 0.2	110	7.59	21.4	142	
SW002 7-21-2014	< 5	< 20	1.3	< 1	5.8	< 0.05	0.366	0.025	< 0.05	7.4	24.6	0.429	1.49	0.02	0.19	not analyzed	1.66	1	1	12	1.31	< 1	1	4.59	< 0.2	58	11	not sampled	not sampled	
SW003 5-9-2014	< 5	69	5.7	< 1	16	< 0.05	0.185	0.052	< 0.05	26	93.3	0.994	6.92	0.276	0.086	1	1.09	1	1	9.07	1.18	< 1	1.13	3.91	< 0.2	210	7	7.98	19.5	232
SW004 5-15-2014	< 5	42	3.5	< 0.1	4.6	< 0.05	0.423	0.033	< 0.05	8.41	26.1	0.597	1.25	0.01	0.067	1	5.53	1	1	9.77	1	< 1	1.89	1.23	< 0.2	87	8	6.7	20.4	84
SW005 5-15-2014	< 5	21	1.5	< 0.1	15	< 0.05	0.512	0.034	< 0.05	10	32.6	0.709	1.83	0.021	0.273	1	2.13	1	1	7.57	1.16	< 1	1.17	2.16	< 0.2	88	10	6.63	22.1	91
SW006 5-15-2014	< 5	20	5.1	< 0.1	12	< 0.05	0.128	0.025	< 0.05	21.1	21.1	1.4	5.18	0.128	0.034	1	1	1	1	3.11	1	< 1	1.17	2.16	< 0.2	160	6	7.05	16.5	208
SW010 5-9-2014	< 5	40	1.4	< 1	6.3	< 0.05	0.203	0.029	< 0.05	9.23	28.9	0.389	1.41	0.056	0.537	1	1	1	1	1.27	3.18	< 1	3.18	4.94	< 0.2	77	9	7.68	17.7	81
SW011 5-9-2014	< 5	31	1	< 1	5.8	< 0.05	0.082	0.025	< 0.05	7.74	24.6	0.117	1.28	0.037	0.708	1	3.46	1	1	26.7	1.74	< 1	1.74	2.8	< 0.2	58	5	7.12	18.9	66
SW012 5-15-2014	< 5	20	0.13	< 0.1	0.29	< 0.05	0.143	< 0.05	< 0.05	0.652	2.05	0.097	0.14	0.007	0.357	1	1	1	1	3.04	1	< 1	1	1	< 0.2	25	18	5.37	22.8	7

Data for a given stormwater outfall that are in bold font are outside of the draft benchmark limits
All samples above were collected during storm events

STORMWATER SAMPLING RESULTS FROM RIVERBEND (JUNE 2008, FROM ORIGINAL APPLICATION SUBMITTAL):

Parameter	Current Benchmark	Outfall SW001 (mg/l)	Outfall SW002 (mg/l)	Outfall SW003 (mg/l) (*composite)
Oil and Grease	30 (15, non-polar)	ND	ND, 27.6	ND
Aluminum	0.75 mg/l	0.915	1.58	0.753, 0.897*, 0.366
Arsenic	0.34 mg/l	0.0054	ND	0.005, ND*, ND
Barium	N/A	0.0339	0.0517	0.115, 0.0222*, 0.0226
Boron	N/A	0.0795	0.0915	0.072, ND*, ND
Cadmium	0.003 mg/l	0.0013	0.0012	ND
Chromium	0.9 (Cr III) mg/l, 0.016 (Cr VI) mg/l	ND	ND	ND
Cobalt	N/A	ND	ND	ND
Copper	0.010 mg/l	0.0684	0.0333	0.0533, 0.0182*, 0.0153
Iron	N/A	2.0	5.79	21.2, 0.999*, 0.447
Magnesium	32 mg/l	1.7	3.52	9.57, 0.934*, 1.210
Manganese	N/A	0.0754	0.117	1.38, 0.0792*, 0.0417
Nickel	0.335 mg/l	0.007	ND	0.0068, ND*, ND
Selenium	0.056 mg/l	0.062	0.0562	ND
Silver	0.3 µg/l	ND	ND	ND
Titanium	N/A	0.0256	0.0813	0.0299, 0.0403*, 0.0132
Zinc	0.126 mg/l	0.863	0.486	2.29, 0.758*, 0.748
Mercury	12 ng/l	ND (<0.00020)	ND (<0.00020)	ND (<0.00020)
Apparent Color	N/A	ND	ND, 180	ND, 40.0
TSS	100 mg/l	29.3	13.1, 67.7	151, 13.1
BOD	30 mg/l	13.0	5.2	72.9, 54.9*
Nitrogen,	30 mg/l	1.7	0.90, 0.90	0.80, 0.25*, 0.90
Nitrogen, Total Kjeldahl	20 mg/l	2.4		7.7, 1.5*, 1.3
Nitrogen NO ₂ + NO ₃	10 mg/l	1.5	1.0, 1.0	1.2, 0.78*, 1.0
Phosphorus	2 mg/l	0.53	0.12	1.6, 0.16*, 0.20
Phenol	4.5 mg/l (Trout)	ND		0.45
Chloride	860 mg/l		ND, 5.8	ND
COD	120 mg/l	ND	49.0	233, 58.0*, 104
Sulfate	500 mg/l		17.3, 20.7	17.3, 10.3