STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY

PERMIT

TO DISCHARGE WASTEWATER UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provision of North Carolina General Statute 143-215.1, other lawful standards and regulations promulgated and adopted by the North Carolina Environmental Management Commission, and the Federal Water Pollution Control Act, as amended,

Duke Energy

is hereby authorized to discharge wastewater from a facility located at the

Buck Steam Station
Dukesville Road
Salisbury
Rowan County

to receiving waters designated as the Yadkin River in subbasin 03-07-06 of the Yadkin-Pee Dee River Basin in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, III and IV hereof.

This permit shall become effective January 1, 2012.

This permit and authorization to discharge shall expire at midnight on August 31, 2016.

Signed this day December 2, 2011.

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Coleen H. Sullins, Director
Division of Water Quality
By Authority of the Environmental Management Commission

SUPPLEMENT TO PERMIT COVER SHEET

All previous NPDES Permits issued to this facility, whether for operation or discharge are hereby revoked. As of this permit issuance, any previously issued permit bearing this number is no longer effective. Therefore, the exclusive authority to operate and discharge from this facility arises under the permit conditions, requirements, terms, and provisions included herein.

Duke Power Company is hereby authorized to:

1. Continue to discharge once-through non-contact cooling water through outfall 001, treated wastewater from the ash basin through outfall 002, and yard sump overflows through outfall 002A. Outfalls 002 and 002A consist of coal pile runoff, ash transport water, metal cleaning wastes, treated domestic wastewater, remediated groundwater, low volume wastes, blowdown from wet cooling towers for combined cycle unit, and boiler blowdown. All discharges result from activities at Duke Power's Buck Steam Station on Dukesville Road in Salisbury, Rowan County; and

2. Discharge from said treatment works at the locations specified on the attached map into the Yadkin River, currently classified WS-IV & B waters in the Yadkin-Pee Dee River Basin.

A. (1) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS [001]

During the period beginning on the effective date of the permit and lasting until expiration, the Permittee is authorized to discharge from outfall 001: Once-Through, Non-Contact Cooling Water. Such discharges shall be limited and monitored by the Permittee as specified below:

PARAMETER	DISCHARGE LIMITATIONS		Monitoring Requirements		
	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location
Flow (MGD)			Daily	Pump logs or similar readings	Intake or Effluent[2]
Temperature	35°C (95°F)		Daily	Grab	Effluent
Temperature[1]			Daily	[1]	Intake & Effluent

NOTES:
1. The daily average temperature of the effluent shall be such as not to exceed 10°C (50°F) if the daily average intake temperature is below 2.5°C (36.5°F), and shall not exceed two times the intake temperature (°F) minus 23 if the daily average intake temperature ranges from 2.5°C (36.5°F) to 12.8°C (55°F) when only units with the same control system are operating.
2. Sample Locations: I-Intake, E-Effluent.

THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Chlorination of once-through cooling water shall not be conducted. Should the facility wish to chlorinate its once-through cooling water, a permit modification must be requested prior to commencement of chlorination.

WHEN HIGH ROCK LAKE, AS MEASURED AT THE INTAKE OF BUCK STEAM STATION, IS DRAWN DOWN 10 FEET OR GREATER, THE PERMITTEE SHALL ON A DAILY AVERAGE BASIS:
1. USE NO MORE THAN 2/3 OF THE STREAM FLOW FOR CONDENSER COOLING; AND
2. ENSURE THAT THE MINIMUM UNHEATED DAILY AVERAGE STREAM FLOW DOES NOT FALL BELOW ONE THIRD OF THE 7 DAY 10 YEAR LOW FLOW (7Q10).

THE MIXING ZONE IS DEFINED AS THE AREA EXTENDING FROM THE INTAKE TO THE POWER PLANT DOWNSTREAM TO HIGH ROCK LAKE DAM

A. (2) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS [002]

During the period beginning on the effective date of the permit and lasting until expiration, the Permittee is authorized to discharge from outfall 002: Ash Settling Pond Discharge. Such discharges shall be limited and monitored by the Permittee as specified below:

PARAMETER	DISCHARGE LIMITATIONS		Monitoring Requirements		
	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location[1]
Flow (MGD)			Monthly	Pump Logs or similar readings	Effluent
Oil and Grease	11.0 mg/L	15.0 mg/L	Quarterly	Grab	Effluent
Total Suspended Solids[2]	23.0 mg/L	74.0 mg/L	Quarterly	Grab	Effluent
Total Copper	1.0 mg/L	1.0 mg/L	Quarterly	Grab	Effluent
Total Iron	1.0 mg/L	1.0 mg/L	Quarterly	Grab	Effluent
Total Arsenic			Quarterly	Grab	Effluent
Total Selenium			Quarterly	Grab	Effluent
Chronic Toxicity[3]			Quarterly	Grab	Effluent
Total Nitrogen (NO_2+NO_3+TKN)			Monthly	Grab	Effluent
Total Phosphorus			Monthly	Grab	Effluent
pH	≥ 6.0 and ≤ 9.0 standard units		Monthly	Grab	Effluent
Total Mercury[4]			Quarterly	Grab	Effluent

NOTES:
1. Effluent sampling shall be conducted at the discharge from the ash settling pond prior to mixing with any other waste streams.
2. A total suspended solids monthly average of 43.0 mg/L is permitted provided that the permittee can satisfactorily demonstrate that the difference between the monthly average of 23.0 mg/L and 43.0 mg/L is the result of the concentration of total suspended solids in the intake water.
3. Chronic Toxicity (Ceriodaphnia) P/F at 0.7%; March, June, September, and December; See condition A (11) of this permit.
4. Total Mercury should by analyzed by method 1631E.

THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

THE METAL CLEANING WASTE, COAL PILE RUNOFF, REMEDIATED GROUNDWATER, FLOWS FROM FLOOR DRAINS, LABORATORY FLOWS, ASH TRANSPORT WATER, DOMESTIC WASTEWATER, AND LOW VOLUME WASTES SHALL BE DISCHARGED INTO THE ASH SETTLING POND.

A. (3) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS [002A]

During the period beginning on the effective date of the permit and lasting until expiration, the Permittee is authorized to discharge from outfall 002A: Yard Sump Overflows. Such discharges shall be limited and monitored by the Permittee as specified below:

PARAMETER	DISCHARGE LIMITATIONS		Monitoring Requirements		
	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location[1]
Flow (MGD)			Episodic	Estimate	Effluent
pH	≥ 6.0 and ≤ 9.0 standard units		Episodic	Grab	Effluent
Total Suspended Solids			Episodic	Grab	Effluent
Fecal Coliform			Episodic	Grab	Effluent
Iron			See Footnote 2	Grab	Effluent

NOTES:
1. Effluent sampling shall be conducted at a point upstream of discharge to the Yadkin River.
2. Sampling for iron is required when TSS is reported as greater than 100 mg/L.

THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

All flows will be reported on monthly DMRs. Should no flow occur during a given month, the words “No Flow” should be clearly written on the front of the DMR. Episodic sampling is required per occurrence when sump overflows occur for longer than one hour. All samples shall be of a representative discharge.

A. (4) DEFINITIONS

The term "low volume waste sources" means, taken collectively as if from one source, wastewater from all sources except those for which specific limitations are otherwise established in this part. Low volume wastes sources include, but are not limited to: Wastewater from wet scrubber air pollution control systems, ion exchange water treatment system, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, and recirculating house service water systems. Sanitary and air conditioning wastes are not considered low volume wastes.

The term "metal cleaning waste" means any wastewater resulting from cleaning (with or without chemical cleaning compounds) any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning.

The term, "chemical metal cleaning waste" means any wastewater resulting from the cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning. Chemical metal cleaning will be conducted according to approved Duke Power equivalency demonstration.

A. (5) TOXICITY REOPENER CONDITION

This permit shall be modified, or revoked and reissued to incorporate toxicity limitations and monitoring requirements in the event toxicity testing or other studies conducted on the effluent or receiving stream indicate that detrimental effects may be expected in the receiving stream as a result of this discharge.

A. (6) MONITORING FREQUENCIES

If the Permittee, after monitoring for at least six months, determines that he is consistently meeting the effluent limits contained herein, the permittee may request of the Director that the monitoring requirements be reduced to a lesser frequency.

A. (7) POLYCHLORINATED BIPHENYL COMPOUNDS

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

A. (8) BIOCIDE CONDITION

The permittee shall not use any biocides except those approved in conjunction with the permit application. The permittee shall notify the Director in writing not later than ninety (90) days prior to instituting use of any additional biocide used in cooling systems which may be toxic to aquatic life other than those previously reported to the Division. Such notification shall include completion of Biocide Worksheet Form 101 and a map locating the discharge point and receiving stream. Completion of Biocide Worksheet Form 101 is not necessary for the introduction of a new biocide into an outfall currently being tested for toxicity

A. (9) INTAKE SCREEN BACKWASH

Continued intake screen backwash discharge is permitted without limitations or monitoring requirements.

A. (10) BEST MANAGEMENT PRACTICES PLAN

The Permittee shall continue to implement a Best Management Practices (BMP) Plan to control the discharge of oils and the hazardous and toxic substances listed in 40 CFR, Part 117 and Tables II and III of Appendix D to 40 CFR, Part 122, and shall maintain the Plan at the plant site and shall be available for inspection by EPA and DWQ personnel.

A. (11) CHRONIC TOXICITY PASS/FAIL PERMIT LIMIT (Quarterly)

The effluent discharge shall at no time exhibit observable inhibition of reproduction or significant mortality to *Ceriodaphnia dubia* at an effluent concentration of 0.7%.

The permit holder shall perform at a minimum, *quarterly* monitoring using test procedures outlined in the "North Carolina *Ceriodaphnia* Chronic Effluent Bioassay Procedure," Revised February 1998, or subsequent versions or "North Carolina Phase II Chronic Whole Effluent Toxicity Test Procedure" (Revised-February 1998) or subsequent versions. The tests will be performed *during the months of* March, June, September, and December. Effluent sampling for this testing shall be performed at the NPDES permitted final effluent discharge below all treatment processes.

If the test procedure performed as the first test of any single quarter results in a failure or ChV below the permit limit, then multiple-concentration testing shall be performed at a minimum, in each of the two following months as described in "North Carolina Phase II Chronic Whole Effluent Toxicity Test Procedure" (Revised-February 1998) or subsequent versions.

The chronic value for multiple concentration tests will be determined using the geometric mean of the highest concentration having no detectable impairment of reproduction or survival and the lowest concentration that does have a detectable impairment of reproduction or survival. The definition of "detectable impairment," collection methods, exposure regimes, and further statistical methods are specified in the "North Carolina Phase II Chronic Whole Effluent Toxicity Test Procedure" (Revised-February 1998) or subsequent versions.

All toxicity testing results required as part of this permit condition will be entered on the Effluent Discharge Monitoring Form (MR-1) for the months in which tests were performed, using the parameter code TGP3B for the pass/fail results and THP3B for the Chronic Value. Additionally, DWQ Form AT-3 (original) is to be sent to the following address:

Attention: NC DENR / DWQ / Environmental Sciences Section
1621 Mail Service Center
Raleigh, North Carolina 27699-1621

Completed Aquatic Toxicity Test Forms shall be filed with the Environmental Sciences Section no later than 30 days after the end of the reporting period for which the report is made.

Test data shall be complete, accurate, include all supporting chemical/physical measurements and all concentration/response data, and be certified by laboratory supervisor and ORC or approved designate signature. Total residual chlorine of the effluent toxicity sample must be measured and reported if chlorine is employed for disinfection of the waste stream.

Should there be no discharge of flow from the facility during a month in which toxicity monitoring is required, the permittee will complete the information located at the top of the aquatic toxicity (AT) test form indicating the facility name, permit number, pipe number, county, and the month/year of the report with the notation of "No Flow" in the comment area of the form. The report shall be submitted to the Environmental Sciences Branch at the address cited above.

Should the permittee fail to monitor during a month in which toxicity monitoring is required, monitoring will be required during the following month.

Should any test data from this monitoring requirement or tests performed by the North Carolina Division of Water Quality indicate potential impacts to the receiving stream, this permit may be re-opened and modified to include alternate monitoring requirements or limits.

If the Permittee monitors any pollutant more frequently then required by this permit, the results of such monitoring shall be included in the calculation & reporting of the data submitted on the DMR & all AT Forms submitted.

NOTE: Failure to achieve test conditions as specified in the cited document, such as minimum control organism survival, minimum control organism reproduction, and appropriate environmental controls, shall constitute an invalid test and will require immediate follow-up testing to be completed no later than the last day of the month following the month of the initial monitoring.

A. (12) ASH POND

Beginning on the effective date of this permit and lasting until expiration, there shall be no discharge of plant wastes to the ash pond unless the permittee provides and maintains at all times a minimum free water volume equivalent to the sum of the maximum 24-hour plant discharges plus all direct rainfall and all runoff flows to the pond resulting from a 10-year, 24-hour rainfall event, when using a runoff coefficient of 1.0.

During the term of the permit, the permittee shall remove settled material from the ponds or otherwise enlarge the available storage capacities in order to maintain the required minimum volumes at all times. Annually the permittee shall determine and report to the permit issuing authority: (1) the actual free water volume of the ash pond, (2) physical measurements of the dimensions of the free water volume in sufficient detail to allow validation of the calculated volume, and (3) a certification that the required volume is available with adequate safety factor to include all solids expected to be deposited in the ponds for the following year. Any changes to plant operations affecting such certification shall be reported to the Director within five days.

NOTE: In the event that adequate volume has been certified to exist for the term of the permit, periodic certification is not needed.

A. (13) CHEMICAL METAL CLEANING WASTES

It has been demonstrated that under certain conditions it is possible to reduce the concentration of metals in boiler cleaning wastes in the range of 92 to 99+ percent by treatment in ash ponds. Because of dilution problems, and the existence of boundary interface layers at the extremities of the plume, it is difficult to prove beyond doubt that the quantity of iron and copper discharged will always be less than one milligram per liter times the flow of metal cleaning when treated in this manner.

The application of physical/chemical methods of treating wastes has also been demonstrated to be effective in the treatment of metal cleaning wastes. However, the effectiveness of ash pond treatment should be considered in relation to the small differences in effluent quality realized between the two methods.

It has been demonstrated that the presence of ions of copper, iron, nickel, and zinc in the ash pond waters was not measurably increased during the ash pond equivalency demonstration at the Duke Power Company's Riverbend Steam Station. Therefore, when the following conditions are implemented during metal cleaning procedures, effective treatment for metals can be obtained at this facility:

(1) Large ash basin providing potential reaction volumes.
(2) Well-defined shallow ash delta near the ash basin influent.
(3) Ash pond pH of no less than 6.5 prior to metal cleaning waste addition.
(4) Four days retention time in ash pond with effluent virtually stopped.
(5) Boiler volume less than 86,000 gallons.
(6) Chemicals for cleaning to include only one or more of the following:
    (a) Copper removal step- sodium bromate, $NaBrO_3$; ammonium carbonate, $(NH_4)2CO_3$; and ammonium hydroxide, NH_4OH.
    (b) Iron removal step-hydrochloric acid, HCl; and ammonium bifluoride, $(NH_4)BF_2$ and proprietary inhibitors.
(7) Maximum dilution of wastes before entering ash pond 6 to 1.
(8) After treatment of metal cleaning wastes, if monitoring of basin effluents as required by the permit reveals discharges outside the limits of the permit. permittee will re-close the basin discharge, conduct such in-basin sampling as necessary to determine the cause of nonconformance, will take appropriate corrective actions, and will file a report with EPA including all pertinent data.

A. (14) FLOATING MATERIALS

The Permittee shall report all visible discharges of floating materials, such as an oil sheen, to the Director when submitting DMRs.

A. (15) CHEMICAL DISCHARGES

Discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act to any waste stream which may ultimately be released to lakes, rivers, streams or other waters of the United States is prohibited unless specifically authorized elsewhere in this permit. Discharge of chlorine from the use of chlorine gas, sodium hypochlorite, or other similar chlorination compounds for disinfection in plant potable and service water systems and in sewage treatment is authorized. Use of restricted use pesticides for lake management purposes by applicators licensed by the N.C. Pesticide Board is allowed.

A. (16) WAIVERS

Nothing contained in this permit shall be construed as a waiver by permittee or any right to a hearing it may have pursuant to State or Federal laws or regulations.

A. (17) GRONDWATER MONITORING WELL CONSTRUCTION AND SAMPLING

The permittee shall conduct groundwater monitoring to determine the compliance of this NPDES permitted facility with the current groundwater Standards found under 15A NCAC 2L .0200. The monitoring shall be conducted in accordance with the Sampling Plan approved by the Division.

A. (18) SECTION 316(B) OF CWA

The permittee shall comply with the Cooling Water Intake Structure Rule per 40 CFR 125.95.

A. (19) STRUCTURAL INTEGRITY INSPECTIONS OF ASH POND DAM

The facility shall meet the dam design and dam safety requirements per 15A NCAC 2K.

A. (20) ASH POND CLOSURE

The facility shall prepare an Ash Pond Closure Plan in anticipation of the facility closure. This Plan shall be submitted to the Division one year prior to the closure of the facility.

A. (21) FISH TISSUE MONITORING NEAR ASH POND DISCHARGE

The facility shall conduct fish tissue monitoring once during the permit term and submit the results with the NPDES permit renewal application. The objective of the monitoring is to evaluate potential uptake of pollutants by fish tissue near the Ash Pond discharge. The parameters analyzed in fish tissue shall be arsenic, selenium, and mercury. The monitoring shall be conducted in accordance with the Sampling Plan approved by the Division.

A. (22) SECTION 316 (A) THERMAL VARIANCE

The thermal variance granted under Section 316(a) terminates on expiration of the NPDES permit. Should the permittee wish a continuation of its 316(a) thermal variance beyond the term of this permit, reapplication for such continuation shall be submitted in accordance with 40 CFR Part 125, Subpart H and Section 122.21(1)(6) not later than 180 days prior to permit expiration. Reapplication shall include a basis for continuation such as a) plant operating conditions and load factors are unchanged and are expected to remain so for the term of the reissued permit; b) there are no changes to plant discharges or other discharges in the plant site area which could interact with the thermal discharges; and c) there are no changes to the biotic community of the receiving waterbody which would impact the previous variance determination.

The next 316 (a) studies shall be performed in accordance with the Division of Water Quality approved plan. The temperature analysis and the balanced and indigenous study plan shall conform to the specifications outlined in 40 CFR 125 Subpart H and the EPA's Draft 316a Guidance Manual, dated 1977.