DUKE ENERGY.
PROGRESS

L. V. Sutton Energy Complex
801 Sutton Steam Plant Rd
Wilmington, NC 28401

o: 910.341.4750
f: 910.341.4790

July 28, 2014

Via FedEx
Mr. Jeffrey O. Poupart
NCDENR-DWR, Wastewater Branch
1617 Mail Service Center
Raleigh, NC 27699-1617

Subject: Duke Energy Progress, Inc.
L. V. Sutton Energy Complex NPDES Permit NC0001422
Application Update in Response to NCDENR Notice of Modification

Dear Mr. Poupart:

Duke Energy Progress (DEP) hereby provides this update to the NPDES permit application in response to DENR's Notice of Modification dated March 14, 2014. This application update reflects current operations at the L. V. Sutton Electric Plant, New Hanover County.

Enclosed are copies of the affected pages of EPA Forms 1 and 2C, with attachments, that have changed since our last NPDES permit became effective in January 2012. Specifically, the following modified pages are included:

- EPA Form 1;
- EPA Form 2C, pages 1-4;
- Site map showing the location of all outfalls (internal and final);
- An updated flow chart and description of waste flows (Form 2C Attachment 2- Item II-A, page A2-1 through A2-3);
- An updated narrative description of sources of pollution and treatment technologies (Form 2C Attachment 3 Item II-B, pages A3-1 through A3-4);
- An updated list of potential items not covered by analysis (Form 2C Attachment 4 Item VI pages A4-1 through A4-3).
- There are no discharge of categorical storm water to waters of the State.

With reissuance, DEP requests the following modifications:

1. Please clarify the last sentence of the Biocide Condition A(13) to state "Division notification and completion of a Biocide Worksheet 101 is not necessary for the introduction of a new biocide into an outfall currently being tested for toxicity."

2. Low volume wastewaters from west retention basin will be directed to the cooling pond via new internal outfall 007. The cooling pond will continue to serve as water supply and discharge point for the recirculated condenser cooling water. The existing Outfall 001, from the cooling pond to the Cape Fear River, will continue to be the only discharge to surface water.

3. While DEP understands that the limits for Arsenic and Selenium at outfall 001 are no longer in effect since the coal fired generation has ceased, we request that this be clarified by removing those limits from the effluent page altogether.

4. DEP anticipates that discharges from the cooling pond in the future will be intermittent, on an as-needed basis for operational reasons, or to increase available freeboard in anticipation of a severe weather event. Therefore we request that frequency for the acute toxicity testing requirement be changed to episodic.

Thank you, in advance for your consideration of the above-requested items. If there are any questions, please contact either:

- Ms. Toya Ogallo, Environmental Specialist at our North Carolina Regional Headquarters, phone (919) 546-6647 or email Letoya.Ogallo@duke-energy.com, or
- Mr. Kent Tyndall, Environmental Professional for the L. V. Sutton Energy Complex Plant; phone (910) 341-4775 or e-mail Kent.Tyndall@duke-energy.com.

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Sincerely,

Allen A. Clare
Station Manager

Enclosures

cc: Kent Tyndall
Toya Ogallo

FedEx to

Mr. Jeffrey O. Poupart
NCDENR-DWR, Wastewater Branch
512 N. Salisbury Street
Raleigh, NC 27604
Phone: (919) 807-6309

Please print or type in the unshaded areas only.

Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: S F NCD000830646 T/A C D

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms**.

SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)		X	
B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)		X	
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	X		X
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)		X	
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	
J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP: L. V. Sutton Energy Complex

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*: 2 Tyndall, Kent, Environmental Professional

B. PHONE *(area code & no.)*: (910) 341-4775

V. FACILTY MAILING ADDRESS

A. STREET OR P.O. BOX: 3 801 Sutton Steam Plant Road

B. CITY OR TOWN: 4 Wilmington

C. STATE: NC

D. ZIP CODE: 28401

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 5 801 Sutton Steam Plant Road

B. COUNTY NAME: New Hanover

C. CITY OR TOWN: 6 Wilmington

D. STATE: NC

E. ZIP CODE: 28401

F. COUNTY CODE *(if known)*: 129

CONTINUED FROM THE FRONT

VII. SIC CODES *(4-digit, in order of priority)*

A. FIRST	B. SECOND
4911 (specify) Electric Power Services	(specify)
C. THIRD	**D. FOURTH**
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME: Duke Energy Progress, Inc.

B. Is the name listed in Item VIII-A also the owner? ☑ YES ☐ NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box: if "Other," specify.)*

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

P (specify) Public Utility

D. PHONE *(area code & no.)*: A (910) 341-4775

E. STREET OR P.O. BOX: 801 Sutton Steam Plant Road

F. CITY OR TOWN	G. STATE	H. ZIP CODE	IX. INDIAN LAND
Wilmington	NC	28401	Is the facility located on Indian lands? ☐ YES ☑ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES *(Discharges to Surface Water)*	D. PSD *(Air Emissions from Proposed Sources)*
N NC0001422	P
B. UIC *(Underground Injection of Fluids)*	**E. OTHER** *(specify)*
U	WQ0000020 (specify) NC Ash Utilization
C. RCRA *(Hazardous Wastes)*	**E. OTHER** *(specify)*
R NCD000830646	165-88 (specify) CAMA Permit for intake structure

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements. (Attachment 1)

XII. NATURE OF BUSINESS *(provide a brief description)*

The L. V. Sutton Plant is an electric generating facility consisting of three simple-cycle internal combustion turbine (CT) units and a natural gas-fired 2x1 Combined Cycle (CC) combustion turbine unit. Until November 2013, the plant also operated three coal-fired electric generating units, however those units have been decomissioned and are currently being demolished.

XIII. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED
Allen A. Clare Station Manager	Allen A. Clare	7/28/14

COMMENTS FOR OFFICIAL USE ONLY

Please print or type in the unshaded areas only.

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)
NCD000830646

Form Approved.
OMB No. 2040-0086.
Approval expires 3-31-98.

FORM 2C NPDES

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURE OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (*list*)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (*name*)
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	
001	34	16	57	77	59	20	Cape Fear River

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (*e.g., for certain mining activities*), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO. (*list*)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (*list*)	b. AVERAGE FLOW (*include units*)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001 (Coal Units)	Cooling Pond discharge	0 MGD	Discharge to surface waters	4-A	
	Recirculated cooling water	0 MGD	Evaporation, recycle (4-C)	1-F	
	Non-contact cooling service water	0 MGD	Evaporation, recycle (4-C)	1-F	
	Ash pond discharges	0 MGD	Sedimentation, neutralization, recycle (4-C)	1-U	2-K
	Intake screen wash	0 MGD	Sedimentation, neutralization, recycle (4-C)	1-U	2-K
	Low volume wastes (e.g., plant	0.35 MGD	Sedimentation, neutralization, recycle (4-C),	1-U	2-K
	drains, boiler blowdown, water		oxidation, precipitation, and	2-B	2-C
	treatment wastes)		sorption, reduction	1-X	2-L
	Storm water (exempt)	0.08 MGD	Sedimentation, sorption, recycle (4-C)	1-U	1-X
	Coal pile runoff	0.2 MGD	Sedimentation, neutralization, recycle (4-C)	1-U	2-K
001 (CC Block)	Cooling Pond discharge	0-380 MGD (estimated) *	Discharge to surface waters	4A	
	Recirculated cooling water	288 MGD (estimated)	Evaporation, recycle (4-C)	1-F	
	Storm water (exempt)	0.04 MGD (estimated)	Sedimentation, sorption, recycle (4-C)	1-U	1-X
	Low volume wastes (e.g., filter	0.96 MGD	Sedimentation, neutralization, recycle (4-C),	1-U	2-K
	plant wastewater and backwash,		oxidation, precipitation, and	2-B	2-C
	WSAC blowdown, HRSG blowdown,		sorption, reduction	1-X	2-L
	plant drains, equipment drains)				
	* No discharge since 11/5/13				
	See Attachment 2 for line drawing showing the water flow through the facility.				
	See Attachment 3 for additional descriptions of contributing flows.				

OFFICIAL USE ONLY (*effluent guidelines sub-categories*)

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☑ YES (*complete the following table*) ☐ NO (*go to Section III*)

1. OUTFALL NUMBER (*list*)	2. OPERATION(s) CONTRIBUTING FLOW (*list*)	3. FREQUENCY a. DAYS PER WEEK (*specify average*)	3. FREQUENCY b. MONTHS PER YEAR (*specify average*)	4. FLOW a. FLOW RATE (*in mgd*) 1. LONG TERM AVERAGE	4. FLOW a. FLOW RATE (*in mgd*) 2. MAXIMUM DAILY	4. FLOW B. TOTAL VOLUME (*specify with units*) 1. LONG TERM AVERAGE	4. FLOW B. TOTAL VOLUME (*specify with units*) 2. MAXIMUM DAILY	4. FLOW C. DURATION (*in days*)
001 (coal units)	Cooling Pond (Historic 2013 coal-fired operations)	4	11	17.61	27.6	3574 MG	5602 MG	203
001 (CC Units)	Cooling Pond (The Cooling Pond has not discharged since 11/5/13. In the future, the discharge is expected to be seasonal, with wastewater primarily being released to increase available freeboard in preparation for severe rain events)	0-5 (est)	0-2 (est)	0	0	0	0	0-30 (est)

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☑ YES (*complete Item III-B*) ☐ NO (*go to Section IV*)

B. Are the limitations in the applicable effluent guideline expressed in terms of production (*or other measure of operation*)?

☐ YES (*complete Item III-C*) ☑ NO (*go to Section IV*)

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (*specify*)	2. AFFECTED OUTFALLS (*list outfall numbers*)
NA			

IV. IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operations of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ YES (*complete the following table*) ☑ NO (*go to Item IV-B*)

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS a. NO.	2. AFFECTED OUTFALLS b. SOURCE OF DISCHARGE	3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE a. REQUIRED	4. FINAL COMPLIANCE DATE b. PROJECTED
NA					

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (*or other environmental projects which may affect your discharges*) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☐ MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)
NCD000830646

CONTINUED FROM PAGE 2

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding – Complete one set of tables for each outfall – Annotate the outfall number in the space provided.
NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
Retired Coal Units			
Strontium	Occasionally found in coal		
Uranium	Occasionally found in coal		
Vanadium	Occasionally found in coal		
Zirconium	Occasionally found in coal		
Asbestos	Used in insulation		
CC Block			
None			

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☑ YES (*list all such pollutants below*) ☐ NO (*go to Item VI-B*)

Retired Coal Units
- Antimony
- Arsenic
- Beryllium
- Cadmium
- Copper
- Lead
- Mercury
- Nickel
- Selenium
- Silver
- Thallium
- Zinc

CC Block
- None

See Attachment 4 for other substances used during operational processes or at the plant that potentially may be discharged.

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VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☑ YES (*identify the test(s) and describe their purposes below*) ☐ NO (*go to Section VIII*)

24-hour static acute toxicity tests using fathead minnows are conducted quarterly on the wastewater discharge from Outfall 001. The facility has passed all toxicity tests.

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

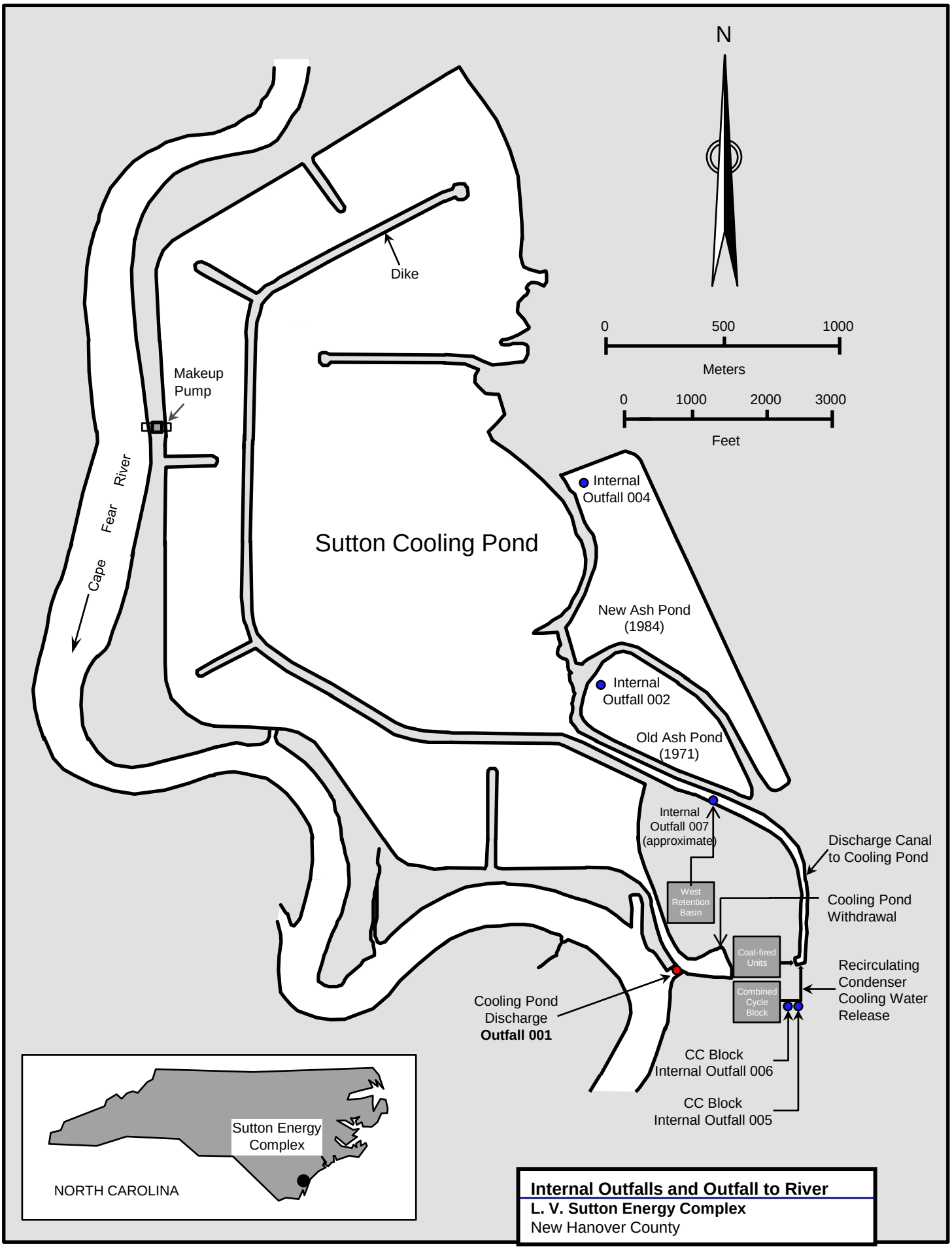
☐ YES (*list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below*) ☑ NO (*go to Section IX*)

A. NAME	B. ADDRESS	C. TELEPHONE (*area code & no.*)	D. POLLUTANTS ANALYZED (*list*)
NA			

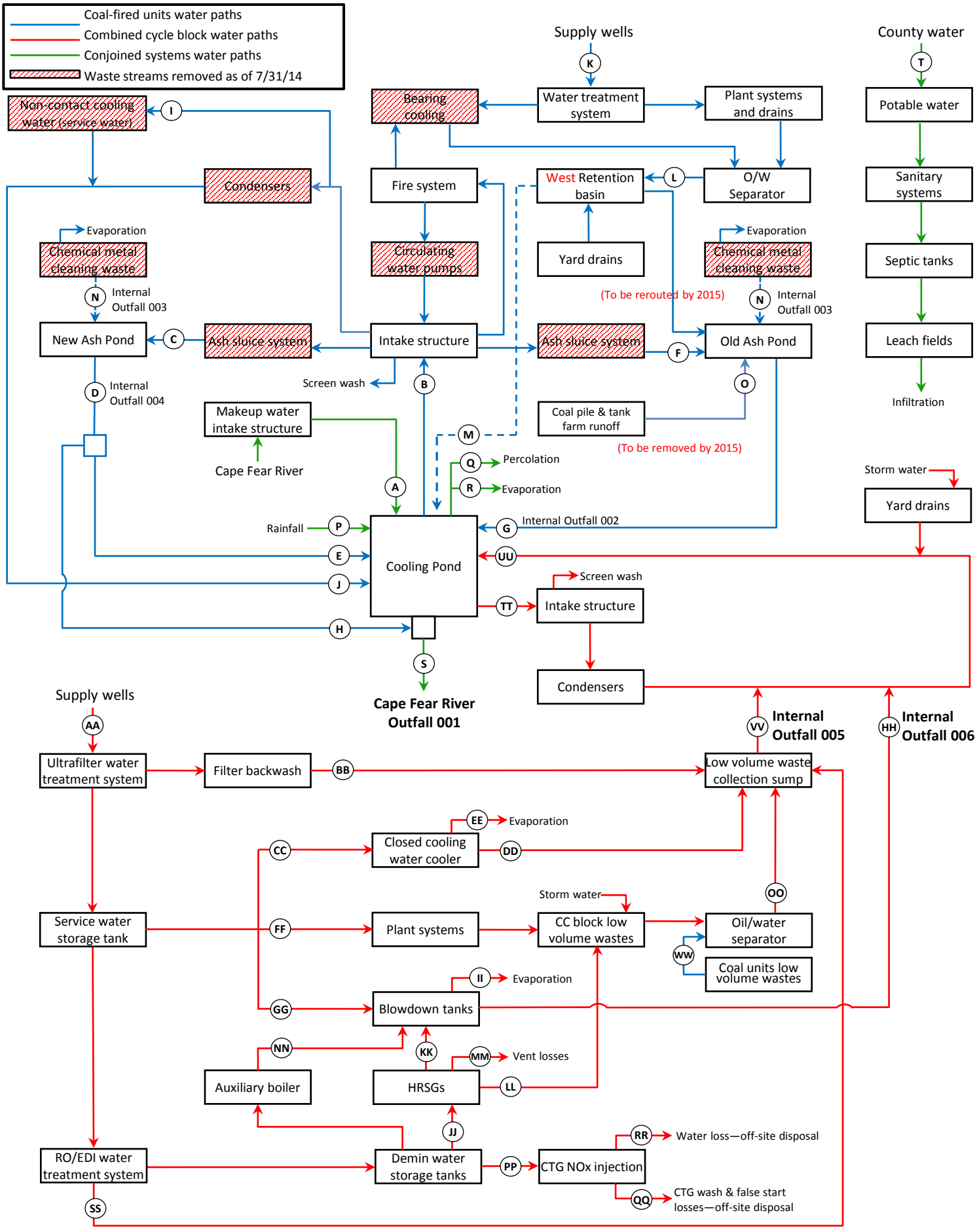
IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE (*type or print*)	B. PHONE NO. (*area code & no.*)
Allen A. Clare, Station Manager	(910) 341-4750
C. SIGNATURE 	D. DATE SIGNED 7/28/14



Internal Outfalls and Outfall to River
L. V. Sutton Energy Complex
New Hanover County


Coal-fired units water paths
Combined cycle block water paths
Conjoined systems water paths
Waste streams removed as of 7/31/14
Supply wells
County water
Non-contact cooling water (service water)
Bearing cooling
Water treatment system
Plant systems and drains
Potable water
Condensers
Fire system
West Retention basin
O/W Separator
Sanitary systems
Evaporation
Chemical metal cleaning waste
Circulating water pumps
Yard drains
Septic tanks
(To be rerouted by 2015)
Internal Outfall 003
New Ash Pond
Ash sluice system
Intake structure
Old Ash Pond
Leach fields
Internal Outfall 004
Screen wash
Infiltration
Makeup water intake structure
Coal pile & tank farm runoff
Cape Fear River
(To be removed by 2015)
Percolation
Evaporation
Storm water
Rainfall
Internal Outfall 002
Cooling Pond
Screen wash
Condensers
Cape Fear River Outfall 001
Internal Outfall 005
Internal Outfall 006
Ultrafilter water treatment system
Filter backwash
Low volume waste collection sump
Closed cooling water cooler
Service water storage tank
Plant systems
CC block low volume wastes
Oil/water separator
Coal units low volume wastes
Blowdown tanks
Auxiliary boiler
HRSGs
Vent losses
RO/EDI water treatment system
Demin water storage tanks
CTG NOx injection
Water loss—off-site disposal
CTG wash & false start losses—off-site disposal

Attachment 2

Form 2C - Item II-A Flow, Sources of Pollution, and Treatment Technologies

Water Path[1]	Average Flow[2] (MGD)	Flow Comments
A	49	Maximum river water makeup to cooling pond (intermittent)
B	0	Water intake for the coal-fired units
C	0	Ash sluice water routed to new ash pond—variable 0–7 MGD
D	0	**Internal Outfall 004**—Ash sluice water from new ash pond—variable 2–7 MGD (optionally routed to Outfall 001, cooling pond, or old ash pond)
E	0	Discharge from new ash pond to cooling pond— variable 0–6.5 MGD
F	0	Ash sluice water routed to old ash pond—variable 0–7 MGD
G	0	**Internal Outfall 002**—Discharge from old ash pond to cooling pond—variable 0–7 MGD
H	0	Alternate discharge to Outfall 001—variable 0-3 MGD
I	0	Non-contact cooling water (service water) for coal-fired units
J	0	Heated water discharge from coal units condensers to cooling pond
K	0	Supply well water withdrawal for coal-fired units
L	0.17	Low volume waste waters from coal-fired units (estimated)
M	0.18	**Internal Outfall 007** - Maximum flow from the west retention basin . This waste stream is expected to be re-routed from the old (1971) ash pond in 2015.
N	0	**Internal Outfall 003**—Chemical metal cleaning wastes were historically disposed of by evaporation in the boilers; Outfall 003 was an alternate for discharging into an ash pond . These wastes are no longer generated since the retirement of the coal-fired units.
O	0.11	Coal pile and tank farm area runoff—estimated 80 dpy (expected to be eliminated by 2015)
P	20.4	Rainfall on the cooling pond—estimated 80 dpy
Q	10	Percolation from the cooling pond—estimated
R	1.5	Evaporation from the cooling pond—estimated
S	0 (Coal units); 12 (CC block)	**Outfall 001**—Discharge from cooling pond to the Cape Fear River—variable 0–380 MGD
T	0.0 (Coal units); 0.002 (CC block)	County water for potable water and sanitary systems
AA	0.67	Supply well water withdrawal for the combined cycle power block

Water Path[1]	Average Flow[2] (MGD)	Flow Comments
BB	0.07	Water treatment filter backwash to Internal Outfall 005 via low volume waste collection sump
CC	0.29	Service water to the Closed Cooling Water Cooler (CCWC)
DD	0.14	Closed cooling water cooler blowdown discharge to Internal Outfall 005 via low volume waste collection sump
EE	0.14	Closed cooling water cooler evaporation and drift losses
FF	0.007	Service water for combined cycle power block plant systems
GG	0.11	Service water to blowdown tanks
HH	0.130	**Internal Outfall 006**—Heat recovery steam generators blowdown tank discharge to the cooling pond (actual monthly avge since Nov 2013)
II	0.033	Blowdown tank flash evaporation
JJ	0.12	Demineralized water to Heat Recovery Steam Generators (HRSGs)
KK	0.088	Heat recovery steam generators blowdown
LL	variable	Heat recovery steam generators cleaning wastes
MM	0.023	Heat recovery steam generators vent losses
NN	0-0.02	Auxiliary boiler blowdown
OO	0.3	Oil/water separator discharge to Internal Outfall 005 via low volume waste collection sump
PP	0.25	Demineralized water to Combined Turbine Generator (CTG) NOx injection system
QQ	0.003	Combustion turbine generator wash water and false start losses
RR	0.25	Combustion turbine generator NOx injection system water losses
SS	0.127	Reverse Osmosis (RO) and Electrodeionization (EDI) water treatment system reject water to Internal Outfall 005 via low volume waste collection sump
TT	288	Combined cycle power block recirculated condenser cooling water withdrawal from the cooling pond
UU	288	Combined cycle power block recirculated condenser heated water discharge to the cooling pond
VV	0.64	**Internal Outfall 005**—Combined cycle power block wastewater discharge to the cooling pond (actual monthly avg since Nov 2013)
WW	0.29	Low volume wastes from coal-fired units

[1]Water path color indication:
Blue = Coal-fired units water paths
Red = Combined cycle power block water paths

Green = Conjoined systems water paths

[2]Average flow values for the combined cycle power block are estimated based on proposed plant design.

Attachment 3

Form 2C - Item II-B Flow, Sources of Pollution, and Treatment Technologies

The L. V. Sutton Electric Plant has three simple-cycle Internal Combustion (IC) turbine units and a natural gas-fired 2x1 Combined Cycle (CC) combustion turbine. Prior to November 2013, the plant operated three coal-fired generating units. These units were retired once the CC block came online and are currently being prepared for demolition. The plant has a 1,110-acre (6,900 acre-ft) wastewater cooling pond on the east side of the Cape Fear River approximately ten river miles upstream of Wilmington, North Carolina. Water is withdrawn from the Cape Fear River, as required, to makeup evaporative and blowdown losses from the cooling pond.

Chemical constituents contained in the discharge from the permitted outfall will, in part, be representative of the naturally-occurring chemical quality and quantity of the intake water and will also have chemical constituents of such quality associated with similar discharges for fossil generating facilities of this size, type, and in this geographical location. Either all or part of the elements in the Periodic Table, either singularly or in any combination, may from time to time be contained in the discharge.

The Sutton Plant currently has one permitted outfall to the Cape Fear River, discharges from the cooling pond (Outfall 001) which receives all combined wastewaters. This outfall will remain the only permitted final outfall.

Recirculated Condenser Cooling Water

The condenser cooling water for the CC block is withdrawn from and discharged to the cooling pond. The heated discharge is routed around baffle dikes within the cooling pond to achieve maximum surface cooling efficiency and before being recirculated through the condenser cooling water intake structure. Evaporation, which is estimated to consume approximately 1.5 MGD above natural evaporation rates during times of full operation, effectively cools the heated water discharge. Biological fouling control agents are used on heat exchanger surfaces.

Non-contact Cooling Water

Non-contact cooling water is also withdrawn from and returned to the cooling pond. This water provides indirect cooling for various equipment by absorbing heat as it passes through a heat exchanger. No direct contact is made with any other equipment or process.

Coal Pile Runoff

Storm water runoff from the coal pile is routed to the old ash pond (1971 pond), which provides neutralization and sedimentation treatment. During maintenance activities, sludge removed from catch basins, sumps, etc. may be transported to the old and/or new ash pond (1984 pond) for disposal. This waste stream will cease when all material is removed from the coal pile area and final grading has been achieved in accordance with the NCDENR-approved Erosion and Sedimentation Control Plan.

Storm Water Runoff

Exempt storm water runoff from around the coal-fired units including parking lots, switchyard, and the IC Turbine area is collected in yard drains which flow to the cooling pond. All other yard and plant drains from the retired coal-fired units, are routed to the west retention basin, and pumped from there to the ash ponds for treatment. In 2015 the discharge from the west retention basin will be routed directly to the heated water canal (see section on Low-Volume Wastes). During certain extreme storm events (e.g., 25-year, 24-hour), storm water may inundate areas around the plant site and accumulate beyond design capacity. Storm water collected during these conditions may be pumped directly to the cooling pond or to the surrounding landscape.

During maintenance activities, sludge removed from catch basins, sumps, etc. may be transported to the old and/or new ash pond for disposal from the existing plant.

Exempt storm water runoff from the combined cycle powerblock area is collected in yard drains or other collection measures which flow to one of the storm water basins before discharging into the cooling pond. Drains from the CC block which may contain oil and grease are routed to an oil/water separator before discharging into the cooling pond via Internal Outfall 005. During certain extreme storm events (e.g., 25-year, 24-hour), storm water may inundate areas around the plant site and accumulate beyond design capacity. Storm water collected during these conditions may be released directly to the cooling pond or to the surrounding landscape. During maintenance activities, sludge removed from basins, sumps, etc. will be transported off-site for proper disposal.

Ash Pond Discharge

Effluent from the new ash pond can be discharged to either the cooling pond or to the Cape Fear River. When the effluent from the new ash pond is routed to the Cape Fear River, up to approximately 4.0 MGD will still be discharged to the cooling pond. Effluent from the old ash pond discharges to the cooling pond. The ash ponds have not discharged since November 2013. As the water in the ash pond lowers, additional treatment may be brought onsite to ensure the ash pond discharge maintains compliance with NPDES permitted limits, such as a portable filtration unit.

Cooling Pond Discharge

Discharges via Outfall 001 from the cooling pond to the Cape Fear River occur on an intermittent basis. This outfall will continue to be the sole discharge of wastewater to the Cape Fear River with the operation of the new combined cycle power block. Under current operations, the cooling pond is not expected to discharge except for maintenance purposes or in anticipation of an extreme weather event, such as a hurricane, when additional freeboard is needed to prevent overtopping of the pond dikes.

Domestic Wastes

Sanitary wastes are treated by an onsite septic tank and drainage field that is permitted by the New Hanover County Health Department. The septage is exempt from the 40 CFR 503 standards. Duke Energy Progress, Inc. will submit appropriate information to the EPA if required.

Low-Volume Wastes

All waste streams not identified above are categorized as low-volume wastes. These wastes include plant drains, which convey miscellaneous equipment leakage, equipment drainage for maintenance, equipment washdown water, sampling streams, service water system blowdown, and water treatment wastes. Any of the chemical additives disclosed in Attachment 4 may be present in Low Volume Wastes.

Coal-fired Units

The coal-fired units were decommissioned in November 2013. Upon retirement of the coal fired units, waste streams from processes which historically went to the ash pond are either no longer generated or will be redirected to the west retention basin until closure is complete, or properly disposed of off-site. Waste streams from closure activities associated with the coal-fired unit may be sent to the retention basin until closure is complete. These waste streams could include wash waters from various components that would be expected to contain coal-combustion residuals. More detail on these specific low volume waste streams are provided below. The discharge from the west retention basin will be redirected from the New (1984) Ash pond to the heated water discharge canal via internal Outfall 007.

Process water used in the coal-fired units was treated prior to use by an ion-exchange demineralizer which was periodically regenerated with solutions of sodium chloride, sodium hydroxide, and sulfuric acid. Alternatively a vendor was be used to provide treatment of plant process water.

Blowdown of boiler water to control boiler chemistry was routed through low-volume prior to discharge in the ash pond. Boiler vacuuming sediment was routed through low-volume prior to discharge to the ash ponds. The precipitators were water washed approximately every 1 to 3 years with the wastewater discharging to the ash pond.

Drains from areas likely to contain oil-filled equipment or storage were routed through an oil-water separator with the effluent routed through low volume prior to discharge to the ash pond. Waste oil is disposed of according to the appropriate regulations.

During maintenance activities, sludges removed from catch basins, sumps, etc. may be transported to the old and/or new ash pond for disposal.

Laboratory processes produce small amounts of wastewater which were routed to plant drains.

Wash/rinse wastewater from an on-site washing machine was also routed to plant drains. Drains may also convey equipment and machinery wash-down and other miscellaneous facility housekeeping and maintenance activities. All low volume wastes described above are routed by gravity flows to the retention basin at the plant and then to the ash ponds for treatment by neutralization, sedimentation, oxidation, and absorption.

The air pre-heaters and electrostatic precipitators were water washed approximately every one to three years with the wastewater discharging to the ash pond via the ash sluice lines.

Combined Cycle Power Block

Process wastewaters generated in the natural gas combined cycle block will be discharged to the cooling pond via two new internal outfalls. Low volume wastewaters including the ultrafilter water treatment system filter backwash, Closed Cooling Water Cooler (CCWC) blowdown, Reverse Osmosis/Electrodeionization (RO/EDI) system reject wastewater, and other wastewaters entering the oil/water separator are directed to the low volume waste collection sump for discharge to the cooling pond via Internal Outfall 005. Low volume wastewaters including the Heat Recovery Steam Generator (HRSG) blowdown and auxiliary boiler blowdown will be discharged to the cooling pond via Internal Outfall 006.

Incidental leaks associated with the operation of the HRSG, Combustion Turbine Generators (CTGs), RO/EDI system, and infrequent draining and cleaning of various processes may generate wastewater that is captured by Internal Outfall 005. During the initial startup phase, HRSG blowdown of up to 1.5 MGD may be released to Outfall 006 for several days.

Wastewater from routine HRSG cleaning, fuel oil/water condensate, and equipment drains potentially containing oil is directed to plant drains which are treated by the oil/water separator. The combustion turbine false start drains, NOx injection, and compressor waste water is directed to a holding tank and transported off-site. For a more extensive cleaning, the HRSGs may require flushing with a large volume of water. The wastewater from this flushing would be discharged via Internal Outfall 005 to the cooling pond or taken off-site.

Various equipment, including fuel oil storage tanks, transformers, lube oil filters, etc. have containment areas for spills. Storm water collected in these areas is visually inspected for the presence of oil prior to release to the ground or released to plant drains which flow to the oil/water separator.

Laboratory processes produce small amounts of wastewater which are routed to plant drains. Wash/rinse wastewater from an on-site washing machine is also routed to plant drains.

Chemical Metal Cleaning Wastes

Chemical metal cleaning wastes were formerly generated during chemical boiler cleaning every 5 to 10 years. The cleaning solution and rinses were stored on site for disposal by evaporation in the boilers. If chemical metal cleaning wastes were not evaporated, they were either treated by neutralization and precipitation in retention basin prior to discharge to the ash ponds, or disposed of off-site. These wastes will no longer be generated with the retirement of the coal-fired units..

Fire Water System

Several plant heat exchangers are cooled by the fire water system.

Ash Reclamation

In the event a practicable market becomes availableDuke Energy Progress, Inc., may exercise the option of reclaiming ash from the ash ponds. However, due to the limited scope of such an operation no additional discharges would be expected.

Inactive Hazardous Waste Sites List Areas

A former ash disposal area and the old ash pond were listed on the State's Inactive Hazardous Waste Sites List.

Pesticide Usage in Sutton Cooling Pond

Herbicides are used when needed to control nuisance aquatic vegetation. These herbicides are applied by licensed applicators, or persons under the immediate supervision of a licensed applicator, in accordance with the manufacturer's instructions. Pesticides are used when needed to perform biological assessments of fish populations. These pesticides are applied by licensed applicators, or persons under the immediate supervision of a licensed applicator, in accordance with the manufacturer's instructions.

Attachment 4

Form 2C - Item VI Potential Discharges Not Covered by Analysis

Chemical	Estimated Quantity (per year)	Frequency	Purpose
Coal-fired Units *Listed chemicals for the coal-fired units are no longer being utilized for the purposes identified below. However, they were used during historic operations and trace amounts have the potential to be discharged during plant demolition.*			
Hydrazine	Trace	Not actively used	Oxygen scavenger in boiler
Ammonia	Trace	Not actively used	pH control in boiler
Phosphate	Trace	Not actively used	pH control in boiler
Sodium hydroxide (50%)	Trace	Not actively used	Demineralizer regeneration
Sodium hydroxide (50%)	Trace	Not actively used	Ash pond pH control
Sulfuric acid (93%)	Trace	Not actively used	Ash pond pH control
Alum	Trace	Not actively used	Ash pond total suspended solids control
EcoGreen Barrier	Trace	As needed	Ash pond fugitive dust suppressant
BioCover	Trace	As needed	Ash pond fugitive dust suppressant
Gorilla Snot	Trace	As needed	Ash pond fugitive dust suppressant
Sulfuric acid (93%)	Trace	Not actively used	Demineralizer regeneration
Sodium chloride	Trace	Not actively used	Water softener regeneration
Bromine/Chlorine [Biotrol 88P (1-bromo-3-chloro-5,5-dimethylhydantoin)]	Trace	Not actively used	Control of biofouling on heat exchangers
Sodium hypochlorite	Trace	Not actively used	Control of biofouling on heat exchangers
Sodium molybdate and sodium nitrate	Trace	Not actively used	Corrosion control in cooling water system
Cleaner (sodium hydroxide, metasilicate, and ethlenediaminetetraacetic acid)	Trace	Not actively used	Cleaner
Ethylene glycol	Trace	Not actively used	Equipment freeze protection
Urea	Trace	Not actively used	NO_x Control
Citric Acid (50%)	Trace	Not actively used	Boiler cleaning
Ammonium hydroxide	Trace	Not actively used	Boiler cleaning
Cronex Inhibitor	Trace	Not actively used	Boiler cleaning

Chemical	Estimated Quantity (per year)	Frequency	Purpose
Sodium nitrite	Trace	Not actively used	Boiler cleaning
Ammonium bicarbonate	Trace	Not actively used	Boiler cleaning
Citric Acid – dry	Trace	Not actively used	Boiler cleaning
Tetraammonium ethylenediaminetetraacetic (EDTA), and ammonium hydroxide	Trace	Not actively used	Boiler cleaning
AP 1000	Trace	Not actively used	Boiler cleaning
Low hazard corrosion inhibitor	Trace	Not actively used	Boiler cleaning
Silicone antifoam agent	Trace	Not actively used	Boiler cleaning
Antifoam agent	Trace	Not actively used	Boiler cleaning
Liquid oxygen	Trace	Not actively used	Boiler cleaning
Powerback Premix with anti-foam agent	Trace	Not actively used	IC unit cleaning
Freeze control products (i.e., varying solutions of glycol, calcium chloride, glycerin, diethylene, etc.)	Trace	Not actively used	Coal freeze conditioning agent
Combined Cycle Power Block			
Hydrazine	< 8000 gallons	Continuous	Steam cycle oxygen scavenger
Amine/ammonia	< 8000 gallons	Continuous	Steam cycle pH control
Phosphate	< 8000 gallons	Continuous	Steam cycle scale and pH control
Corrosion inhibitor	< 8000 gallons	Continuous	Cooling water system corrosion inhibitor
Sodium hypochlorite or sodium bromide	< 8000 gallons	Continuous	Cooling water system biofouling control
Mineral dispersant	< 8000 gallons	Continuous	Cooling water system scale inhibitor
Sulfuric acid	< 8000 gallons	Continuous	Cooling water system pH control
Citric acid	< 8000 gallons	Continuous	Water treatment system low pH reagent
Sodium hydroxide (50%)	< 8000 gallons	Continuous	Water treatment system high pH reagent
Sodium hypochlorite	< 8000 gallons	Continuous	Inlet water oxidation and filter backwash reagent
Potassium permanganate	< 8000 gallons	Continuous	Filter inlet water chemical
Sodium bisulfite	< 8000 gallons	TBD	Plant systems process water dechlorination
Sodium bisulfite	< 8000 gallons	TBD	Reverse osmosis water system inlet water dechlorination

Chemical	Estimated Quantity (per year)	Frequency	Purpose
Sodium hydroxide (50%)	< 8000 gallons	Continuous	Reverse osmosis water system chemical
Anti-scalant	< 8000 gallons	Continuous	Reverse osmosis water system scale prevention
Bromine antimicrobial (sodium hypochlorite, sodium bromide, sodium hydroxide)	< 8000 gallons	TBD	
Cooling Pond Vegetation Control			
Liquid copper-based herbicide (15.9% Copper Carbonate)	As needed, According to manufacturer directions	Twice/year	Lyngbia vegetation control
Fluridone-based herbicide (5% fluridone)	As needed, According to manufacturer directions	Seasonal	Macrophyte vegetation control