DUKE ENERGY.

Marshall Steam Station

8320 Highway 150 E:
Terrell NC 2862

O 828.478.7700
f: 828.478.7679

Oct. 9, 2014

Mr. Jeff Poupart
North Carolina Division of Water Resources
NPDES Wastewater Unit
1617 Mail Service Center
Raleigh NC 27699-1617

Subject: Duke Energy Carolinas LLC – NPDES Permit Application
Marshall Steam Station - #NC0004987

Dear: Mr. Poupart:

Duke Energy Carolinas, LLC request the subject permit be renewed and issued. The above referenced permit expires on April 30, 2015. As mandated by North Carolina Administrative Code 15A NCAC 2 H.0105 (e), this permit application for renewal is being submitted at least 180 days prior to the expiration of the permit.

Please find enclosed in triplicate, the renewal application, which includes the following items:

EPA Form 1
Outfall Locations Map
EPA Form 2C
Water Flow Diagrams
Supplemental Information
Balanced and Indigenous Population Report (316 a)
Alternative Schedule Request for 316 (b)
Fish Tissue Monitoring
Metals Sampling in the Vicinity of Ash Basins
Ash Basin Capacity Information
Seep Information
Groundwater Information

Duke Energy Carolinas, LLC requests notification that this application is complete.

As required by Part A (15) of the current NPDES permit Duke Energy request that the 316 (a) thermal variance be continued through to the next permit. The attached Balanced and Indigenous Population Report (BIP) continues to indicate that Lake Norman supports a balanced and indigenous population of fish and macro-invertebrates. The BIP also satisfies the four questions required by the 1988 Kaplan Memo for renewal of the thermal variance. Therefore, Duke Energy believes the BIP supports the request for renewal of the thermal variance.

The following monitoring reductions are requested at Outfall 002 and Outfall 004 based on historical monitoring data.

- Reduce the sampling frequency for Selenium at Outfall 002 from weekly to monthly
- Reduce the sampling frequency for Selenium at Outfall 004 from weekly to monthly

Sincerely,

Brian Weisker
General Manager III
Regulated Fossil Stations

EPA Form 1

Please print or type in the unshaded areas only

Form Approved OMB No. 2040-0086

FORM 1 GENERAL

EPA

U S ENVIRONMENTAL PROTECTION AGENCY
GENERAL INFORMATION
Consolidated Permits Program
(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: F NC0004987 D

LABEL ITEMS	PLEASE PLACE LABEL IN THIS SPACE
I. EPA I.D. NUMBER	
III. FACILITY NAME	
V. FACILITY MAILING ADDRESS	
VI. FACILITY LOCATION	

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	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 — Marshall Steam Station

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2: Stowe, Allen/Lead Environmental Professional	(704) 382-4309

V. FACILTY MAILING ADDRESS

A. STREET OR P.O. BOX: 3: P.O. Box 1006, Mail Code EC13K

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4: Charlotte	NC	28201

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 5: 8320 East Highway 150

B. COUNTY NAME: Catawba

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6: Terrell	NC	28682	

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

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

A. FIRST	B. SECOND
4911 (specify) Electric Services	(specify)

C. THIRD	D. FOURTH
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME: Duke Energy Carolinas, LLC (Attention: Allen Stowe)

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) Electric Utility

D. PHONE (area code & no.): A (704) 382-4309

E. STREET OR P.O. BOX: P.O. Box 1006, Mail Code EC13K

F. CITY OR TOWN	G. STATE	H. ZIP CODE	IX. INDIAN LAND
Charlotte	NC	28201	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 NC0004987	P

B. UIC (Underground Injection of Fluids)	E. OTHER (specify)
U	03676T50 / 18-12 (specify) Air Permit/Landfill Permit

C. RCRA (Hazardous Wastes)	E. OTHER (specify)
R NCD043678879	SWP 18-09 / WQ0000452 (specify) Landfill Permit/Distribution of Residual Solids Permit

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.

XII. NATURE OF BUSINESS (provide a brief description)

Coal fired electric generation

XIII. CERTIFICATION (see instructions)

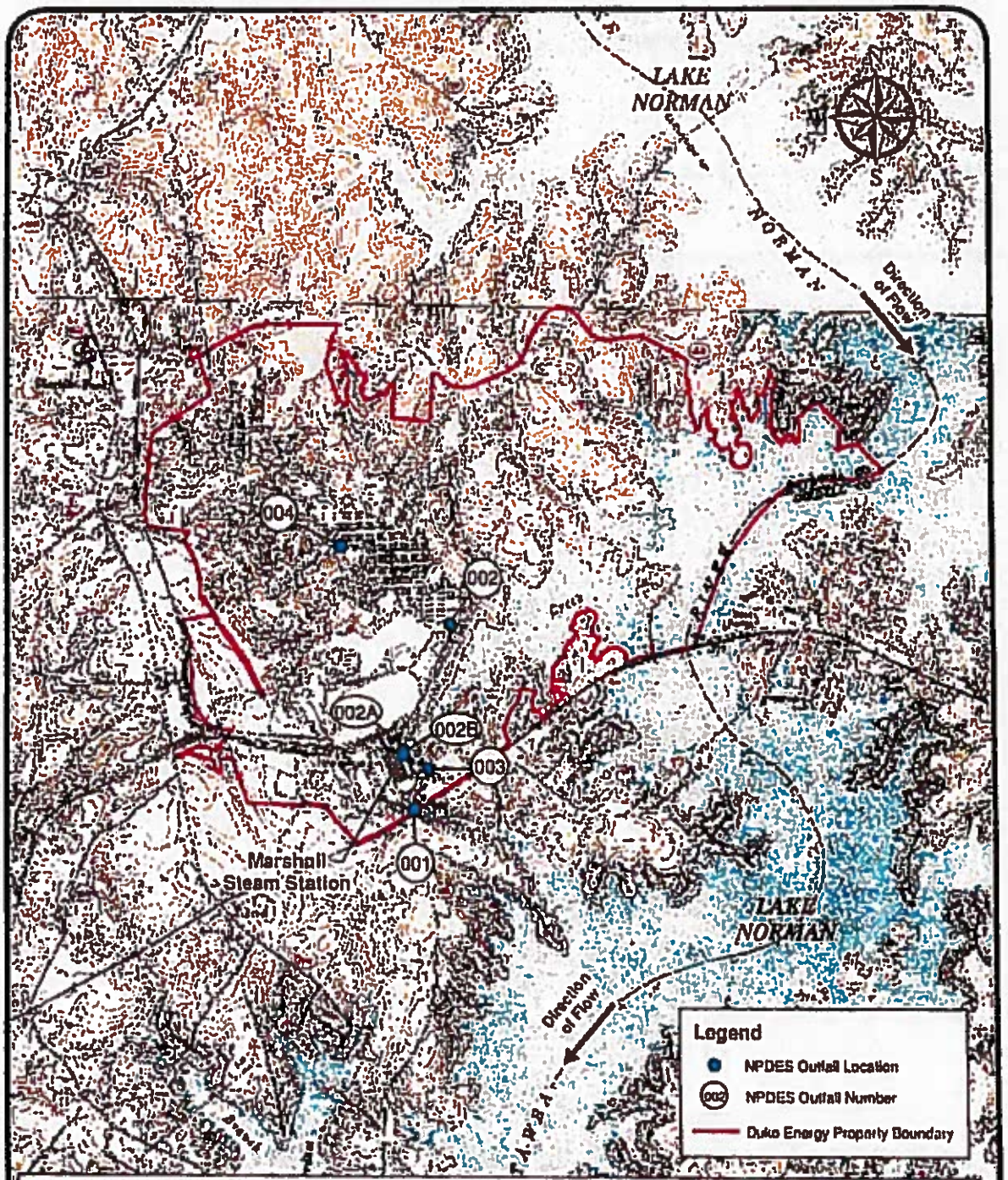
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information 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
Brian Weiske - General Manager III, Regulated Fossil Stations		10/13/2014

COMMENTS FOR OFFICIAL USE ONLY

EPA Form 3510-1 (8-90)

Outfall Locations



SCALE:	AS SHOWN
DATE	10-15-2008
DRAWN BY:	RDP
PROJECT NO:	1411-08-140

Duke Energy®

LOCATION MAP DUKE ENERGY MARSHALL STEAM STATION NPDES # NC0004987

MARSHALL STEAM STATION
CATAWBA COUNTY, NORTH CAROLINA

FIGURE NO. **1**

EPA Form 2C

Please print or type in the unshaded areas only.

EPA I.D. NUMBER (*copy from Item 1 of Form 1*): NC0004987

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	35	35	42	80	57	49	Lake Norman
002	35	36	22	80	57	40	Lake Norman
002A/002B	35/35	35/35	55/54	80/80	57/57	52/52	Lake Norman (Intermittent)
003	35	35	51	80	57	45	Lake Norman
004	35	36	38	80	58	09	Internal Outfall to 002 to Lake Norman

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	Condenser Cooling Water	945.9 MGD	Screen discharge to surface water	1T	
	(Once through non-contact)			4A	
	Includes intake screen backwash				
002	Ash basin discharge with sanitary	7.7 MGD	chemical coagulation, settling, neutralization,	3D	3K
	system effluent and storm water		ion exchange, surface water discharge	1D	
				2J	
				4A	
002A 002B	Emergency Overflow of yard drain	Intermittent	surface water discharge	4A	
	sump #1 (002A) and sump #2 (002B)				
	See supplemental information				
003	Induced draft fan control	0.2 MGD	surface water discharge	4A	
	house cooling water				
	(once through non-contact)				
004	Constructed treatment wetlands	1.17 MGD	sedimentation	1T	
			reduction	2L	

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*)
002A	Emergency overflow of yard drain sump #1 (see supplmental information)	See Supplemental Information		See Supplemental Information		See Supplemental Information		See Supplemental Information
002B	Emergency overflow of yard drain sump #2 (see supplmental information)	See Supplemental Information		See Supplemental Information		See Supplemental Information		See Supplemental Information

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	NA	NA	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

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*)
NC0004987

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
See Supplemental Information, Table 5.1 (attached) for complete list			

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*)

CONTINUED FROM THE FRONT

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*)

Quarterly analysis of Ceriodaphnia Dubia chronic testing per current permit requirements on Outfall 002

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*)
Shealy Environmental Services, Inc.	106 Vantage Point Drive West Columbia, SC 29172	803-791-9700	BOD, color, sulfide, sulfite, fecal coliform, surfactants, cyanide, phenol, volatiles, semi-volatile, acid compounds, PCBs, pesticides, mercury
SGS Environmental Services, Inc.	5500 Business Dr. Wilmington, NC 28405	910-350-1903	Dioxin
GEL Laboratories LLC	2040 Savage Road Charleston, SC 29417	843-556-8171	Radiological
Duke Energy Analytical Laboratory	13339 Hagers Ferry Road Huntersville, NC 28078	980-875-5375	Metals, COD, TKN, oil & grease, total phosphorous, TSS, TOC, bromide, sulfate, fluoride, nitrate-nitrite

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.*)
Brian Weisker, General Manager III, Regulated Fossil Stations	(828) 478-7600
C. SIGNATURE	**D. DATE SIGNED**
	10/13/2014

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (use the same format) instead of completing these pages.
SEE INSTRUCTIONS

EPA I.D. NUMBER (copy from Item 1 of Form 1): NC0004987

EPA Facility Name: Marshall Steam Station

OUTFALL NO.: 001

V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) Concentration	(2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	(2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	(2) Mass	d. NO. OF ANALYSES	3. UNITS a. Concentration	b. Mass	4. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	(2) Mass	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand (BOD)	< 2	< 24417.5					1	mg/l	lb/Day	< 2		1
b. Chemical Oxygen Demand (COD)	< 20	< 244174.7					1	mg/l	lb/Day	< 20		1
c. Total Organic Carbon (TOC)	2.4	29301.0					1	mg/l	lb/Day	2.4		1
d. Total Suspended Solids (TSS)	< 5	< 61043.7					1	mg/l	lb/Day	< 5		1
e. Ammonia (as N)	0.076	927.9					1	mg/l	lb/Day	0.069		1
f. Flow	VALUE 1463		VALUE 1411.8		VALUE 945.9		730	MGD	N/A	VALUE		
g. Temperature (winter)	VALUE		VALUE		VALUE		180	DEGREES CELSIUS		VALUE		
h. Temperature (summer)	VALUE		VALUE		VALUE		180	DEGREES CELSIUS		VALUE		
i. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM			1	STANDARD UNITS		7.1		

PART B - Mark "X" in column 2a for each pollutant you know or have reason to believe is present. Mark "X" in column 2b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly or indirectly but expressly in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" Believed a. present	b. absent	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) Concentration	(2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	(2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	(2) Mass	d. NO. OF ANALYSES	4. UNITS a. Concentration	b. Mass	5. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	(2) Mass	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		< 0.10	< 1220.9					1	mg/l	lb/Day	< 0.10		1
b. Chlorine, Total Residual	X		< 0.05	< 610.4					1	mg/l	lb/Day	< 0.05		1
c. Color	X		< 25.0	N/A		N/A		N/A	1	Std. Units	N/A	< 25.0	N/A	
d. Fecal Coliform	X		10.0	N/A		N/A		N/A	1	Colonies /100 ml	N/A	9.00	N/A	1
e. Fluoride (16984-48-8)	X		< 0.10	< 1220.9					1	mg/l	lb/Day	< 0.10		1
f. Nitrate-Nitrite (as N)	X		0.32	3858.0					1	mg/l	lb/Day	0.31		1

CONTINUE ON PAGE V-2

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
NC0004987	001

Marshall Steam Station

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	Believed		a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVG. VALUE (if available)		d. NO. OF ANALYSES	a. Concentration	b. Mass	a. LONG TERM AVG. VALUE		b. NO. OF ANALYSES
	a. present	b. absent	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
g. Nitrogen, Total Organic (as N)	X		0.82	6299.7					1	mg/l	lb/Day	0.54		1
h. Oil and Grease	X		5.00	< 61043.7					1	mg/l	lb/Day	5.00		1
i. Phosphorous (as P), Total (7723-14-0)	X		0.033	402.9					1	mg/l	lb/Day	0.032		1
j. RADIOACTIVITY														
(1) Alpha, Total	X		5.00	N/A		N/A		N/A	1	pCi/l	N/A	5.00	N/A	1
(2) Beta, Total	X		5.00	N/A		N/A		N/A	1	pCi/l	N/A	5.00	N/A	1
(3) Radium, Total	X		1.00	N/A		N/A		N/A	1	pCi/l	N/A	1.00	N/A	1
(4) Radium 226, Total	X		1.00	N/A		N/A		N/A	1	pCi/l	N/A	1.00	N/A	1
k. Sulfate (as SO4) (14808-79-8)	X		4.80	58601.9					1	mg/l	lb/Day	3.80		1
l. Sulfide (as S)	X		1.00	< 12208.7					1	mg/l	lb/Day	4.10		1
m. Sulfite (as SO3) (14265-45-3)	X		2.00	< 24417.5					1	mg/l	lb/Day	2.00		1
n. Sulfactants	X		0.05	< 610.4					1	mg/l	lb/Day	0.092		1
o. Aluminum, Total (7429-90-5)	X		0.870	10621.8					1	mg/l	lb/Day	0.890		1
p. Barium, Total (7440-39-3)	X		0.018	219.8					1	mg/l	lb/Day	0.017		1
q. Boron, Total (7440-42-8)	X		0.074	903.4					1	mg/l	lb/Day	0.050		1
r. Cobalt, Total (7440-48-4)	X		0.001	< 12.2					1	mg/l	lb/Day	0.001		1
s. Iron, Total (7439-89-6)	X		0.779	9510.8					1	mg/l	lb/Day	0.750		1
t. Magnesium, Total (7439-95-4)	X		1.93	23562.9					1	mg/l	lb/Day	1.54		1
u. Molybdenum, Total (7439-98-7)	X		0.001	< 12.2					1	mg/l	lb/Day	0.001		1
v. Manganese, Total (7439-96-5)	X		0.037	451.7					1	mg/l	lb/Day	0.029		1
w. Tin, Total (7440-31-5)	X		0.010	< 122.1					1	mg/l	lb/Day	0.010		1
x. Titanium, Total (7440-32-6)	X		0.027	329.6					1	mg/l	lb/Day	0.028		1

CONTINUE ON PAGE V-3

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
NC0004987	001

CONTINUED FROM PAGE 3 OF FORM 2-C

Marshall Steam Station

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2, 4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Pollutant quantified	b. Believed present	c. Believed absent	a. MAXIMUM DAILY VALUE (1) Concentration	a. MAXIMUM DAILY VALUE (2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	b. MAXIMUM 30 DAY VALUE (if available) (2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	c. LONG TERM AVG. VALUE (if available) (2) Mass	d. NO. OF ANALYSES	a. Concentration	b. Mass	a. LONG TERM AVG. VALUE (1) Concentration	a. LONG TERM AVG. VALUE (2) Mass	d. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X			< 1.0	< 12.21					1	ug/l	lb/Day	< 1.0		1
2M. Arsenic, Total (7440-38-2)	X			< 1.0	< 12.21					1	ug/l	lb/Day	< 1.0		1
3M. Beryllium, Total (7440-41-7)	X			< 1.0	< 12.21					1	ug/l	lb/Day	< 1.0		1
4M. Cadmium, Total (7440-43-9)	X			< 1.0	< 12.21					1	ug/l	lb/Day	< 1.0		1
5M. Chromium, Total (7440-47-3)	X			< 1.0	< 12.21					1	ug/l	lb/Day	< 1.0		1
6M. Copper, Total (7440-50-8)	X			0.006	73.25					1	mg/l	lb/Day	< 0.005		1
7M. Lead, Total (7439-92-1)	X			< 1	< 12.21					1	ug/l	lb/Day	< 1.0		1
8M. Mercury, Total (7439-97-6)	X			0.0016	0.02					1	ug/l	lb/Day	0.00163		1
9M. Nickel, Total (7440-02-0)	X			< 1.0	< 12.21					1	ug/l	lb/Day	< 1.0		1
10M. Selenium, Total (7782-49-2)	X			< 1.0	< 12.21					1	ug/l	lb/Day	< 1.0		1
11M. Silver, Total (7440-22-4)	X			< 1.0	< 12.21					1	ug/l	lb/Day	< 1.0		1
12M. Thallium, Total (7440-28-0)	X			< 0.001	< 12.2					1	mg/l	lb/Day	< 0.001		1
13M. Zinc, Total (7440-66-6)	X			0.0049	59.33					1	mg/l	lb/Day	0.0024		1
14M. Cyanide, Total (57-12-5)	X			< 0.010	< 122.09					1	mg/l	lb/Day	< 0.010		1
15M. Phenols, Total	X			0.0051	62.3					1	mg/l	lb/Day	0.02		1
DIOXIN															
2,3,7,8 Tetra Chlorodibenzo P Dioxin (1764-01-6)			X	DESCRIBE RESULTS < 10	< 122087.4					1	pg/l	lb/Day	< 10		1

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1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Re-quired	b. Believed present	c. Believed absent	a. MAXIMUM DAILY VALUE (1) Concentration	a. MAXIMUM DAILY VALUE (2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	b. MAXIMUM 30 DAY VALUE (if available) (2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	c. LONG TERM AVG. VALUE (if available) (2) Mass	d. NO. OF ANALYSES	a. Concentration	b. Mass	a. LONG TERM AVG. VALUE (1) Concentration	a. LONG TERM AVG. VALUE (2) Mass	d. NO. OF ANALYSES
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	X			< 5.0	< 61.04					1	ug/l	lb/Day	< 5.0		1
2V. Acrylonitrile (107-13-1)	X			< 5.0	< 61.04					1	ug/l	lb/Day	< 5.0		1
3V. Benzene (71-43-2)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
4V. Bis (Chloro-methyl) Ether (542-88-1)			X												
5V. Bromoform (75-25-2)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
6V. Carbon Tetrachloride (56-23-5)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
7V. Chlorobenzene (108-90-7)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
8V. Chlorodi-bromomethane (124-48-1)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
9V. Chloroethane (75-00-3)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
10V. 2-Chloro-ethylvinyl Ether (110-75-8)	X			< 5.0	< 61.04					1	ug/l	lb/Day	< 5.0		1
11V. Chloroform (67-66-3)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
12V. Dichloro-bromomethane (75-27-4)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
13V. Dichloro-difluoromethane (75-71-8)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
14V. 1,1-Dichloro-ethane (75-34-3)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
15V. 1,2-Dichloro-ethane (107-06-2)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
16V. 1,1-Dichloro-ethylene (75-35-4)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
17V. 1,2-Dichloro-propane (78-87-5)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
18V. 1,3-Dichloro-propylene (542-75-6)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
19V. Ethylbenzene (100-41-4)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
20V. Methyl Bromide (74-83-9)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
21V. Methyl Chloride (74-87-3)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1

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1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" a. Required	2. MARK "X" b. Believed present	2. MARK "X" c. Believed absent	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) Concentration	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) Mass	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) Mass	3. EFFLUENT c. LONG TERM AVG. VALUE (if available) (1) Concentration	3. EFFLUENT c. LONG TERM AVG. VALUE (if available) (2) Mass	3. EFFLUENT d. NO. OF ANALYSES	4. UNITS a. Concentration	4. UNITS b. Mass	5. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	5. INTAKE (optional) a. LONG TERM AVG. VALUE (2) Mass	5. INTAKE (optional) d. NO. OF ANALYSES
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-09-2)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
23V. 1,1,2,2-Tetrachloroethene (79-34-5)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
24V. Tetrachloroethylene (127-18-4)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
25V. Toluene (108-88-3)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
27V. 1,1,1-Trichloroethane (71-55-6)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
28V. 1,1,2-Trichloroethane (79-00-5)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
29V. Trichloroethylene (79-01-6)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
30V. Trichlorofluoromethane (75-69-4)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
31V. Vinyl Chloride (75-01-4)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		1
2A. 2,4-Dichlorophenol (120-83-2)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		1
3A. 2,4-Dimethylphenol (105-67-9)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		1
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		1
5A. 2,4-Dinitrophenol (51-28-5)	X			< 50	< 610.44					1	ug/l	lb/Day	< 50		1
6A. 2-Nitrophenol (88-75-5)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		1
7A. 4-Nitrophenol (100-02-7)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		1
8A. P-Chloro-M-Cresol (59-50-7)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		1
9A. Pentachlorophenol (87-86-5)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		1
10A. Phenol (108-95-2)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		1
11A. 2,4,6-Trichlorophenol (88-06-2)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		1

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1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" a. Required	b. Believed present	c. Believed absent	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) Concentration	(2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	(2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	(2) Mass	d. NO. OF ANALYSES	4. UNITS a. Concentration	b. Mass	5. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	(2) Mass	d. NO. OF ANALYSES
GC/MS FRACTION - BASE NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	X			< 10	< 122.00					1	ug/l	lb/Day	< 10		
2B. Acenaphylene (208-96-8)	X			< 10	< 122.00					1	ug/l	lb/Day	< 10		
3B. Anthracene (120-12-7)	X			< 10	< 122.00					1	ug/l	lb/Day	< 10		
4B. Benzidine (92-87-5)	X			< 100	< 1220.87					1	ug/l	lb/Day	< 100		
5B. Benzo (a) Anthracene (56-55-3)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
6B. Benzo (a) Pyrene (50-32-8)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
7B. 3,4-Benzo-fluoranthene (205-99-2)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
8B. Benzo (ghi) Perylene (191-24-2)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
9B. Benzo (k) Fluoranthene (207-08-9)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
10B. Bis (2-Chloro-ethoxyl) Methane (111-91-1)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
12B. Bis (2-Chloroiso-propyl) Ether (108-60-1)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
13B. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
15B. Butyl Benzyl Phthalate (85-68-7)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
16B. 2-Chloro-naphthalene (91-58-7)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
18B. Chrysene (218-01-9)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
19B. Dibenzo (a,h) Anthracene (53-70-3)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
20B. 1,2-Dichloro-benzene (95-50-1)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
21B. 1,3-Dichloro-benzene (541-73-1)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1

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1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" a. Required	b. Present	c. Absent	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) Concentration	a. MAXIMUM DAILY VALUE (2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	b. MAXIMUM 30 DAY VALUE (if available) (2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	c. LONG TERM AVG. VALUE (if available) (2) Mass	d. NO. OF ANALYSES	4. UNITS a. Concentration	4. UNITS b. Mass	5. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	5. INTAKE (optional) a. LONG TERM AVG. VALUE (2) Mass	5. INTAKE (optional) d. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
22B. 1,4-Dichlorobenzene (106-46-7)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
23B. 3,3-Dichlorobenzidine (91-94-1)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
24B. Diethyl Phthalate (84-66-2)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
25B. Dimethyl Phthalate (131-11-3)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
26B. Di-N-Butyl Phthalate (84-74-2)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
27B. 2,4-Dinitrotoluene (121-14-2)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
28B. 2,6-Dinitrotoluene (606-20-2)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
29B. Di-N-Octyl Phthalate (117-84-0)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
30B. 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
31B. Fluoranthene (206-44-0)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
32B. Fluorene (86-73-7)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
33B. Hexachlorobenzene (118-74-1)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
34B. Hexachlorobutadiene (87-68-3)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
35B. Hexachlorocyclopentadiene (77-47-4)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
36B. Hexachloroethane (67-72-1)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
38B. Isophorone (78-59-1)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
39B. Naphthalene (91-20-3)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
40B. Nitrobenzene (98-95-3)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
41B. N-Nitrosodimethylamine (62-75-9)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X			< 10	< 122.09					1	ug/l	lb/Day	< 10		

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1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" a. Required	2. MARK "X" b. Believed present	2. MARK "X" c. Believed absent	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) Concentration	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) Mass	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) Mass	3. EFFLUENT c. LONG TERM AVG. VALUE (if available) (1) Concentration	3. EFFLUENT c. LONG TERM AVG. VALUE (if available) (2) Mass	3. EFFLUENT d. NO. OF ANALYSES	4. UNITS a. Concentration	4. UNITS b. Mass	5. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	5. INTAKE (optional) a. LONG TERM AVG. VALUE (2) Mass	5. INTAKE (optional) d. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
43B. N-Nitrosodiphenylamine (86-30-6)	X			< 10	< 122.00					1	ug/l	lb/Day	< 10		
44B. Phenanthrene (85-01-8)	X			< 10	< 122.00					1	ug/l	lb/Day	< 10		
45B. Pyrene (129-00-0)	X			< 10	< 122.00					1	ug/l	lb/Day	< 10		
46B. 1,2,4-Trichlorobenzene (120-82-1)	X			< 2.0	< 24.42					1	ug/l	lb/Day	< 2.0		1
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)			X												
2P. alpha-BHC (319-84-6)			X												
3P. beta-BHC (315-85-7)			X												
4P. gamma-BHC (58-89-9)			X												
5P. delta-BHC (319-86-8)			X												
6P. Chlordane (57-74-9)			X												
7P. 4,4'-DDT (50-29-3)			X												
8P. 4,4'-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P.alpha-Endosulfan (115-29-7)			X												
12P. beta-Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-93-4)			X												
16P. Heptachlor (76-44-8)			X												

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1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" a. Required	b. Believed present	c. Believed absent	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) Concentration	(2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	(2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	(2) Mass	d. NO. OF ANALYSES	4. UNITS a. Concentration	b. Mass	5. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	(2) Mass	d. NO. OF ANALYSES
GC/MS FRACTION - PESTICIDES (continued)															
17P Heptachlor Epoxide (1024-57-3)			X												
18P PCB-1242 (53469-21-9)			X	< 0.26	<					1	ug/l		< 0.25		1
19P PCB-1254 (11097-69-1)			X	< 0.26	<					1	ug/l		< 0.25		1
20P PCB-1221 (11104-28-2)			X	< 0.26	<					1	ug/l		< 0.25		1
21P PCB-1232 (11141-16-5)			X	< 0.26	<					1	ug/l		< 0.25		1
22P PCB-1248 (12672-29-6)			X	< 0.26	<					1	ug/l		< 0.25		1
23P PCB-1260 (11096-82-5)			X	< 0.26	<					1	ug/l		< 0.25		1
24P PCB-1016 (12674-11-2)			X	< 0.26	<					1	ug/l		< 0.25		1
25P Toxaphene (8001-35-2)			X												

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (use the same format) instead of completing these pages.
SEE INSTRUCTIONS

EPA I.D. NUMBER (copy from Item 1 of Form 1): NC0004987

EPA Facility Name: **Marshall Steam Station**

OUTFALL NO. 002

V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) Concentration	(2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	(2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	(2) Mass	d. NO. OF ANALYSES	3. UNITS a. Concentration	b. Mass	4. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	(2) Mass	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand (BOD)	< 2	< 287.1		0 0.0		0 0.0	1	mg/l	lb/Day		0	
b. Chemical Oxygen Demand (COD)	< 20	< 2870.7		0 0.0		0 0.0	1	mg/l	lb/Day		0	
c. Total Organic Carbon (TOC)	1.9	0 272.7		0 0.0		0 0.0	1	mg/l	lb/Day		0	
d. Total Suspended Solids (TSS)	11	0 1578.9	11	0 1578.9	6.1	0 392.0	25	mg/l	lb/Day		0	
e. Ammonia (as N)	0.26	0 37.2		0 0.0		0 0.0	1	mg/l	lb/Day		0	
f. Flow	VALUE 17.2		VALUE 17.2		VALUE 7.7		24	MGD	N/A	VALUE		
g. Temperature (winter)	VALUE		VALUE		VALUE		1	DEGREES CELSIUS		VALUE		
h. Temperature (summer)	VALUE		VALUE		VALUE			DEGREES CELSIUS		VALUE		
i. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM			24	STANDARD UNITS				

PART B - Mark "X" in column 2a for each pollutant you know or have reason to believe is present. Mark "X" in column 2b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly or indirectly but expressly in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" Believed a. present	b. absent	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) Concentration	(2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	(2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	(2) Mass	d. NO. OF ANALYSES	4. UNITS a. Concentration	b. Mass	5. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	(2) Mass	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		3.80	0 545.4		0 0.0		0 0.0	1	mg/l	lb/Day		0	
b. Chlorine, Total Residual	X		< 0.05	< 7.2		0 0.0		0 0.0	1	mg/l	lb/Day		0	
c. Color	X		< 25.0	N/A		N/A		N/A	1	Std. Units	N/A		N/A	
d. Fecal Coliform	X		< 1.00	N/A		N/A		N/A	1	Colonies /100 ml	N/A		N/A	
e. Fluoride (16984-48-8)	X		0.97	0 139.2		0 0.0		0 0.0	1	mg/l	lb/Day		0	
f. Nitrate-Nitrite (as N)	X		0.60	0 86.7		0 0.0		0 0.0	1	mg/l	lb/Day		0	

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ITEM V-B CONTINUED FROM FRONT

Marshall Steam Station

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT								4. UNITS		5. INTAKE (optional)		
	Believed		a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVG. VALUE (if available)		d. NO. OF ANALYSES	a. Concentration	b. Mass	a. LONG TERM AVG. VALUE		b. NO. OF ANALYSES
	a. present	b. absent	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
g. Nitrogen, Total Organic (as N)	X		8.60	0 1234.4	8.6	0 1234.4	2.9	0 186.3	25	mg/l	lb/Day		0	
h. Oil and Grease	X		< 5.00	< 717.7	< 5	< 717.7	< 5	< 321.3	8	mg/l	lb/Day		0	
i. Phosphorous (as P), Total (7723-14-0)	X		0.600	0 86.1	0.06	0 8.6	0.03	0 1.9	9	mg/l	lb/Day		0	
j. Radioactivity														
(1) Alpha, Total	X		< 5.00	N/A		N/A		N/A	1	pCi/l	N/A		N/A	
(2) Beta, Total	X		< 5.00	N/A		N/A		N/A	1	pCi/l	N/A		N/A	
(3) Radium, Total	X		< 1.00	N/A		N/A		N/A	1	pCi/l	N/A		N/A	
(4) Radium 226, Total	X		0.58	N/A		N/A		N/A	1	pCi/l	N/A		N/A	
k. Sulfate (as SO4) (14808-79-8)	X		170	0 24400.8		0 0.0		0 0.0	1	mg/l	lb/Day		0	
l. Sulfide (as S)	X		< 1.00	< 143.5		0 0.0		0 0.0	1	mg/l	lb/Day		0	
m. Sulfite (as SO3) (14265-45-3)	X		< 2.00	< 287.1		0 0.0		0 0.0	1	mg/l	lb/Day		0	
n. Surfactants	X		< 0.050	< 7.2		0 0.0		0 0.0	1	mg/l	lb/Day		0	
o. Aluminum, Total (7429-90-5)	X		0.227	0 32.6		0 0.0		0 0.0	1	mg/l	lb/Day		0	
p. Barium, Total (7440-39-3)	X		0.076	0 10.9		0 0.0		0 0.0	1	mg/l	lb/Day		0	
q. Boron, Total (7440-42-8)	X		7.750	0 1112.4		0 0.0		0 0.0	1	mg/l	lb/Day		0	
r. Cobalt, Total (7440-48-4)	X		0.0044	0 0.6		0 0.0		0 0.0	1	mg/l	lb/Day		0	
s. Iron, Total (7439-89-6)	X		0.460	0 66.0	0.46	0 66.0	0.41	0 26.3	2	mg/l	lb/Day		0	
t. Magnesium, Total (7439-95-4)	X		67.8	0 9731.6		0 0.0		0 0.0	1	mg/l	lb/Day		0	
u. Molybdenum, Total (7439-98-7)	X		0.0184	0 2.6		0 0.0		0 0.0	1	mg/l	lb/Day		0	
v. Manganese, Total (7439-96-5)	X		0.828	0 118.8		0 0.0		0 0.0	1	mg/l	lb/Day		0	
w. Tin, Total (7440-31-5)	X		< 0.010	< 1.4		0 0.0		0 0.0	1	mg/l	lb/Day		0	
x. Titanium, Total (7440-32-6)	X		< 0.005	< 0.7		0 0.0		0 0.0	1	mg/l	lb/Day		0	

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Marshall Steam Station

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2, 4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE (optional)		
	a. re-quired	Believed b. pre-sent	Believed c. ab-sent	a. MAXIMUM DAILY VALUE (1) Concentration	a. MAXIMUM DAILY VALUE (2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	b. MAXIMUM 30 DAY VALUE (if available) (2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	c. LONG TERM AVG. VALUE (if available) (2) Mass	d. NO. OF ANALYSES	a. Concentration	b. Mass	a. LONG TERM AVG. VALUE (1) Concentration	a. LONG TERM AVG. VALUE (2) Mass	d. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS																
1M. Antimony, Total (7440-36-0)	X			< 1.0	< 0.14		0 0.00		0 0.00	1	ug/l	lb/Day		0.00		
2M. Arsenic, Total (7440-38-2)	X			14.7	0 2.11	14.7	0 2.11	7.89	0 0.51	10	ug/l	lb/Day		0.00		
3M. Beryllium, Total (7440-41-7)	X			< 1.0	< 0.14		0 0.00		0 0.00	1	ug/l	lb/Day		0.00		
4M. Cadmium, Total (7440-43-9)	X			< 1.0	< 0.14		0 0.00		0 0.00	1	ug/l	lb/Day		0.00		
5M. Chromium, Total (7440-47-3)	X			< 1.0	< 0.14		0 0.00		0 0.00	1	ug/l	lb/Day		0.00		
6M. Copper, Total (7440-50-8)	X			< 0.005	< 0.72	< 0.005	< 0.72	< 0.005	< 0.32	3	mg/l	lb/Day		0.00		
7M. Lead, Total (7439-92-1)	X			< 1	< 0.14		0 0.00		0 0.00	1	ug/l	lb/Day		0.00		
8M. Mercury, Total (7439-97-6)	X			1.28	0 0.18	1.28	0 0.18	0.73	0 0.05	10	ng/l	lb/Day		0.00		
9M. Nickel, Total (7440-02-0)	X			10.8	0 1.55	10.8	0 1.55	7.4	0 0.48	10	ug/l	lb/Day		0.00		
10M. Selenium, Total (7782-49-2)	X			6.04	0 0.87	5.7	0 0.82	3.19	0 0.20	103	ug/l	lb/Day		0.00		
11M. Silver, Total (7440-22-4)	X			< 1.0	< 0.14		0 0.00		0 0.00	1	ug/l	lb/Day		0.00		
12M. Thallium, Total (7440-28-0)	X			< 0.001	< 0.1		0 0.0		0 0.0	1	mg/l	lb/Day		0.00		
13M. Zinc, Total (7440-66-6)	X			17.300	0 2483.14	17.3	0 2483.14	7.687	0 493.94	26	ug/l	lb/Day		0.00		
14M. Cyanide, Total (57-12-5)	X			< 0.010	< 1.44		0 0.00		0 0.00	1	mg/l	lb/Day		0.00		
15M. Phenols, Total	X			0.0054	0 0.8		0 0.0		0 0.0	1	mg/l	lb/Day		0.00		
DIOXIN																
2,3,7,8 Tetra chlorodibenzo P Dioxin (1764-01-6)			X	DESCRIBE RESULTS < 9.95	< 1428.2		0 0.0		0 0.0	1	pg/l	lb/Day				

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1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. re-quired	Believed b. pre-sent	Believed c. ab-sent	a. MAXIMUM DAILY VALUE (1) Concentration	a. MAXIMUM DAILY VALUE (2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	b. MAXIMUM 30 DAY VALUE (if available) (2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	c. LONG TERM AVG. VALUE (if available) (2) Mass	d. NO. OF ANALYSES	a. Concen-tration	b. Mass	a. LONG TERM AVG. VALUE (1) Concentration	a. LONG TERM AVG. VALUE (2) Mass	d. NO. OF ANALYSES
GC/MS FRACTION - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	X			< 5.0	< 0.72		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
2V. Acrylonitrile (107-13-1)	X			< 5.0	< 0.72		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
3V. Benzene (71-43-2)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
4V. Bis (Chloro-methyl) Ether (542-88-1)			X		0		0		0					0	
5V. Bromoform (75-25-2)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
6V. Carbon Tetrachloride (56-23-5)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
7V. Chlorobenzene (108-90-7)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
8V. Chlorodi-bromomethane (124-48-1)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
9V. Chloroethane (75-00-3)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
10V. 2-Chloro-ethylvinyl Ether (110-75-8)	X			< 5.0	< 0.72		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
11V. Chloroform (67-66-3)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
12V. Dichloro-bromomethane (75-27-4)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
13V. Dichloro-difluoromethane (75-71-8)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
14V. 1,1-Dichloro-ethane (75-34-3)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
15V. 1,2-Dichloro-ethane (107-06-2)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
16V. 1,1-Dichloro-ethylene (75-35-4)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
17V. 1,2-Dichloro-propane (78-87-5)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
18V. 1,3-Dichloro-propylene (542-75-6)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
19V. Ethylbenzene (100-41-4)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
20V. Methyl Bromide (74-83-9)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
21V. Methyl Chloride (74-87-3)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	

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1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" a. required	2. MARK "X" Believed b. present	2. MARK "X" Believed c. absent	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) Concentration	a. MAXIMUM DAILY VALUE (2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	b. MAXIMUM 30 DAY VALUE (if available) (2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	c. LONG TERM AVG. VALUE (if available) (2) Mass	d. NO. OF ANALYSES	4. UNITS a. Concentration	4. UNITS b. Mass	5. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	5. INTAKE (optional) a. LONG TERM AVG. VALUE (2) Mass	5. INTAKE (optional) d. NO. OF ANALYSES
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-09-2)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
24V. Tetrachloroethylene (127-18-4)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
25V. Toluene (108-88-3)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
27V. 1,1,1-Trichloroethane (71-55-6)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
28V. 1,1,2-Trichloroethane (79-00-5)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
29V. Trichloroethylene (79-01-6)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
30V. Trichlorofluoromethane (75-69-4)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
31V. Vinyl Chloride (75-01-4)	X			< 5.0	< 0.72		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			< 10	< 1.44		0 0.00		0 0.00	2	ug/l	lb/Day		0.00	
2A. 2,4-Dichlorophenol (120-83-2)	X			< 10	< 1.44		0 0.00		0 0.00	2	ug/l	lb/Day		0.00	
3A. 2,4-Dimethylphenol (105-67-9)	X			< 10	< 1.44		0 0.00		0 0.00	2	ug/l	lb/Day		0.00	
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			< 10	< 1.44		0 0.00		0 0.00	2	ug/l	lb/Day		0.00	
5A. 2,4-Dinitrophenol (51-28-5)	X			< 50	< 7.18		0 0.00		0 0.00	2	ug/l	lb/Day		0.00	
6A. 2-Nitrophenol (88-75-5)	X			< 10	< 1.44		0 0.00		0 0.00	2	ug/l	lb/Day		0.00	
7A. 4-Nitrophenol (100-02-7)	X			< 10	< 1.44		0 0.00		0 0.00	2	ug/l	lb/Day		0.00	
8A. P-Chloro-M-Cresol (59-50-7)	X			< 10	< 1.44		0 0.00		0 0.00	2	ug/l	lb/Day		0.00	
9A. Pentachlorophenol (87-86-5)	X			< 10	< 1.44		0 0.00		0 0.00	2	ug/l	lb/Day		0.00	
10A. Phenol (108-95-2)	X			< 10	< 1.44		0 0.00		0 0.00	2	ug/l	lb/Day		0.00	
11A. 2,4,6-Trichlorophenol (88-06-2)	X			< 10	< 1.44		0 0.00		0 0.00	2	ug/l	lb/Day		0.00	

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1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" a. Required	2. MARK "X" Believed b. present	2. MARK "X" Believed c. absent	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) Concentration	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) Mass	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) Mass	3. EFFLUENT c. LONG TERM AVG. VALUE (if available) (1) Concentration	3. EFFLUENT c. LONG TERM AVG. VALUE (if available) (2) Mass	3. EFFLUENT d. NO. OF ANALYSES	4. UNITS a. Concentration	4. UNITS b. Mass	5. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	5. INTAKE (optional) a. LONG TERM AVG. VALUE (2) Mass	5. INTAKE (optional) d. NO. OF ANALYSES
GC/MS FRACTION - BASE NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
2B. Acenaphtylene (208-96-8)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
3B. Anthracene (120-12-7)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
4B. Benzidine (92-87-5)	X			< 100	< 14.35		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
5B. Benzo (a) Anthracene (56-55-3)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
6B. Benzo (a) Pyrene (50-32-8)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
7B. 3,4-Benzo-fluoranthene (205-99-2)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
8B. Benzo (ghi) Perylene (191-24-2)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
9B. Benzo (k) Fluoranthene (207-08-9)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
10B. Bis (2-Chloro-ethoxyl) Methane (111-91-1)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
12B.Bis (2-Chloroiso-propyl) Ether (108-60-1)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
13B. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
15B. Butyl Benzyl Phthalate (85-68-7)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
16B. 2-Chloro-naphthalene (91-58-7)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
18B. Chrysene (218-01-9)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
19B. Dibenzo (a,h) Anthracene (53-70-3)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
20B. 1,2-Dichloro-benzene (95-50-1)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
21B. 1,3-Dichloro-benzene (541-73-1)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	

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Marshall Steam Station

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. re-quir-ed	Believed b. pre-sent	c. ab-sent	a. MAXIMUM DAILY VALUE (1) Concentration	(2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	(2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	(2) Mass	d. NO. OF ANALYSES	a. Concen-tration	b. Mass	a. LONG TERM AVG. VALUE (1) Concentration	(2) Mass	d. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
22B. 1,4-Dichloro-benzene (106-46-7)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
23B. 3,3-Dichloro-benzidine (91-94-1)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
24B. Diethyl Phthalate (84-66-2)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
25B. Dimethyl Phthalate (131-11-3)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
26B. Di-N-Butyl Phthalate (84-74-2)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
27B. 2,4-Dinitro-toluene (121-14-2)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
28B. 2,6-Dinitro-toluene (606-20-2)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
29B. Di-N-Octyl Phthalate (117-84-0)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
30B. 1,2-Diphenyl-hydrazine (as Azo-benzene) (122-66-7)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
31B. Fluoranthene (206-44-0)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
32B. Fluorene (86-73-7)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
33B. Hexachloro-benzene (118-74-1)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
34B. Hexa-chlorobutadiene (87-68-3)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
35B. Hexachloro-cyclopentadiene (77-47-4)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
36B. Hexachloro-ethane (67-72-1)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
38B. Isophorone (78-59-1)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
39B. Naphthalene (91-20-3)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
40B. Nitrobenzene (98-95-3)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
41B. N-Nitro-sodimethylamine (62-75-9)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	

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1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. re-quired	Believed b. pre-sent	Believed c. ab-sent	a. MAXIMUM DAILY VALUE (1) Concentration	a. MAXIMUM DAILY VALUE (2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	b. MAXIMUM 30 DAY VALUE (if available) (2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	c. LONG TERM AVG. VALUE (if available) (2) Mass	d. NO. OF ANALYSES	a. Concen-tration	b. Mass	a. LONG TERM AVG. VALUE (1) Concentration	a. LONG TERM AVG. VALUE (2) Mass	d. NO. OF ANALYSES
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
43B. N-Nitro-sodiphenylamine (86-30-6)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
44B. Phenanthrene (85-01-8)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
45B. Pyrene (129-00-0)	X			< 10	< 1.44		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
46B. 1,2,4-Tri-chlorobenzene (120-82-1)	X			< 2.0	< 0.29		0 0.00		0 0.00	1	ug/l	lb/Day		0.00	
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)			X		0										
2P. alpha-BHC (319-84-6)			X		0										
3P. beta-BHC (315-85-7)			X		0										
4P. gamma-BHC (58-89-9)			X		0										
5P. delta-BHC (319-86-8)			X		0										
6P. Chlordane (57-74-9)			X		0										
7P. 4,4'-DDT (50-29-3)			X		0										
8P. 4,4'-DDE (72-55-9)			X		0										
9P. 4,4'-DDD (72-54-8)			X		0										
10P. Dieldrin (60-57-1)			X		0										
11P.alpha-Endosulfan (115-29-7)			X		0										
12P. beta-Endosulfan (115-29-7)			X		0										
13P. Endosulfan Sulfate (1031-07-8)			X		0										
14P. Endrin (72-20-8)			X		0										
15P. Endrin Aldehyde (7421-93-4)			X		0										
16P. Heptachlor (76-44-8)			X		0										

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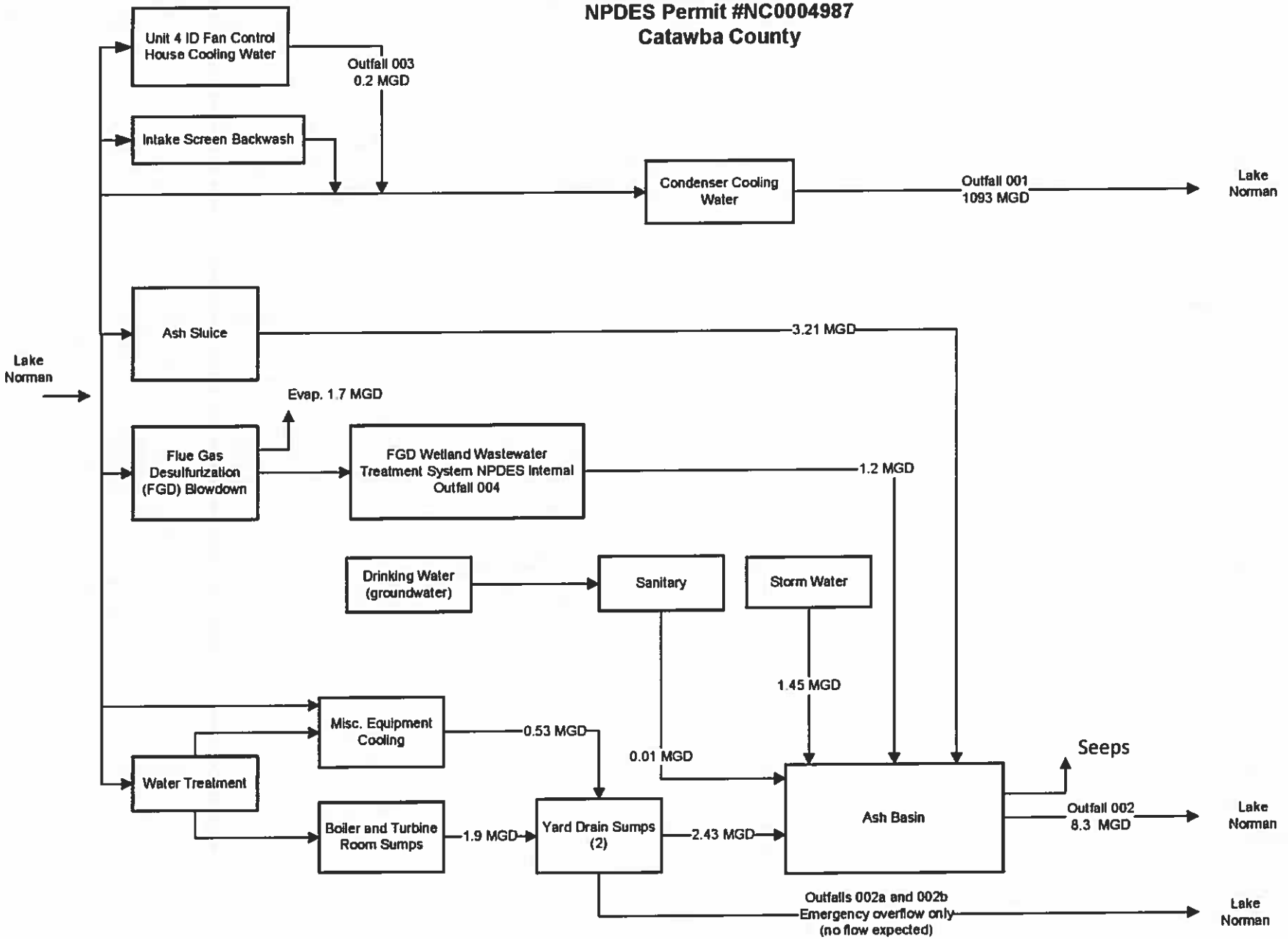
Marshall Steam Station

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. re-quired	Believed b. pre-sent	Believed c. ab-sent	a. MAXIMUM DAILY VALUE (1) Concentration	a. MAXIMUM DAILY VALUE (2) Mass	b. MAXIMUM 30 DAY VALUE (if available) (1) Concentration	b. MAXIMUM 30 DAY VALUE (if available) (2) Mass	c. LONG TERM AVG. VALUE (if available) (1) Concentration	c. LONG TERM AVG. VALUE (if available) (2) Mass	d. NO. OF ANALYSES	a. Concen-tration	b. Mass	a. LONG TERM AVG. VALUE (1) Concentration	a. LONG TERM AVG. VALUE (2) Mass	d. NO. OF ANALYSES
GC/MS FRACTION - PESTICIDES (continued)															
17P. Heptachlor Epoxide (1024-57-3)			X		0										
18P. PCB-1242 (53469-21-9)			X	< 0.30	<					1	ug/l				
19P. PCB-1254 (11097-69-1)			X	< 0.30	<					1	ug/l				
20P. PCB-1221 (11104-28-2)			X	< 0.30	<					1	ug/l				
21P. PCB-1232 (11141-16-5)			X	< 0.30	<					1	ug/l				
22P. PCB-1248 (12672-29-6)			X	< 0.30	<					1	ug/l				
23P. PCB-1260 (11096-82-5)			X	< 0.30	<					1	ug/l				
24P. PCB-1016 (12674-11-2)			X	< 0.30	<					1	ug/l				
25P. Toxaphene (8001-35-2)			X		0										

Water Flow Diagram

Marshall Steam Station Water Schematic
NPDES Permit #NC0004987
Catawba County



Supplemental Information

NPDES

Supplemental Information

For

Marshall Steam Station
NPDES Permit No. NC0004987

October 2014

1.0 General Information

Marshall Steam Station (MSS) is located on NC Highway 150, six miles west of I-77 in Catawba County on Lake Norman near Terrell, North Carolina. MSS consists of four coal-fired steam electric generating units. Units 1 and 2 can generate 380,000 kilowatts (net) of electricity each and units 3 and 4 have the capacity to generate 660,000 kilowatts (net) of electricity each.

A brief discussion of the individual waste streams follows.

2.0 Outfall Information

2.1 Outfall 001 - Condenser Cooling Water (CCW) Units 1-4

The CCW system is a once through non-contact cooling water system, which condenses steam from the condensers and other selected heat exchangers. When MSS is operating at full power, it has a design capacity to pump 1463 MGD (1,016,000 GPM) of cooling water through a network of tubes that runs through the condenser and selected heat exchangers. The raw cooling water is returned to the lake. No biocides or other chemicals are used in the condenser cooling water.

Units 1 and 2 have two CCW pumps per unit and Units 3 and 4 have three CCW pumps per unit with the following maximum flow capacities:

Unit No.	1-Pump GPM	2-Pump GPM	3-Pump GPM
1	126,000	190,000	-
2	126,000	190,000	-
3	150,000	253,000	318,000
4	150,000	253,000	318,000

The operational schedule for these pumps is dependent on the intake water temperature and on the unit loads. Depending on the electrical demand, pumps are operated to maximize MSS efficiency and to assure balanced and indigenous populations are maintained in Lake Norman. Each unit is on an independent system to avoid a system trip that would suddenly reduce the discharge flow at outfall 001. This practice leads to a higher reliability factor for the units and protection of aquatic life taking refuge in the discharge canal during cold weather. Flow recorded on the monthly Discharge Monitoring Reports is based on CCW pump run times.

The condensers are mechanically cleaned. Normally, amertap balls are cleaning the tubes on a continuous basis while the plant is operating. Periodically, after the condenser is drained, metal scrapers, plastic scrapers or rubber plugs are forced through the tubes to rid them of scale or other deposits. The condenser tubes may also be tested for leaks, as needed. A leak test can be conducted in approximately two to three hours per unit with usually no more than six injections of tracer gas (i.e., sulfur hexaflouride, helium, etc) each within approximately a 30 second period and/or checked with fluorescent dye. The dye is added to the condensate water and put on the outside of the condenser tubes. During the test, if fluorescent water does leak into the tubes, this discharge indicates a leak does exist in the condenser tubing. The levels of gas or dye that might be discharged would be well below any levels of aquatic biological toxicity concerns. If leaks are detected, then one method used to temporarily stop small leaks is to add sawdust to the CCW system, as previously approved by NCDENR. The sawdust is

added at amounts that will plug the leaks and not result in an environmental impact. This is a temporary measure until the unit can come off-line so the leaks can be permanently repaired.

2.1.1 Intake Screen Washing Manually by Removing Screens

The intake screens (32 total) are washed on an as needed basis. Normally, the screens require washing once a month for a period of approximately 5 minutes per screen. The screens (10 ft x 20 ft) are stationary type and are removed for cleaning. A low-pressure pump supplies the raw water required for washing with a design capacity of 300 gpm. Therefore, the average flow of water used to backwash the screens is 0.002 MGD. Should it become necessary to backwash the screens on a continuous basis the maximum flow would be 0.43 MGD per screen. The debris collected on the screens consists of twigs, leaves, and other material indigenous to Lake Norman and is removed and properly disposed. The intake screen backwash water drains back to the station intake cove without any adverse environmental impact.

2.2 Outfall 002 - Ash Basin

The ash basin at MSS accommodates flows from two yard-drain sumps, an ash removal system, low volume wastes and non-point source storm water. Low volume waste 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. Total average influent from these sources combined is approximately 8.3 MGD. At times, due to unit loads, rainfall, evaporation and seepage of ash basin ponds, the amount of effluent may be different than influent volumes.

2.2.1 Yard-Drain Sumps

The yard-drain sumps are concrete structures having four level controlled pumps each that direct wastewater from the powerhouse area to the ash basin. These pumps are operated on a rotating basis. Usually two pumps are set so that one pump is primary and the other is backup. After a selected period the controls are changed so that different pumps are utilized.

The yard-drain sumps collect wastewater from many sources, such as, the filtered water system, turbine and boiler room sumps, miscellaneous equipment cooling water, foundation drainage, low volume wastes, and tunnel unwatering. The yard-drain sumps also collect some storm water runoff from the coal pile, rail access, and powerhouse roofs and pavement. Ground water from a foundation drainage system under the track hopper is also intermittently discharged to the yard-drain sumps. The combined average flow from all sources tied to the yard-drain sumps is approximately 2.43 MGD, which is pumped to the ash basin for physical and biological treatment.

2.2.2 Turbine Room Sumps

The turbine room sumps collect approximately 0.35 MGD of wastewater. This wastewater comes from non-contact cooling water (from Units 1 & 2 boiler feedpump turbine lube oil coolers) and floor drains. Floor drains contain boiler blowdown, leakage from seals, equipment cooling water, condensate from the feedwater system, low volume wastewater, boiler room sump overflow, emergency fire fighting water, general mechanical maintenance activities, miscellaneous plant wastes and area washdown water.

2.2.3 Boiler Room Sumps

The average flow pumped from the boiler room sumps directly to the ash basin is approximately 1.55 MGD. The sources of input to the boiler room sumps include the following:

2.2.3.1 Water Treatment System

The MSS make-up water treatment system is comprised of a clarifier, three gravity filters, two sets of activated carbon filters, a reverse osmosis system and two sets of demineralizers. The water treatment wastes consist of floc and sedimentation, filter backwash, reverse osmosis concentrate reject and cleaning wastes, and demineralizer regeneration wastes. Water processed through this system is supplied to the boilers to generate steam to turn the turbines. On occasion a vendor may be used with a mobile water treatment unit to augment the facility water treatment capacity. Any vendor will use traditional water treatment methods, chemicals, and disposal methods generally described below. This wastewater is drained to the boiler room sump, which ultimately discharges to the ash basin.

Clarifier:

The clarifier utilizes typical water treatment chemicals such as, Ferric sulfate (), sodium hydroxide, and calcium hypochlorite for the primary treatment of raw water. The sedimentation wastes collected in the clarifier consists of solids that were suspended in the service water plus Ferric precipitate formed as a result of adding Ferric sulfate () and sodium hydroxide. The quantity of Ferric Sulfate used per year is approximately 14,000 gallons. The total amount of caustic is roughly one quarter the amount of Ferric Sulfate The average volume of water required for desludging the clarifier is approximately 0.008 MGD. These sedimentation wastes along with dilute water treatment chemicals and by-products are piped to a floor drain which flows to the boiler room sumps where they are pumped to the ash basin via the yard-drain sump.

Gravity Filters:

There are three gravity filters composed of anthracite (coal) which follow the clarifier in the water treatment process. They are used for removal of colloidal material and are backwashed as necessary, dependent upon the level of solids in the water. Normally, one of these filters is backwashed each day. Approximately 0.007 MGD of backwash water is required for each filter. This flow is discharged to the floor drains to the boiler room sump, which pumps to the yard-drain sump. The gravity filter medium is changed out on an as-needed basis with the spent filter media being landfilled.

Activated Carbon Filters:

Two activated carbon filters remove organics and the chlorine that is injected into the clarifier. These filters are typically backwashed approximately once a week. The flow of water required to backwash one of these filters is 20,000 gallons per day. The wash water flows to the boiler room sump and is pumped to the yard-drain sump. Activated carbon is replaced on an as needed basis with the spent carbon sluiced to the ash basin.

Reverse Osmosis System
There is a two stage Reverse Osmosis (RO) system which processes approximately 535 gallons per minute of filtered water. Approximately 400 gpm of permeate water is produced and flows to the permeate water storage tank. Approximately 135 gpm of concentrate water is produced which flows to the boiler room sump and ultimately the ash basin via the yard drain sump. Water from the permeate tank is pumped to the demineralizers as supply water.

The RO system is cleaned approximately twice per year using a dilute low pH cleaner (sulfonic acid/citric acid), biocide (Trisep Tristat 110), and a high pH cleaner (sodium hydroxide/sodium lauryl sulfate).

Demineralizers:
Demineralizers at MSS consist of two sets of mixed-bed cells which supply make-up water to the boilers and other closed systems. Normal plant operation requires that only one cell of each demineralizer set operate at any one time. Each cell has a capacity of 225 gpm.

Each cell is regenerated approximately every four weeks. Each year MSS will use an estimated 8,000 gallons of 50% caustic and 2,500 gallons 93% sulfuric acid for demineralizer regenerations. The dilute acid and caustic are discharged from the cell simultaneously through the same header for neutralization purposes. The regeneration wastes flow to the boiler room sumps where it is pumped to the ash basin via the yard-drain sump. The useful life of the resin varies and when replaced spent resin is sluiced to the ash basin.

2.2.3.2 Miscellaneous Waste Streams

- Closed system drainage, cleanings, testing containing corrosion inhibitors (Calgon CS), biocides (Calgon H-550 and H 7330), cleanings[1] (small heat exchangers), dispersant (polyacrylamide), wetting agent (sodium lauryl sulfate), detergent (tri-sodium phosphate), and leak testing (disodium fluorescing dye).
- Turbine room sump overflow
- Boiler seal water (trace oil and grease)
- Miscellaneous system leakages (small leaks from pump packings and seals, valve seals, pipe connections)
- Moisture separators on air compressor precipitators
- Floor wash water
- Emergency fire fighting water
- Pyrite (ash) removal system overflow
- Low Volume Wastewater, including internal boiler washes

2.2.3.3 Chemical makeup tanks and drums rinsate
Intermittent rinse water containing small amounts of Ferric sulfate, sodium hydroxide, hydrazine, ammonium hydroxide.

2.2.3.4 Boiler blowdown

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[1] To date small closed system cleanings (e.g. heat exchangers) have not used these chemicals, reserved for future use.

Primarily when units 1 & 2 startup and until water chemistry stabilizes the blowdown from these boilers is allowed to flash in a blowdown tank. During startup a significant portion of this blowdown steam is vented to the atmosphere. After water chemistry has stabilized, blowdown venting is minimal and condensate flow is small. Trace amounts of hydrazine, ammonia, and silica oxide may be present in the condensate. The combined condensate flow from blowdown amounts to an average of approximately 0.002 MGD. This flow is routed to the boiler room sump and then to the ash basin.

2.2.3.5 Boiler Cleaning

Boilers #1, #2, #3 and #4 at MSS are chemically cleaned on an as needed basis. Tube inspections are performed during outages, which indicate when cleaning needs scheduling. Boilers #1 and #2 are controlled circulation boilers and boilers #3 and #4 are supercritical boilers. The wastes produced from a boiler chemical cleaning are pumped to the ash basin.

Boilers #1 and #2 each have a water-side volume of 51,600 gallons. The volume of #3 and #4 boilers is 35,300 gallons each. The total volume of dilute waste chemicals, including rinses, discharged from #1 or #2 boilers during a chemical cleaning is 580,000 gallons. The total volume of dilute waste chemicals drained from #3 or #4 amounts to 320,000 gallons. This dilute wastewater is drained through temporary piping to permanent ash removal piping where flow goes to the ash basin. The chemicals and approximate amounts for each cleaning are listed below.

CLEANING CHEMICALS	AMOUNT USED PER UNIT	
Alkaline Boilouts – (only after major boiler tube work)		
	Boiler #1 or #2	**Boiler #3 or #4**
Soda Ash	4400 lb	NA
Trisodium Phosphate	NA	3000 lb
Triton X-100* Detergent (0.05%)	25 gal	18 gal
Antifoam Agent (0.025%)	13 gal	9 gal
*** or equivalent detergent**		
EDTA Boiler Chemical Cleaning		
	Boiler #1 or #2	**Boiler #3 or #4**
Tetra-ammonium EDTA (38%)	11000 gal	NA
Antifoam Agent	15 gal	10 gal
Ammonium Hydroxide (26°Be')	NA	1,400 gal
Di-ammonium EDTA (44.5%)	NA	6,000 gal
Rodine 2002 (corrosion inhibitor)	300 gal	240 gal

Regardless of the method used for cleaning, no waste water will be discharged to the ash basin, rather all cleaning waste waters will either be evaporated in the boiler or collected and transported off-site for proper treatment and disposal.

2.2.4 Stormwater Runoff

The ash basin collects/receives flows from the yard drainage basins, ash removal lines and rainfall run-off from the basin watershed area. Some of the flows pumped into the ash basin from the yard drains include roof runoff, stormwater discharge from transformer containments, stormwater discharge fom fuel oil containments, stormwater from the FGD facility, rail lines, coal handling facilities, chemical storage and miscellaneous plant equipment. Details of storm water the runoff that flows into the ash basin via gravity are described in section 2.2.15.

2.2.5 Induced Draft Fan Motor Bearing Cooling Water

Once through non-contact cooling water is supplied to eight induced draft (ID) fan motor bearings to remove excess heat. No chemicals are added to the once through raw lake water. The rate of flow through the ID fan heat exchangers that discharges to the yard-drain sumps is approximately 0.08 MGD, which is pumped to the ash basin.

2.2.6 Track Hopper Sump

The track hopper sump collects ground water from a foundation drain system underneath the track hopper. The flow is usually intermittent; however, the pump capacity is 100 gpm. On a daily basis it is estimated that the run time is only 50% which would correspond to a flow of 0.07 MGD to the yard-drain sumps, which is pumped to the ash basin.

2.2.7 CCW Tunnel-Unwatering Sump

In the event that maintenance activities are needed in the intake or discharge tunnels an unwatering sump is provided to remove water from the tunnels. Raw water in the tunnels can be pumped to the yard-drain sumps that ultimately discharge to the ash basin.

2.2.8 Turbine Non-Destructive Testing

Bore sonic testing of turbine rotors is infrequent, once every 5 years. Demineralized water is mixed with a corrosion inhibitor, e.g. Immunol 1228, at a ratio of 100 parts water to 1 part inhibitor. The mixture is applied to the turbine rotors. The excess is drained and mixed with low volume wastewater and discharged to the ash basin via the yard-drain sumps.

2.2.9 Ash Sluice

MSS utilizes electrostatic precipitators as its air pollution control devices. Under normal plant operations, the dry fly ash captured in these precipitators is collected in temporary storage silos for subsequent disposal in a permitted on-site structural fill or for recycling in off-site ash utilization projects. If the system that collects the dry fly ash is not operating, the fly ash can be sluiced to the ash basin. Bottom ash from the boilers is usually sluiced with water to a holding cell for recycling activities. Pyrites from the mills are sluiced with water to an ash basin settling-cell. Approximately 3.21 MGD of fly/bottom ash and pyrite sluice is pumped through large steel pipes (ash lines) directly to the ash basin settling-cell. Once through non-contact cooling water from the coal pulverizing mill is discharged to the bottom ash hopper and pumped to the ash basin.

Electrostatic precipitators at MSS are normally cleaned by mechanically vibrating the wires and rapping the plates inside the precipitator. Before major precipitator work is performed they are cleaned by a wash down. The wash water is pumped to the ash basin from the yard-drain sump.

2.2.10 Sanitary Waste

A sanitary waste treatment system is operational and consists of an aerated basin that provides treatment with a 30-day retention time and has a total volume of 587,000 gallons. Effluent from the aerated basin is polished further through additional residence time in the ash basin. The system is designed for 6100 gpd (normal) and 13,500 gpd (outage).

The powerhouse lift station was installed as a central collection point to receive all the sanitary waste from MSS and pump it to the aerated basin.

The sanitary system accommodates wastewater flow from the following sources:

- General plant sanitary wastewater
- Vendor facilities sanitary wastewater
- Laboratory drains (Small amounts of laboratory chemicals used to test wastewater effluents and high purity boiler water, see the following table for non-hazardous substance).

Substance	Quantity	Location
2-Propanol	4 gal.	Lab/Warehouse
Glycerin	4 gal.	Lab/Warehouse
Indigo carmine	0.3 lb	Lab
Dimethylaminobenzaldehyde	0.22 lbs	Lab

Table values represents typical quantities on-site at any given time and do not necessarily reflect quantities discharged.

2.2.11 Ash Silo Storm Water Sump

A ash silo system has been constructed for dry handling of the ash. This system includes a sump for collection of rainfall runoff and washdown of the silo area, which is pumped to the ash basin. This sump's drainage area is approximately 1 acre. Overall, this will be a minimal input to the ash basin.

2.2.12 Wastewater from Plant Additions

2.2.12.1 Selective Non-Catalytic Reduction (SNCR)

As part of the compliance with the North Carolina Clean Air Initiative (NCCAIR), Marshall installed urea based "trim" Selective Non-Catalytic Reduction (SNCR) systems on units 1, 2, and 4. The trim SNCR systems are expected to reduce NOx emissions by approximately 20%. SNCR systems operate by injecting urea liquor into the upper section of the boiler where a chemical reaction occurs to reduce the NOx to water and nitrogen. Some residual ammonia will be collected in the fly ash from the electrostatic precipitators. The majority of this ammonia will stay with the ash as it is handled dry but a small amount may be carried to the ash basin. However, the operation of the SNCR system is not expected to require additional treatment capabilities to ensure compliance with NPDES permit limits. Marshall units 1, 2, and 4 currently are using this technology to reduce NOx whereas unit 3 operates a Selective Catalytic Reduction (SCR) system.

2.2.12.2 Selective Catalytic Reduction (SCR)

As part of the compliance with the North Carolina Clean Air Initiative (NCCAIR), Marshall has replaced unit 3's SNCR with a more efficient Selective Catalytic Reduction (SCR) system, capable of reducing NOx by approximately 90%. This SCR utilizes a urea to ammonia (U2A) which converts the urea liquor into an ammonia gas, external to the boiler in a hydrolyzer. The hydrolyzer contains approximately 1000 gallons of urea while in operation and periodic blowdowns occur to flush out sediment in the bottom of each hydrolzer. Small quantities of urea will be discharged into the ash basin from the blowdown process. Roughly, 10 gallons a week is discarded during the blowdown process and is collected in the ash basin. Similar to the SNCR, the SCR will also result in small traces of ammonia in the fly ash that is collected from the electrostatic precipitators. The majority of this ammonia will remain with the ash as it is handled dry but a small amount may be carried to the ash basin. However, the operation of the SCR system is not expected to require additional treatment capabilities to ensure compliance with NPDES permit limits.

2.2.12.3 Flue Gas Desulfurization (FGD)

The installation of a Wet Flue Gas Desulfurization (FGD) system was completed in 2006 at Marshall for Unit 4. The remaining units FGD systems were completed in 2007. The FGD is an air pollution control system that removes SO_2 from the flue gas system. In a Wet Scrubber system the SO_2 component of the flue gas produced from the coal combustion process is removed by reaction with limestone-water slurry. The particular system used at Marshall will collect the flue gas after it passes through the electrostatic precipitator and route the gas into the lower end of a vertical tank. As the gas rises through the tank to the outlet at the top, the gas passes through a spray header. An atomized slurry of water and limestone droplets is continually sprayed through this header into the stream of flue gas. The SO_2 in the flue gas reacts with the calcium in the limestone and produces SO_3. The SO_3 slurry falls to the bottom of the tank where a stream of air is injected to oxidize the slurry to form gypsum ($CaSO_4 \cdot H_2O$). The gypsum slurry is drawn off the tank to a hydrocyclone and subsequently routed to a vacuum belt filter. The liquid waste from this process will be treated as wastewater in the constructed treatment wetlands. The effluent from the CTW discharges to the ash basin (via NPDES Internal Outfall 004).

The FGD system requires a material handling system that supplies limestone to the scrubber and a gypsum storage area for the gypsum removed from the process. The limestone comes into the site by rail and is stored in an area near the coal pile. It is then transferred to the FGD site via a covered conveyor. Runoff from the storage area is routed to the ash basin. The gypsum is routed from the FGD tank via a covered conveyor belt that carries it to a storage pile. The runoff from this area is also routed to the ash basin.

The FGD system also requires a gypsum landfill. The FGD landfill is located west of the Marshall Ash Basin. The runoff and leachate from this landfill is routed to the ash basin. FGD residue material that is not suitable for beneficial use as wallboard will be placed in the landfill. In addition to this material, material is periodically removed from the clarifier stage of the wastewater treatment

system and placed in the landfill. The landfill footprint contains approximately 20.64 acres. The landfill is permitted to receive asbestos from Duke Genergy Carolinas, facilities, generated gypsum from the Allen, Marshall and Cliffside Stations, generated clarifier sludge from the Allen, Marshall and Cliffside Sations as well as the following wastes generated soly from the Marshall Station: fly and bottom ash, C&D debris, pyrites, waste limestone material, land clearing and inert debris, boiler slag, mill regects, sand blast material and coal waste. The FGD residue is conveyed to the landfill site by truck, where the material is spread and compacted. The landfill began receiving FGD residue in the fall of 2006. The volumetric capacity of the landfill is 2.19 million yd^3. Duke Energy is exploring other beneficial uses for the FGD residue (gypsum). If these options are determined to be viable, the FGD residue meeting the material requirements for the beneficial uses will not be disposed in the landfill.

2.2.13 Seepage

MSS has identified two seeps in the vicinity of the of the ash basin dam. These seeps contribute a small amount of water to Lake Norman.

2.2.14 Industrial Waste landfill Leachate

Construction of an industrial waste landfill is scheduled to begin in early 2010. Landfill operation is slated for late 2010. Fly ash, FGD gypsum and clarifier sludge will be disposed in this landfill. Landfill runoff and leachate will be routed to the ash basin for treatment.

2.2.15 Stormwater Gravity Drains to the Ash Basin

Marshall Steam Station has several non-stormwater discharge drainage areas that drain via gravity flow into the ash settling basin, or discharge into station sumps that subsequently pump to the ash settling basin. These aere addressed were addressed in Section 2.2.4. All of the areas north of the primary coal delivery rail lines gravity drain to the ash settling basin. The following is a summary of the stormwater that gavity drains to the ash basin:

2.2.15.1 FGD Gypsum Radial Stacker

This drainage area includes the FGD gypsum radial stacker operation and portions of an adjacent soil borrow area. Stormwater runoff from this area enters a detention basin before discharging into a tributary of the ash settling basin to the north.

2.2.15.2 Soil Borrow Area

This drainage area includes the remaining portions of the soil borrow area. Stormwater runoff from this area enters a detention basin on the west side of the drainage area before discharging into a small creek that flows to the ash settling basin.

2.2.15.3 Drainage Area 15 – FGD Landfill

This drainage area includes the FGD residue landfill. Stormwater runoff from this area enters a detention basin at the southeastern edge of the landfill and is subsequently piped via gravity flow to the ash settling basin.

This landfill also includes FGD wastewater treatment sludge, asbestos, flyash, bottom ash, mill rejects, and construction and demolition debris.

2.2.15.4 Coal Pile

This drainage area is comprised entirely of the station coal storage pile. Stormwater runoff from this area enters perimeter ditches that discharge into the ash basin.

2.2.15.5 Sanitary Wastewater Lagoon

This drainage area is comprised of the sanitary wastewater treatment lagoon and surrounding area. Stormwater runoff discharges into the ash basin to the north.

2.2.15.6 FGD Constructed Wetland Treatment System

This drainage area is comprised of the constructed wetland treatment system (CWTS) designed to treat wastewater from the FGD solid removal wastewater treatment system. Stormwater runoff from the CWTS area flows into the adjacent ash settling basin.

2.2.15.7 Bottom Ash Operation and Pyrite Operation

This drainage area includes the bottom ash operation and recovery of coal from pyrites. All stormwater runoff from this area is routed via ditches into the ash settling basin.

2.2.15.8 Closed Ash Landfill

This drainage area includes the closed and capped ash landfill. All stormwater runoff from this area is routed via ditches into the ash settling basin.

2.2.15.9 Beneficial Structural Fill

This drainage area includes the active beneficial ash structural fill. All stormwater runoff from this area is routed via ditches into the ash settling basin.

2.3 Outfalls 002A and 002B - Yard-Drain Sump Emergency Overflow

An overflow pipe that could direct flow from the sump to Lake Norman was included in the construction of the two yard sumps. This modification was performed to prevent submergence and damage of the pump motors within the sumps in the event that all pumps failed or redundant power supply lines could not be restored in a timely manner. Outfall 002A has overflowed five times between April 2007 and March 2009. Outfall 002B has overflowed two times between April 2007 and March 2009. Observations and monitoring of effluent during these events have indicated no noticeable impact to water quality. No sanitary waste is routed through the yard-drain sumps.

2.4 Outfall 003 - Unit 4 ID Fan Control House Cooling Water

Once through non-contact cooling water is supplied to the Unit 4 induced draft (ID) fan motor control-house equipment to remove excess heat. No chemicals are added to the once through raw lake water. The flow rate through the control equipment that discharges to Lake Norman is approximately 0.2 MGD.

2.5 Internal Outfall 004 – Treated FGD Wet Scrubber Wastewater

The wastewater from the FGD system is conveyed to the wastewater solids removal system, which discharges into the mixed equalization tank. The wastewater contained in the equalization tank is conveyed to the flocculating clarifier which is utilized as the liquid/solids separation device. Polymer may be injected to aid in the settling process. Clarified effluent is conveyed to the Constructed Treatment Wetlands (CTW) supply tank.

Settled solids are removed from the clarifier by the operating sludge transfer pump and conveyed to the mixed sludge holding tank and dewatered by the filter presses. Dewatered cake from the filter presses is ultimately landfilled. Filtrate from the dewatering process is conveyed to the equalization tank for reprocessing.

The CTW system receives wastewater from the clarifier unit where it enters two equalization basins, each with a 24-hour hydraulic retention time (HRT) for cooling, mixing, concentration equalization, and settling of solids. Water from the equalization basins is normally split into 6 flows then to three equal flows, each entering a treatment train consisting of two 1.28 acre wetland cells (36 hour HRT), a 0.24 acre rock filter and a 1.67 acre final wetland cell (64 hour HRT). Total area of treatment is approximately 15 acres with a normal HRT of 8 days based on average projected flows. The CTW system will treat an average flow of 1.2 and a peak flow of 1.4 MGD.

3.0 Additional Information

FUEL AND OIL STORAGE TANKS

The following above ground fuel and oil storage tanks are located at MSS:

- two 500 gallon,
- three 1,000 gallon,
- 2,000 gallon,
- 5,000 gallon
- two 500,000 gallon fuel-oil tanks;
- 1000 gallon gasoline tank;
- four 750 gallon lubricating-oil tanks;
- 500 gallon hydraulic-oil tank;
- 900 gallon used-oil tank;
- 8000 gallon used-oil tank (inside the powerhouse).

At the time of this application, only one of the 500,000 gallon fuel-oil tanks is in service. All above ground tanks at MSS have secondary containment provided that is capable of containing the entire contents of the tank.

All oil storage facilities and oil filled equipment are presently covered under Spill Prevention Control and Countermeasure Plans (SPCC)[2].

5.0 Hazardous and Toxic Substances

5.1 Hazardous and Toxic Substances Table 2c-3

[2] SPCC Plan required by 40 CFR 112.

At MSS, the potential for toxic and hazardous substances being discharged is very low. In reference to item V-D of Form 2-C, the substances identified under Table 2c-3 that may be in the discharge are as follows:

Marshall Steam Station Hazardous and Toxic Substances
Table 5.1

Acetaldehyde	Dodecylbenzenesulfonic Acid	Nitric Acid	Sodium Hydroxide
Acetic Acid	Ethylbenzene	Phenol	Sodium Hypochlorite
Adipic Acid	Ferrous Sulfate	Phosphoric Acid	Sodium Phosphate Diabasic
Aluminum sulfate	Formaldehyde	Phosphorus	Sodium Phosphate Tribasic
Ammonia	Hydrochloric Acid	Potassium Bichromate	Styrene
Ammonium Chloride	Hydrofluoric Acid	Potassium Hydroxide	Sulfuric acid
Ammonium Hydroxide	Hydrogen Sulfide	Potassium Permanganate	Toluene
Antimony Trioxide	Maleic Acid	Propionic Acid	Vanadium Pentoxide
Asbestos	Mercuric Nitrate	Pyrethrins	Vinyl Acetate
Benzene	Monoethylamine	Sodium Dodecylbenzenesulfonate	Xylene (Mixed Isomers)
Chlorine	Naphthenic Acidalene	Sodium Fluoride	Zinc Chloride
Cupric Nitrate	Cyclohexane	Nickel Hydroxide	

During the course of the year products such as commercial cleaners and laboratory reagents may be purchased that can contain very low levels of a substance found in Table 2C-3. It is not anticipated that these products will impact the ash basin's capacity to comply with its toxicity limits, since their concentrations are extremely low.

5.2 40 CFR 117 and CERCLA Hazardous Substances

The table below identifies hazardous substances located on-site that may be released to the ash basin during a spill. Substances listed are present in quantities equal to or greater than the reportable quantity (RQ) levels as referenced in 40 CFR 117, 302 and 355. This list is being provided in order to qualify for the spill reportability exemption provided in 40 CFR 117 and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

Marshall Steam Station Hazardous Substances in Excess of RQ
Table 5.2

SUBSTANCE	QUANTITY	SOURCE
Aluminum sulfate	40,987 lbs	Powerhouse/Water Treatment
Ammonium hydroxide	3,317 lbs	Powerhouse
Benzene	167 lbs	Gasoline Tank
Hydrazine*	2,145 lbs	Powerhouse/Warehouse
Methyl Tert-Butyl Ether	1,334 lbs	Gasoline Tank
Naphthalene	41,700 lbs	Fuel Oil Tanks

Sodium hydroxide	50,040 lbs	Powerhouse
Sulfuric acid	6,738 lbs	Powerhouse
Xylene (Mixed Isomers)	42,992 lbs	Fuel Oil Tanks
Ferric Sulfate	116,620 lbs	Water Treatment

Values in Table 5.2 represent maximum quantities usually on-site at any given time and do not necessarily reflect quantities discharged. Various amounts of these substances may go to the ash basin for treatment due to use in site laboratories, small leaks, spills, or drainage from closed loop systems. Treatment of these substances and their by-products is achieved by physical and biological activity in the ash basin.

*Listed in 40 CFR 302.4 - Table 302.4 *List of Hazardous Substances and Reportable Quantities.*

6.0 Marshall Steam Station 316 Determination

6.1 316(a) Determination

During the term of this permit Duke Energy has continued to monitor the receiving waters of Lake Norman in an attempt to determine if the Lake still supports a balanced and indigenous population. The attached Balanced and Indigenous Population Report (BIP) continues to indicate that Lake Norman continues to support a balanced and indigenous population of fish and macro-invertebrates. Therefore, Duke energy request that the thermal variance for the Marshall Steam Station be continued for the next permit cycle.

6.2 Marshall Steam Station 316(b) Determination

Please see the attached alternate schedule request.