Permit No.	Date	DIN
18-12	**February 4, 2010**	**9546**

APPROVED DOCUMENT
Division of Waste Management
Solid Waste Section
Date **February 26, 2010** By **LY Frost**

RECEIVED
February 4, 2010
Solid Waste Section
Asheville Regional Office

PERMIT TO CONSTRUCT APPLICATION
OPERATIONS PLAN
INDUSTRIAL LANDFILL NO. 1
MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

S&ME Project No. 1356-08-122

Prepared for:
Duke Energy Carolinas, LLC
526 South Church Street
Charlotte, North Carolina 28202

Prepared by:
S&ME, Inc.
S&ME Engineering License No. F-0176

9751 Southern Pine Boulevard
Charlotte, North Carolina 28273

November 24, 2009

Revised February 3, 2010

TABLE OF CONTENTS

FIGURES

APPENDIX

1. GENERAL FACILITY OPERATIONS

1.1 Overview

This Operations Plan is part of the Permit to Construct Application for the Industrial Landfill No. 1 at Marshall Steam Station and presents the landfill's operational requirements for: (1) general facility operations; (2) waste handling and landfill sequencing; and (3) environmental management. This Operations Plan was prepared consistent with the requirements of Rules .0505 of 15A NCAC 13B of the North Carolina Solid Waste Management Rules.

The proposed Industrial Landfill No. 1 is owned by Duke Energy Carolinas, LLC (Duke Energy). The operations of the facility will either be overseen by a Duke Energy Operations Manager or subcontracted to an outside company.

1.2 Contact Information

Correspondence and questions concerning the operation of the landfill should be directed to the appropriate entity as follows:

- ***OWNER***
  Duke Energy Carolinas, LLC – Marshall Steam Station
  8320 East NC Highway 150, Terrell, NC 28682
  (828) 478-7700
  Facility Contact: Coordinator Material Handling or Environmental Professional

- ***STATE REGULATORY AGENCY***
  North Carolina Department of Environment and Natural Resources

  Division of Waste Management, Solid Waste Section
  Asheville Regional Office (Permitting)
  2090 US Highway 70, Swannanoa, NC 28778
  (828) 296-4500
  Regional Engineer: Larry Frost

  Mooresville Regional Office (Operations)
  610 East Center Avenue, Mooresville, NC 28115
  (704)-663-1699
  Regional Engineer: Charles Gerstell

- ***ENGINEER***
  S&ME, Inc.
  9751 Southern Pine Blvd., Charlotte, NC 28273
  (704) 523-4726
  Project Engineer: Ken Daly, P.E.

1.3 Safety

Landfill operations were developed considering the health and safety of the facility's operating staff. Duke Energy will provide each of the operating staff with site specific safety training prior to landfill operations and designate on-site safety protocols in accordance to Duke Energy's Safe Work Practices. An Emergency Action Plan (EAP) is included in Appendix I to provide guidance in the event of a slope failure.

1.4 Access and Security Requirements

Access roads to the landfill will be of all weather construction and maintained in good condition. To prevent unauthorized entry, access to the Duke Energy property is controlled by either perimeter fencing or steep terrain with dense vegetation. Site access into the plant is also controlled by a gate at the main entrance.

1.5 Signs

Signs providing the permit number, stating that no hazardous or un-permitted waste can be received, and other pertinent information will be posted at the site entrance. Traffic signs and markers will be provided as necessary to promote an orderly traffic pattern to and from the active disposal area and maintain efficient operating conditions. The entrance sign will state:

"Industrial Solid Waste Landfill Facility
Permit No. 18-12
No Hazardous or Un-Permitted Waste Allowed
Contact Plant Coordinator Materials Handling or Environmental Professional
(828) 478-7700"

1.6 Dust Control

Dust generated on haul roads will be controlled through the application of water and road maintenance. Mud and dirt from the haul and access roads will be removed by washing or with heavy construction equipment. Dust and windblown ash will be controlled through the use of cover soils and interim spray applied coverings such as cement-based coverings (i.e. posi-shell) and hydroseed mulch. Additionally, interim and final covers will be vegetated as soon as practical in order to minimize the blowing of dust on-site.

1.7 Fire Control

No open burning shall be permitted at the landfill. Ash is a non-combustible material and the threat of fire is minimal. However, if a fire occurs at the landfill the local fire department shall be notified and equipment and stockpiled soil shall be provided to control accidental fires. Any fire that occurs at the landfill shall be reported to the Division within 24 hours and a written notification will be submitted within 15 days by the Operations Manager.

1.8 Training

Due to the diversity and nature of job tasks required at the landfill, personnel should be adequately trained to handle facility operations and maintenance. The Operations Manager

should have a general understanding of all the tasks required for site operations. Individuals performing the various tasks should have adequate training for the specific tasks they are assigned. Noteworthy operations and maintenance tasks to be addressed in training include:

- maintaining accurate records of waste loading (quantitative and qualitative);
- operating requirements for stormwater segregation from exposed waste areas; and
- operating and maintaining leachate collection system and leak detection system.

The facility operator will complete approved operator training courses in accordance with permit requirements.

1.9 Record Keeping

An operating record will be maintained on-site and will include the following:

- Leak Detection System (LDS) monitoring information;
  - Documentation of an approved response action plan from the Division;
  - Records of the amount of liquids removed at each sump;
  - Notice of exceedence of action leakage rate for sumps (if any);
  - Preliminary assessment report for exceedence of action leakage rate (if any);
  - Reports documenting remedial actions (if any);
- Closure and post-closure LDS monitoring plan and results;
- Operations Plan.

The above records will be kept in the operating record for the active life of the landfill and the post-closure care period. Information contained in the operating record must be furnished upon request to the Division or made available for inspection by the Division. Additional records kept on-site will include:

- Facility Permits;
  - Solid waste facility permits;
  - Erosion and Sediment Control Plan;
- Regulatory agency inspection reports;
- Site Suitability Study;
- Employee training program and records; and
- Site drawings and specifications.

1.10 Erosion and Sedimentation Control

Erosion and sedimentation control (E&SC) responsibilities during operations shall consist of monitoring E&SC stormwater conveyance features, surface erosion, and discharge points.

1.10.1 E&SC Features Monitoring

E&SC features include rain gutters, road ditches, outlet protection aprons, downchute piping, and direct runoff to perimeter ditches. Prior to landfill closure, E&SC features shall be checked weekly. During post closure, E&SC features shall be checked quarterly and after a 1-inch rainfall event. Sediment shall be removed from structures to their original dimensions when conditions warrant. Necessary repairs shall be made as soon as practical.

Prior to closure, channels shall be monitored after each runoff event. Following closure, channels shall be checked after each 1-inch rainfall event. Riprap-lined channel sections and outlet protection aprons shall be checked for washouts. Riprap shall be added to these areas as needed to maintain the integrity of the structure.

1.10.2 Surface Erosion Monitoring

Vegetative ground cover sufficient to control erosion must be established within 15 working days or 90 calendar days upon completion of any phase of landfill development as per the North Carolina Erosion and Sedimentation Control Guidelines. Seedbed preparation, seeding, soil amendments, and mulching for the establishment of vegetative ground cover shall be applied in accordance with Figure 11, Seeding Specification.

Slopes shall be periodically checked for erosion and vegetative quality, fertilized, and mowed at least once a year. A slope or portion thereof shall be identified as needing maintenance if it meets any one of the following conditions:

- Exposed waste on exterior slopes;
- Bare spots larger than 25 square feet;
- Bare spots make up more than 2% of total seeded area;
- Rills exceeding 4 inches in depth;
- Areas of cracking, sliding, or sloughing; or
- Areas of seepage

Slopes identified as needing maintenance shall be repaired as soon as practical and as appropriate to correct deficiencies. Repair activities may include re-dressing the slope, filling in low areas, and/or seeding in accordance with Figure 11: Seeding Specification. In the event that cracking, sliding, sloughing, or seepage is identified on slopes, a slope failure identification criteria is met , and the Notification Sequence provided in the Emergency Action Plan (EAP) included in Appendix I should be followed accordingly.

1.10.3 Stormwater Discharge

The landfill operation shall not cause a discharge of pollutants into waters of the United States, including wetlands, that violates any requirement of the Clean Water Act, including, but not limited to, NPDES requirements, pursuant to Section 402. In addition, under the requirements of Section 404 of the Clean Water Act, the discharge of dredged or fill material into waters of the state that would be in violation of the requirements shall not be allowed by landfill operations.

Operations at the landfill shall not cause the discharge of a non-point source of pollution to waters of the United States, including wetlands, that violates any requirement of an area-wide or statewide water quality management plan that has been approved under Section 208 or 319 of the Clean Water Act, as amended.

2. WASTE HANDLING AND LANDFILL SEQUENCING

2.1 Landfill Capacity

The landfill is comprised of phases, which are further subdivided into cells. Phase 1 of the landfill consists of Cells 1, 2, 3, and 4 and has an operational life of approximately 5.2. Landfill sequencing is further described in Section 2.4 of this Operations Plan. The whole landfill is estimated to have a storage life of approximately 24.3 years, based on a projected disposal rate of 738,000 tons per year.

The landfill capacity was estimated using the proposed grading and closure plans in conjunction with the anticipated annual disposal rates. The volume of Phase 1 available for waste placement, which consists of the airspace between the protective cover soil and the proposed top of waste, was estimated to be on the order of 3,829,020 cubic yards. Landfill capacity is further described in Section 7.1 of the accompanying Engineering and Facility Plan.

2.2 Waste Acceptance, Disposal, and Screening Requirements

The landfill will only accept fly ash, bottom ash, flue gas desulfurization (FGD) gypsum, FGD clarifier sludge, asbestos material, land clearing and inert debris, coal mill rejects, waste limestone material, and boiler slag generated at the Marshall Steam Station. The landfill owner or operator shall notify the Division within 24 hours of attempted disposal of any wastes the landfill is not permitted to receive. Hazardous, liquid, or infectious wastes shall not be disposed of in the landfill. The removal of waste from the landfill is prohibited unless the owner or operator approves and the removal is not performed on the working face.

The proposed landfill will be receiving a relatively consistent and homogeneous waste stream of combustion products residuals generated solely from the Marshall Steam Station. Waste will be hauled and disposed of by dedicated and consistent operators from the waste source to the landfill. As hauling and disposal operations are wholly contained within the site, random inspections are not proposed. Rather loads will be monitored continuously through operations. Based on the consistent and homogeneous waste stream it is anticipated that municipal solid waste, hazardous, liquid, or non-permitted wastes will be readily distinguished from the ordinary waste stream.

2.3 Operating Concepts

The primary objective of the landfill is to operate safely and efficiently while minimizing leachate generation and controlling stormwater. The landfill development will be sequenced in Phases as indicated on Figure 1. The Facility's final closure grading plan is presented on

Figure 2. Landfilling operations will generally proceed from the north towards the south by the use of cells. In general, waste placement will be performed in 10-foot lifts with operations usually being focused within a particular cell area. Subsequent landfilling operations in the cell will generally be limited to an exposed surface area of approximately 2 acres, at the operator's discretion, with waste in other areas covered with operational, intermediate, or final cover as appropriate. Soil diversion berms will be used to collect and divert the non-contact stormwater runoff from exterior landfill slopes to areas where the runoff will be directed to an active ash basin. When the desired waste elevations are obtained within the cell, waste placement will move to the next cell where the process will be repeated.

2.4 Landfill Sequencing

The general steps for the operation of the landfill are summarized below and are shown on the operations diagrams provided as Figures 3 through 10. In general the waste fill shall progress in approximate 10-ft thick operational lifts made up of 1-ft thick compacted lifts. Waste placement shall be graded to shed contact water into the landfill cell. When the operator is ready to place operational (i.e. weekly) or interim cover soil, subject areas may be graded to shed stormwater runoff (that has not contacted waste) out of the landfill cell to the perimeter stormwater conveyance channels.

In general, waste filling shall progress from the high end toward the low end of each cell to promote management of contact and non-contact water. The landfill sump areas shall not be covered with waste during placement of the first two, 10-ft thick operational lifts. Rather the sump areas shall remain exposed to promote management of leachate and contact water, anticipated to be greater during early stages of landfill operations. After the first two, 10-ft thick operational lifts are placed, the sump areas may be covered with waste.

Landfill operations will begin in Cell 1 and proceed sequentially to Cell 2, Cell 3, and Cell 4. A step-by-step waste filling sequence is illustrated in the attached Figures and summarized below only for the first steps of filling Cells 1 and 2. Operations personnel shall fill the remainder of the Cells following a sequence similar to the one illustrated for Cells 1 and 2.

Waste placement shall begin in Cell 1 and shall progress sequentially with waste placement in approximate quadrants of Cell 1 as shown in Figures 3 through 5. The general waste filling sequence is described as follows.

- Step 1A (Figure 3): place a 10-ft thick operational lift in the Cell 1 northwest quadrant, graded to promote contact water drainage towards the sump within the landfill.
- Step 1B (Figure 3): place the next 10-ft thick operational lift in the Cell 1 northwest quadrant, place operational cover soil with finished grades sloping to promote non-contact stormwater runoff to the landfill perimeter.

- Step 2A (Figure 4): place a 10-ft thick operational lift in the Cell 1 southwest quadrant, graded to promote contact water drainage towards the sump within the landfill.
- Step 2B (Figure 4): place the next 10-ft thick operational lift in the Cell 1 southwest quadrant, place operational cover soil with finished grades sloping to promote non-contact stormwater runoff to the landfill perimeter.
- Step 3A (Figure 5): place a 10-ft thick operational lift in the Cell 1 northeast quadrant, graded to promote contact water drainage towards the sump within the landfill. Then place the next 10-ft thick operational lift and place operational cover soil with finished grades sloping to promote non-contact stormwater runoff to the landfill perimeter.
- Step 3B (Figure 5): place a 10-ft thick operational lift in the Cell 1 southeast quadrant, graded to promote contact water drainage towards the sump within the landfill. Then place the next 10-ft thick operational lift and place operational cover soil with finished grades sloping to promote non-contact stormwater runoff to the landfill perimeter.
- Step 4 (Figure 6): for Cell 2, place 10-ft thick operational lifts following the quadrant based sequence illustrated in Steps 1 through 3 to reach proposed grades.

This general pattern of filling shall be repeated until the interim cover grading plan for Cells 1 and 2 as illustrated in Figure 7 is achieved. This general pattern of filling is also illustrated in the cross section provided in Figure 10. During filling, exterior stormwater conveyance features shall be constructed to manage non-contact stormwater runoff consistent with the Cell 1 and 2 Stormwater Management Plan (Engineering Plan Drawing C13).

Waste placement shall progress in Cells 3 and 4 in the same general pattern of filling and "piggyback" over Cells 1 and 2 as illustrated on Figure 8. The interim cover closure grading plan for Phase 1 is illustrated in Figure 9. Exterior stormwater conveyance features shall be constructed to manage non-contact stormwater runoff consistent with the Phase 1 Stormwater Management Plan (Engineering Plan Drawing C14).

2.5 Waste and Cover Material Placement

Waste and cover material shall be placed to the lines and grades shown on the grading plans with slopes no steeper than 3 (horizontal) to 1 (vertical). The Cells 1 and 2 grading plan is provided in Figure 3. The Phase 1 grading plan is provided in Figure 4. Prior to waste placement, stakes indicating the limits of waste placement, as shown on the Engineering Plan Drawings, shall be located. The waste shall be compacted as densely as practical using compactors and dozers in approximate 1-foot lifts to achieve a vertical operational lift thickness of 10 feet.

The primary objective during operations is to manage and segregate contact leachate from non-contact stormwater runoff. Contact leachate should be contained within the landfill. In order to effectively manage leachate, the waste shall initially be placed from up-gradient to down-gradient to promote drainage to the sump. Waste placement on the

first few lifts shall terminate up-gradient of the sump to leave this area exposed. As higher waste elevations are achieved, the waste may be placed in the sump area, as long as landfill surfaces are graded to promote proper drainage into the landfill. A minimum five percent slope shall be graded on the landfill surface to promote surface water runoff. Waste shall not be disposed of in water.

Asbestos waste material and FGD clarifier sludge require specialty handling and disposal methods as described herein. Asbestos waste shall be packaged in accordance with 40 CFR 61, and it may be disposed of separate and apart from other solid wastes at the bottom of the working face or in an area not contiguous with other disposal areas. Separate areas shall be clearly marked so that asbestos is not exposed by future land-disturbing activities. The waste shall be covered immediately with soil in a manner that will not cause airborne conditions. FGD clarifier sludge will be spread in 6-inch lifts in the center of the operational area. No FGD clarifier sludge shall be placed within 25 feet of the exterior slopes. Prior to placement of the next fill lift, material should be adequately blended with the other waste. The waste stream was assumed for design to be comprised predominantly of ash. Should the waste stream change at some time during operations, the design slope stability analyses must be reviewed for the changed conditions.

The landfill active face should, at the operator's discretion, generally be approximately a 2-acre area to reduce the amount of exposed waste. Operational soil cover shall be applied at least once a week or when the active area reaches approximately a 2-acre area. Operational soil cover shall be a 6-inch thick layer constructed of on-site soil or an approved alternative, such as tarps, spray applied cement based applications (i.e. posi-shell), or spray applied hydroseed mulch. A 12-inch thick interim cover layer shall be placed on areas where final grades have been reached or where waste placement will be inactive for 12 months or more.

2.6 Final Cover

The final cover system for a completed phase will be finished within 180 days following the beginning of closure activities unless otherwise approved by the Division.

The proposed final cover will consist of a compacted interim soil cover, 40-mil LLDPE geomembrane liner, geocomposite drainage layer, an 18-inch thick earthen barrier layer, and a 6-inch earthen vegetative layer. A proposed alternative is to use a 50-mil structured geomembrane with an integral drainage layer overlain with a geotextile. The geomembrane will provide a barrier layer to reduce leachate generation. The vegetative layer will consist of on-site soil suitable for maintaining a grass cover and controlling erosion. Surface water that percolates through the vegetative layer and 18-inch thick earthen barrier layer will drain through the geocomposite drainage layer. The geocomposite will day-light periodically across the cover system and at the toe of the landfill final cover slope to provide drainage.

3. ENVIRONMENTAL MANAGEMENT

3.1 Stormwater Collection and Conveyance

Stormwater runoff from the landfill will be directed via a system of rain gutters, tack-on benches, road ditches, downchute piping, and direct runoff to perimeter ditches surrounding the landfill limits. The perimeter ditches discharge directly to an active ash basin on the south side of the landfill. Final and interim E&SC plans are contained within the Permit to Construct Application.

During initial operations within the non-active cells, a geomembrane raincover may be used to reduce leachate generation and protect against erosion of the liner system protective cover layer prior to operations. The collected water can then be pumped into the active ash basin.

The stormwater collection and conveyance system shall be checked regularly and maintained such that necessary repairs will be made as early as practical.

3.2 Leachate Collection System (LCS)

The leachate collection system (LCS) consists of a geocomposite drainage layer and a header pipe that provides gravity drainage of the leachate to sumps. From the sumps, the leachate is pumped to the active ash basin by forcemain then discharged under the plant's existing NPDES permit.

The general operation required to begin waste placement includes the activation of the LCS. This task is accomplished by removing the sacrificial geomembrane cover to expose the LCS corridor. The opened LCS corridor flows directly into the sumps such that rain water entering the cell will now enter the LCS. The Operations Manager shall document LCS activation within each cell and file the documentation in the facility operation records. The design engineer will be on-site to monitor and document the removal of the sacrificial geomembrane cover and the activation of the LCS in the sump area.
The LCS sump shall be equipped with a dedicated pump system. The LCS pump system contains one low-flow pump and one high-flow pump. The pump system shall operate automatically based on level switches with a low level cutoff and high level run-start activations. Additionally, a high level alarm shall be in place which will also have a high level activation. See the table below for LCS specific sump operations levels. The LCS system control panels will be equipped with visual and audible alarms programmed to activate at the programmed sump liquid level. The alarms will be equipped with a test function.

Pump	Low level cutoff	High level run-start	High level alarm activation
Low-flow	0.5 feet (6 inches)	1.5 feet (18 inches)	2.5 feet (30 inches)
High-flow		2.0 feet (24 inches)	

3.2.1 LCS Maintenance

The maintenance of the leachate management system's physical facilities (consisting of HDPE piping, sumps, and pumps) and records will be performed by or under the direct supervision of Duke Energy.

Leachate will be pumped to the active ash basin on-site then discharged under the plant's existing NPDES permit. Water leaving the active ash basin will be sampled in accordance with the requirements of the plant's NPDES discharge permit.

Periodic equipment maintenance shall be performed as recommended by the equipment manufacturer. Equipment maintenance will consist of checking pumps, flow meters, valves, connections, and other system equipment for leaks, corrosion, wear, scale build-up, improper functioning, and other improper operations. Appropriate corrective measures shall be taken when equipment is not operating properly.

Observations shall be made weekly to confirm the proper LCS system performance. Weekly observations shall include, but not be limited to, checking pump function, verifying flow meter function, testing visual and audible alarms, and monitoring for leaks.

Clean-out pipes are located at the ends of the LCS leachate header pipes. LCS lines and sumps shall be cleaned out by the use of a clean-out snake or high pressure water flushing at least once a year and remote camera monitored at least once every five (5) years. Leachate line cleanout and camera monitoring will be documented in the operating record.

3.2.2 LCS Record Keeping and Sampling

Records shall be maintained documenting the amounts of leachate generated and disposed of at the active ash basin. Flow will be measured at the discharge of the LCS sump by a totalizing flow meter.
Leachate from the LCS system shall be sampled in accordance with the approved monitoring plan. Leachate will be sampled semiannually from dedicated sample ports located on the LCS system. Leachate quality will be analyzed and reported consistent with the requirements of the approved monitoring plan. The following constituents will be analyzed for semi-annually:

Temperature	Arsenic	Barium
Boron	Cadmium	Chloride
Chromium	Copper	Fluoride
Iron	Lead	Manganese
Mercury	Nickel	Nitrate
pH	Selenium	Silver
Sulfate	Zinc	Total Dissolved Solids

3.2.3 Contingency Plan

In the unlikely event that leachate can not be pumped to the active ash basin (i.e. a power outage), leachate flow will be temporarily stored within the landfill until such time that pumping operations to the active ash basin can be restored. Please note that the design provides for redundant electrical supply, such that the system will switch to the backup power supply line in the event that primary power is lost. In such an event, the Division shall be notified in writing, within 30 days, about the events and corrective actions taken.

3.3 Leak Detection System (LDS)

A leak detection system (LDS) has been incorporated into the design of the landfill. The LDS consists of a secondary 60 mil HDPE liner system overlain by a secondary geocomposite drainage layer connected to an LDS sump. Flow collected in the sump will be transferred to the active ash basin via the leachate force main.

The LDS sump shall be equipped with a dedicated pump system. The LDS pump system contains one low-flow pump. The LDS pump system shall operate automatically based on level switches with a low level cutoff and a high level run-start activation. Additionally, a high level alarm shall be in place which will also have a high level activation. See the table below for LDS specific sump operations levels. The LDS system control panels will be equipped with visual and audible alarms programmed to identify sump liquid levels. The alarms will be equipped with a test function.

Pump	Low level cutoff	High level run-start	High level alarm activation
Low-flow	0.5 feet (6 inches)	1.5 feet (18 inches)	2.0 feet (24 inches)

The LDS has been designed with an Initial Response Leakage Rate (IRLR) of 300 gallons per acre per day and an Action Leakage Rate (ALR) of 500 gallons per acre per day. Should fluid collected in the LDS exceed the IRLR or ALR based on routine flow meter readings, the owner or operator shall take steps as indicated in the facility's Response Action Plan presented in Section 3.3.3.

The management of the leak detection system's physical facilities (consisting of piping and flow meters) and records of monitoring will be performed by or under the direct supervision of Duke Energy.

3.3.1 LDS Maintenance

Periodic equipment maintenance shall be performed as recommended by the equipment manufacturer. Equipment maintenance will consist of checking pumps, flow meters, valves, connections, and other system equipment for leaks, corrosion, wear, scale build-up, improper functioning, and other improper operations. Appropriate corrective measures shall be taken when equipment is not operating properly.

Observations shall be made weekly to confirm the proper LDS system performance. Weekly observations shall include, but not be limited to, checking pump function,

verifying flow meter function, testing visual and audible alarms, and monitoring for leaks.

Clean-out pipes are located at the ends of the LDS leachate header pipes. LDS lines and sumps shall be remote camera monitored at least once every five (5) years. LDS line camera monitoring will be documented in the operating record.

3.3.2 Record Keeping and Monitoring

Flow will be measured at the discharge of the LDS sump by a totalizing flow meter. The facility shall maintain records of monthly flow rate data from the LDS sump from the activation of the cell drainage system and until the waste height reaches approximately 40 feet. From that point, flow rate data shall be collected on a quarterly basis until landfill closure.

During the post-closure care period, semi-annual monitoring is required. If the liquid levels in the sump stays below the pump high level run-start (no pump flow) for more than 1 year, then flow rates can be recorded annually. However, if at any time during post-closure care the pump high level run-start level is exceeded on the semi-annual or annual schedules, the facility must return to monthly monitoring, until such time as the liquid level remains below the pump high-level run start activation level for two consecutive months.

The purpose of LDS monitoring is to monitor if the leakage rates have been exceeded. Specific leakage rates are identified in Section 3.3. To determine if exceedances of the leakage rates have occurred, the facility must convert monitored data to an average daily flow rate for the cell (in gallons per acre per day, gpad). For example, the average daily flow rate in gpad is equal to the total monthly flow rate divided by the number of days in the month, divided by the area of the cell in acres. For calculation purposes, cell areas are summarized for Cells 1 through 4 in the table below.

Cell	Areas
Cell 1	9.9 acres
Cell 2	9.6 acres
Cell 3	7.2 acres
Cell 4	9.1 acres

If a leakage rate is exceeded, then the Division must be notified as set forth in the Response Action Plan presented in Section 3.3.3.

3.3.3 Response Action Plan

The purpose of the response action plan is to describe the necessary course of action in the event the Initial Response Leakage Rate (IRLR) and/or the Action Leakage Rate (ALR) are exceeded. If the IRLR is exceeded, steps 1 through 4 will be followed. Should the ALR also be exceeded steps 1 through 6 will be followed. The IRLR and

ALR are referenced collectively as "leakage rates" in the following response action plan steps.

The IRLR is 300 gallons per acre per day.

The ALR is 500 gallons per acre per day.

The response action steps include:

Step 1 (IRLR and ALR):
Review physical equipment (pump and flow meter) function and data to confirm flow readings. Review operations to evaluate where operating equipment may have contacted the landfill liner or how landfill operations may have influenced the exceedance.

If the exceedance is confirmed, the cell LDS flow shall be recorded daily. Should the daily monitored LDS flow exceed the IRLR or ALR after the initial exceedance, operational responses may include: the reduction of active face area; grading to provide improved drainage; and/or, the addition of interim soil cover.

Step 2 (IRLR and ALR):
Within 14 days of identifying that a leakage rate has been exceeded, the facility shall contact the Division in writing. Daily LDS flow recording shall continue. Should none of the daily measured LDS flow rates exceed the leakage rate within 14 days of initial identification of the exceedance, monthly LDS flow averaging shall resume.

Step 3 (IRLR and ALR):
Within 30 days of identifying that a leakage rate has been exceeded, the facility shall submit to the Division a written preliminary assessment which shall include at a minimum:

- the amount of the liquid exceedance including initial measurement and daily measurements, if necessary, to date;
- likely sources of the liquids;
- the possible leak location;
- the possible leak size;
- the probable cause of the leak; and
- an outline of the short-term actions being taken and planned.

Step 4 (IRLR and ALR):
To the extent practicable, evaluate the location, size and cause of the leak; and assess the potential for leakage escaping into the environment and its mobility. Leachate quality shall be sampled, including a chemical analysis of LDS fluids, to evaluate potential hazards (pH and RCRA metals).

Step 5 (ALR Only):
When the ALR is exceeded, establish whether or not the unit should be closed or receipt of waste should be curtailed; and conclude whether waste should be removed from the unit for inspection, engineered controls, or repair of the liner and drainage system. Evaluate and prepare to implement what other short-term or long-term measures shall be taken to mitigate or stop any leaks according to the stage (early operations, middle operations, or closed) of landfill development, as detailed in Section 3.3.2, the discussion on LDS flow measurement.

Step 6 (ALR Only):
Within 60 days of identifying that the ALR has been exceeded, submit to the Division the results of the evaluation performed in Step 4, any actions taken according to Step 5, and any further measures planned. For as long as there is an exceedance of the action leakage rate, the owner or operator shall submit monthly reports to the Division summarizing the results of the remedial actions taken and further actions planned.

3.4 Landfill Gas Management

Waste will consist of fly ash, bottom ash, flue gas desulfurization (FGD) gypsum, FGD clarifier sludge, asbestos material, land clearing and inert debris, coal mill rejects, waste limestone material, and boiler slag generated at the Marshall Steam Station. The majority of the waste stream (approximately 95% or more) will consist of fly ash. The remaining small portion of the waste stream will consist of the other aforementioned waste products. Based on the nature of the waste it is not anticipated that methane or hydrogen sulfide gas will be generated or that odor will be an issue. Therefore, Duke Energy does not propose monitoring for landfill gas or providing landfill gas management measures.

In the event that methane or hydrogen sulfide gases are noticed during ordinary operations, actions will include monitoring for the presence of gas in the field with gas monitoring equipment and the final closure and post-closure plan will be developed to address gas management.

FIGURES

ISLAND POINT ROAD

PHASE 1

PHASE 2

PHASE 3

PHASE 4

PHASE 5

CLOSED C&D LANDFILL

CLOSED ASBESTOS LANDFILL

PL

LOW

LEGEND

- EXISTING MAJOR CONTOUR (10')
- EXISTING MINOR CONTOUR (2')
- OBSCURED EXISTING MAJOR CONTOUR (10')
- OBSCURED EXISTING MINOR CONTOUR (2')
- PROPOSED SUBGRADE MAJOR CONTOUR (10')
- PROPOSED SUBGRADE MINOR CONTOUR (2')
- PL — PROPERTY LINE
- LOW — LIMIT OF WASTE

0 200 400 800

(IN FEET)
1 inch = 400 ft.

SCALE: 1 " = 400'
DATE: 11-24-09
PROJECT NO. 1356-08-122
DRAWN BY: CLD
ENGINEERING LICENSE NO: F-0176
CHECKED BY: KRD

S&ME
9751 SOUTHERN PINE BLVD.
CHARLOTTE, N.C. 28273
(704)523-4726
WWW.SMEINC.COM

SUBGRADE GRADING PLAN
INDUSTRIAL LANDFILL NO. 1

MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

FIGURE NO.
1

C:\1356\DUKE ENERGY\08-122 Marshall ILF\fl\DWG\Industrial Landfill #1\PTC\op plans\OPERATION PLAN\FIG 1.dwg

ISLAND POINT ROAD

TYPICAL COVER SYSTEM ACCESS ROAD CROSS SECTION

COVER SYSTEM DOWN DRAIN 710-SF AT PERIMETER

CLOSED C&D LANDFILL

CLOSED ASBESTOS LANDFILL

LOW

PL

LEGEND

- EXISTING MAJOR CONTOUR (10')
- EXISTING MINOR CONTOUR (2')
- OBSCURED EXISTING MAJOR CONTOUR (10')
- OBSCURED EXISTING MINOR CONTOUR (2')
- PROPOSED SUBGRADE MAJOR CONTOUR (10')
- PROPOSED SUBGRADE MINOR CONTOUR (2')
- PL — PROPERTY LINE
- LOW — LIMIT OF WASTE

0 200 400 800

(IN FEET)
1 inch = 400 ft.

SCALE: 1 " = 400'
DATE: 11-24-09
PROJECT NO. 1356-08-122
DRAWN BY: CLD
ENGINEERING LICENSE NO: F-0176
CHECKED BY: KRD

S&ME
9751 SOUTHERN PINE BLVD.
CHARLOTTE, N.C. 28273
(704)523-4726
WWW.SMEINC.COM

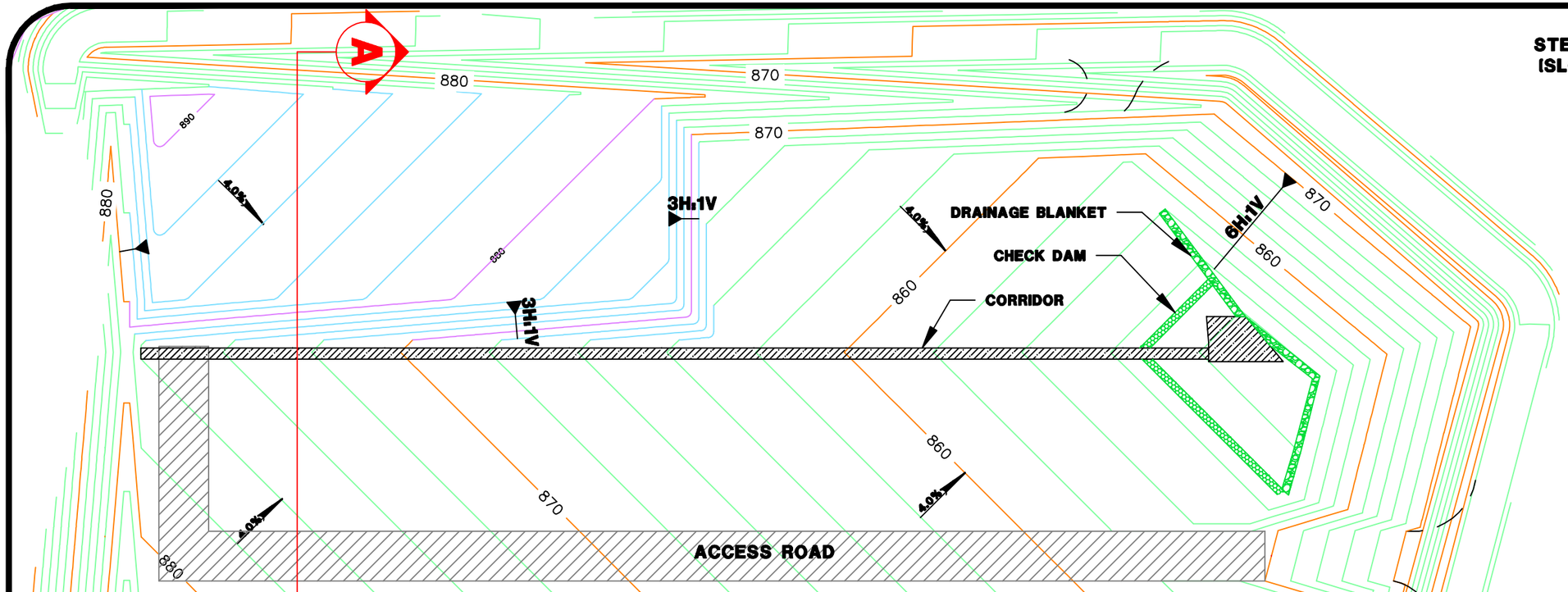
FINAL CLOSURE GRADING PLAN
INDUSTRIAL LANDFILL NO. 1

MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

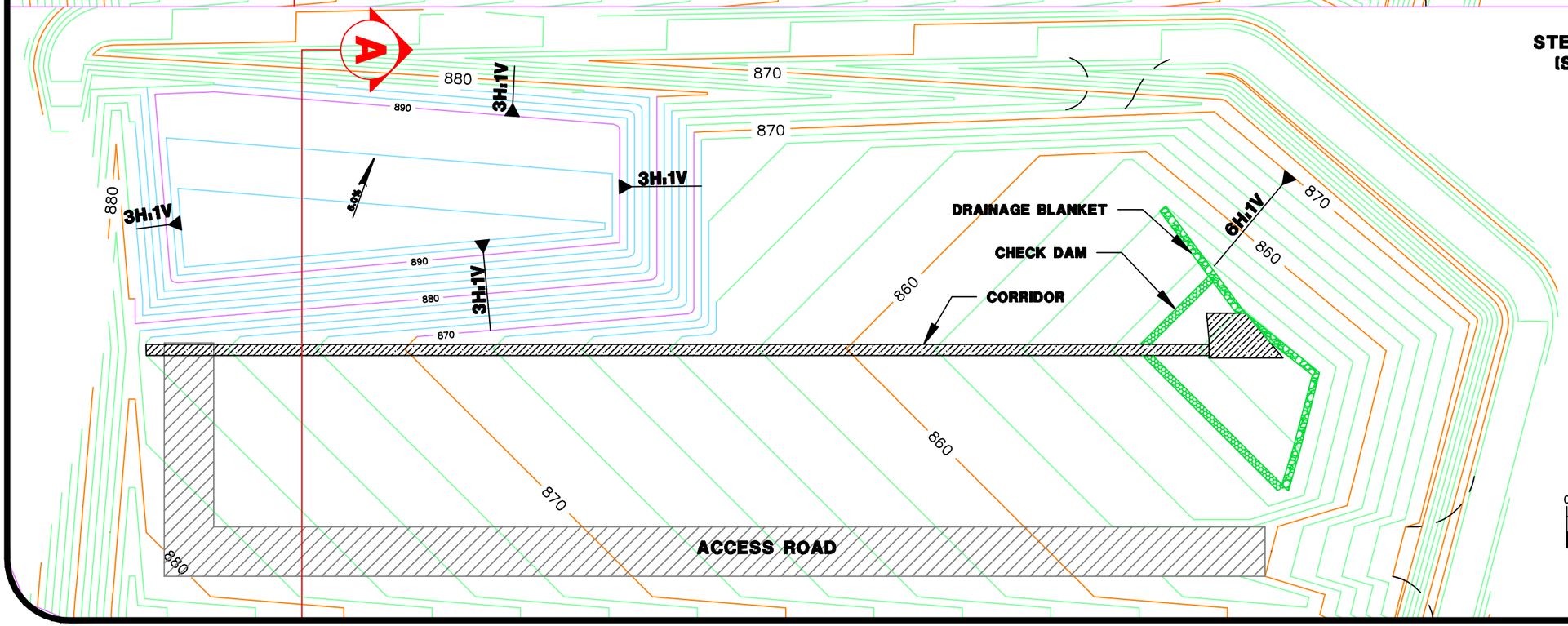
FIGURE NO.
2

C:\1356\DUKE ENERGY\08-122 Marshall ILF#1\DWG\Industrial Landfill #1\PTC\op plans\OPERATION PLAN\FIG 2.dwg

STEP 1A - WASTE GRADE (SLOPED INTO THE CELL)



STEP 1B - OPERATIONAL COVER (SLOPED OUT OF THE CELL)



LEGEND

- PROTECTIVE COVER GRADE 10'
- PROTECTIVE COVER GRADE 2'
- PROPOSED STAGE GRADE 10'
- PROPOSED STAGE GRADE 2'

0 50 100 200

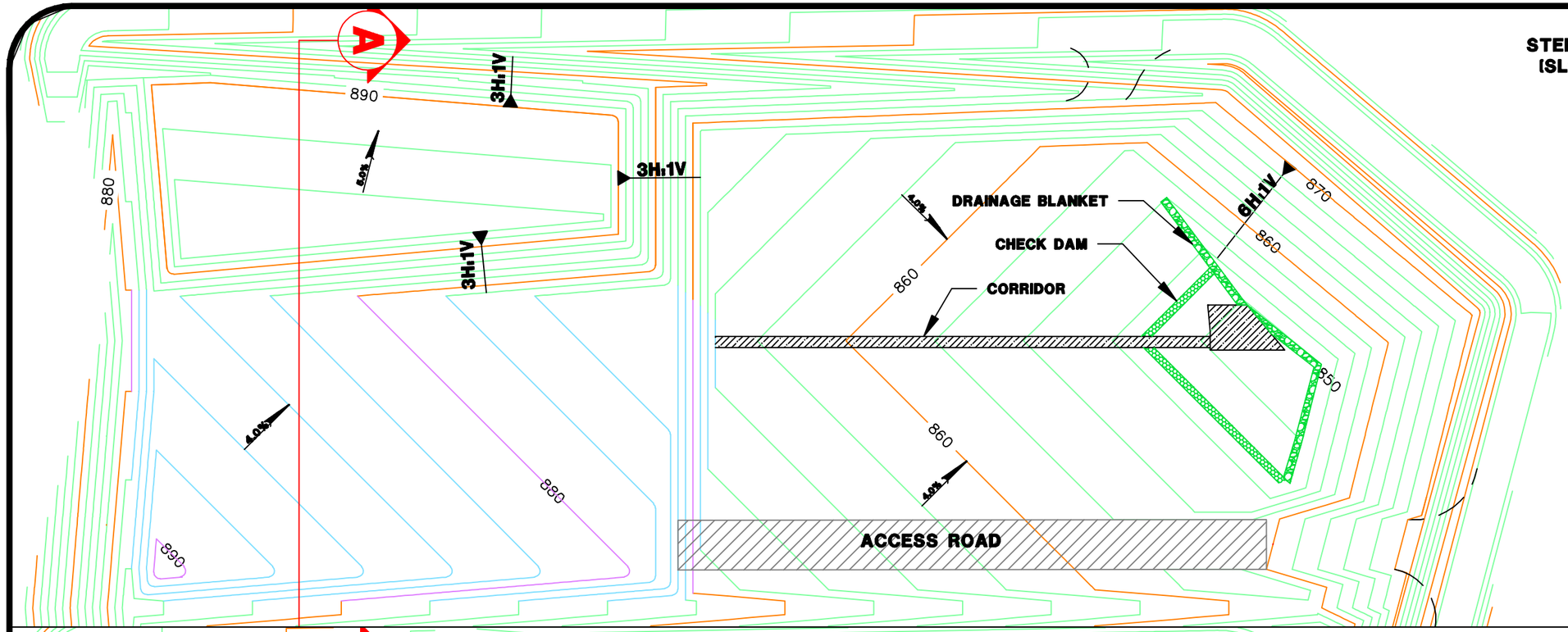
(IN FEET)
1 inch = 100 ft.

DATE: 11-24-09
SCALE: 1 " = 100'
DRAWN BY: CLD
PROJECT NO. 1356-08-122
CHECKED BY: KRD
ENGINEERING LICENSE NO: F-0176

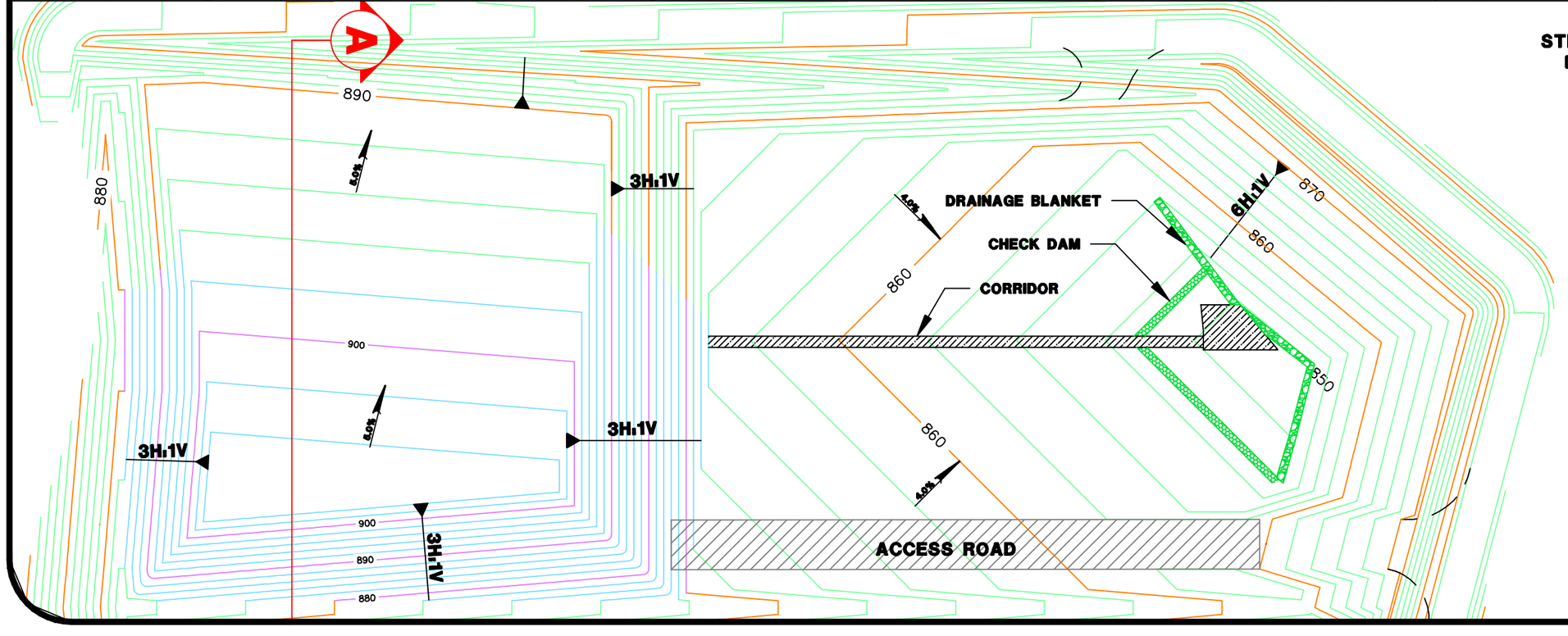
S&ME
9751 SOUTHERN PINE BLVD.
CHARLOTTE, N.C. 28273
(704)523-4726
WWW.SMEINC.COM

CELL 1 - STEP 1
INDUSTRIAL LANDFILL NO. 1
MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

FIGURE NO.
3



STEP 2A - WASTE GRADES (SLOPED INTO THE CELL)



STEP 2B - OPERATIONAL COVER (SLOPED OUT OF THE CELL)

LEGEND

- PROTECTIVE COVER GRADE 10'
- PROTECTIVE COVER GRADE 2'
- PROPOSED STAGE GRADE 10'
- PROPOSED STAGE GRADE 2'

0 50 100 200

(IN FEET)
1 inch = 100 ft.

DATE: 11-24-09
DRAWN BY: CLD
CHECKED BY: KRD
SCALE: 1" = 100'
PROJECT NO. 1356-08-122
ENGINEERING LICENSE NO: F-0176

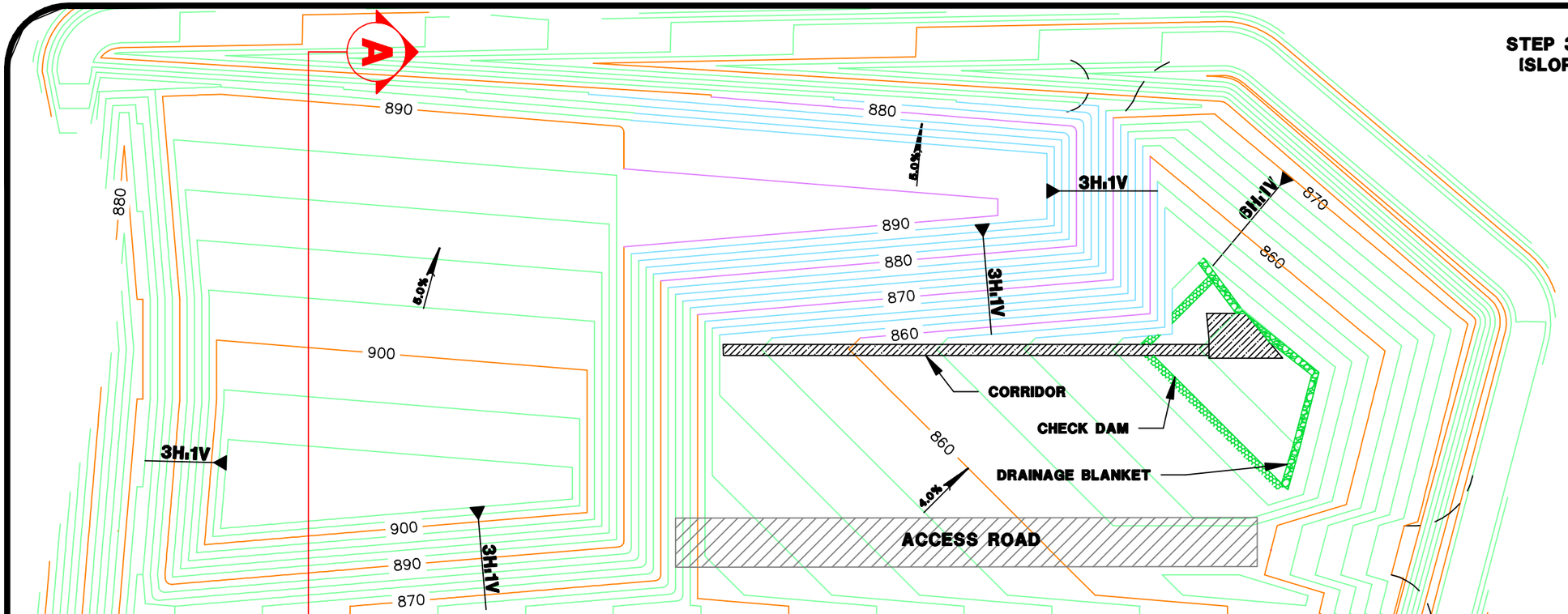
S&ME
9751 SOUTHERN PINE BLVD.
CHARLOTTE, N.C. 28273
(704)523-4726
WWW.SMEINC.COM

CELL 1 - STEP 2
INDUSTRIAL LANDFILL NO. 1

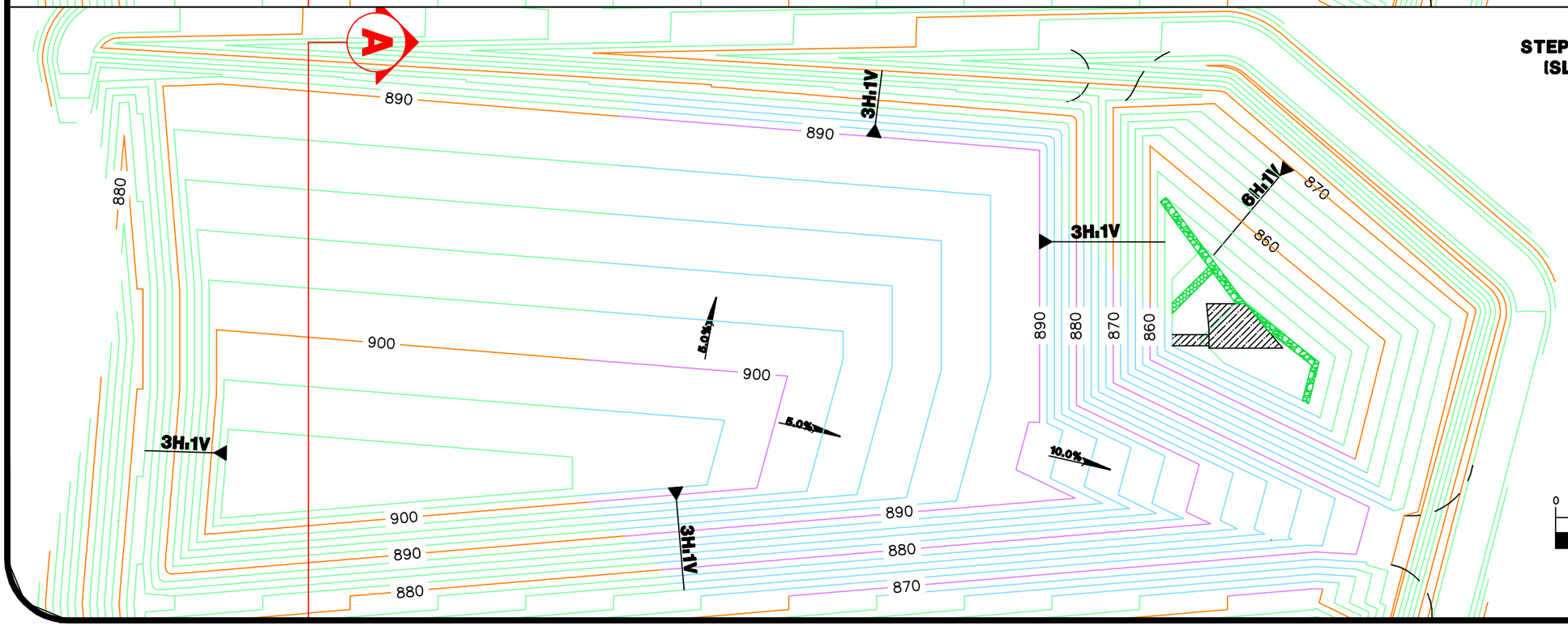
MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

FIGURE NO.
4

STEP 3A - WASTE GRADES (SLOPED INTO THE CELL)



STEP 3B - OPERATIONAL COVER (SLOPED OUT OF THE CELL)



LEGEND

- PROTECTIVE COVER GRADE 10'
- PROTECTIVE COVER GRADE 2'
- PROPOSED STAGE GRADE 10'
- PROPOSED STAGE GRADE 2'

0 50 100 200

(IN FEET)
1 inch = 100 ft.

DATE: 11-24-09
DRAWN BY: CLD
CHECKED BY: KRD
SCALE: 1" = 100'
PROJECT NO. 1356-08-122
ENGINEERING LICENSE NO: F-0176

S&ME
9751 SOUTHERN PINE BLVD.
CHARLOTTE, N.C. 28273
(704)523-4726
WWW.SMEINC.COM

CELL 1 - STEP 3
INDUSTRIAL LANDFILL NO. 1

MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

FIGURE NO.
5

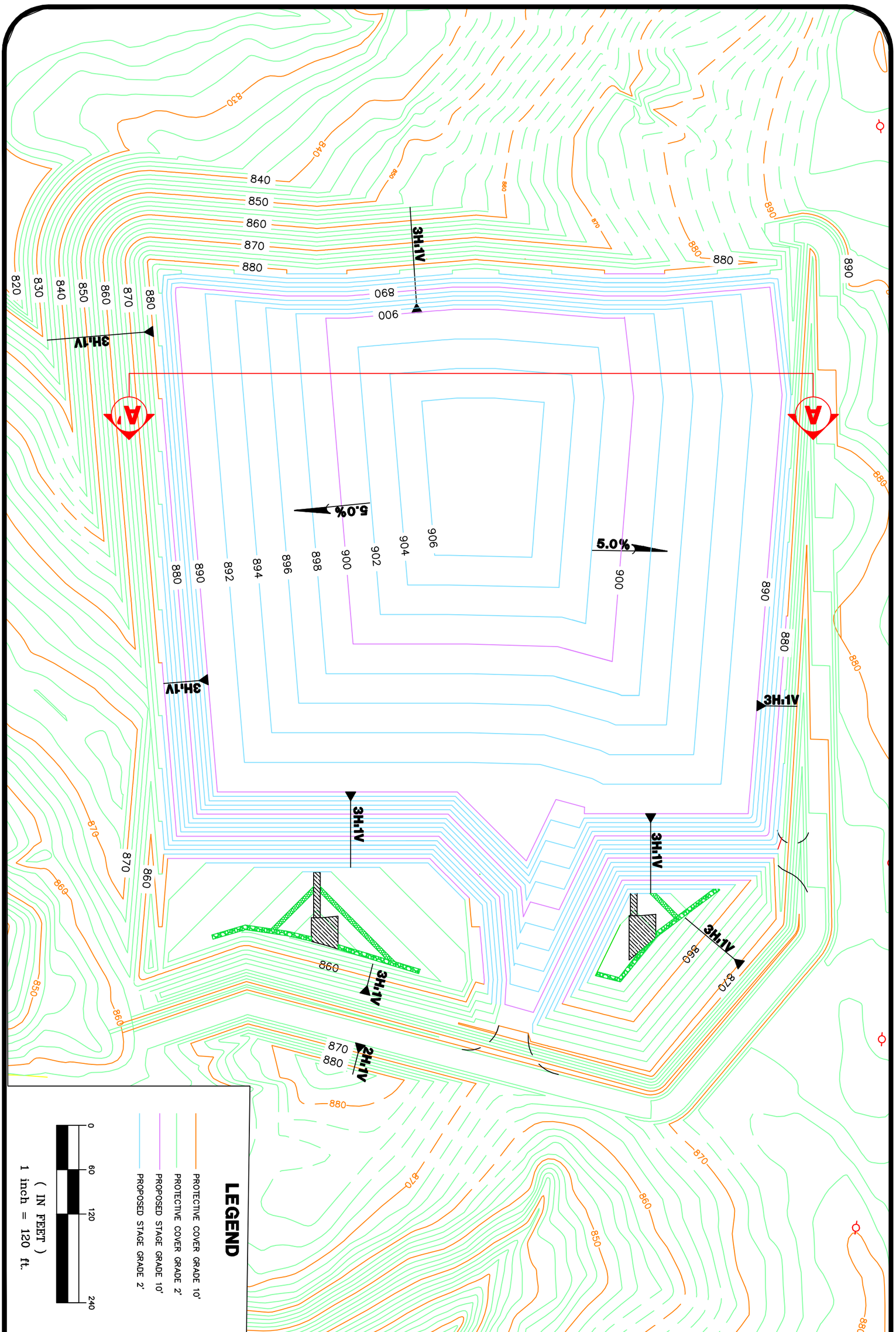
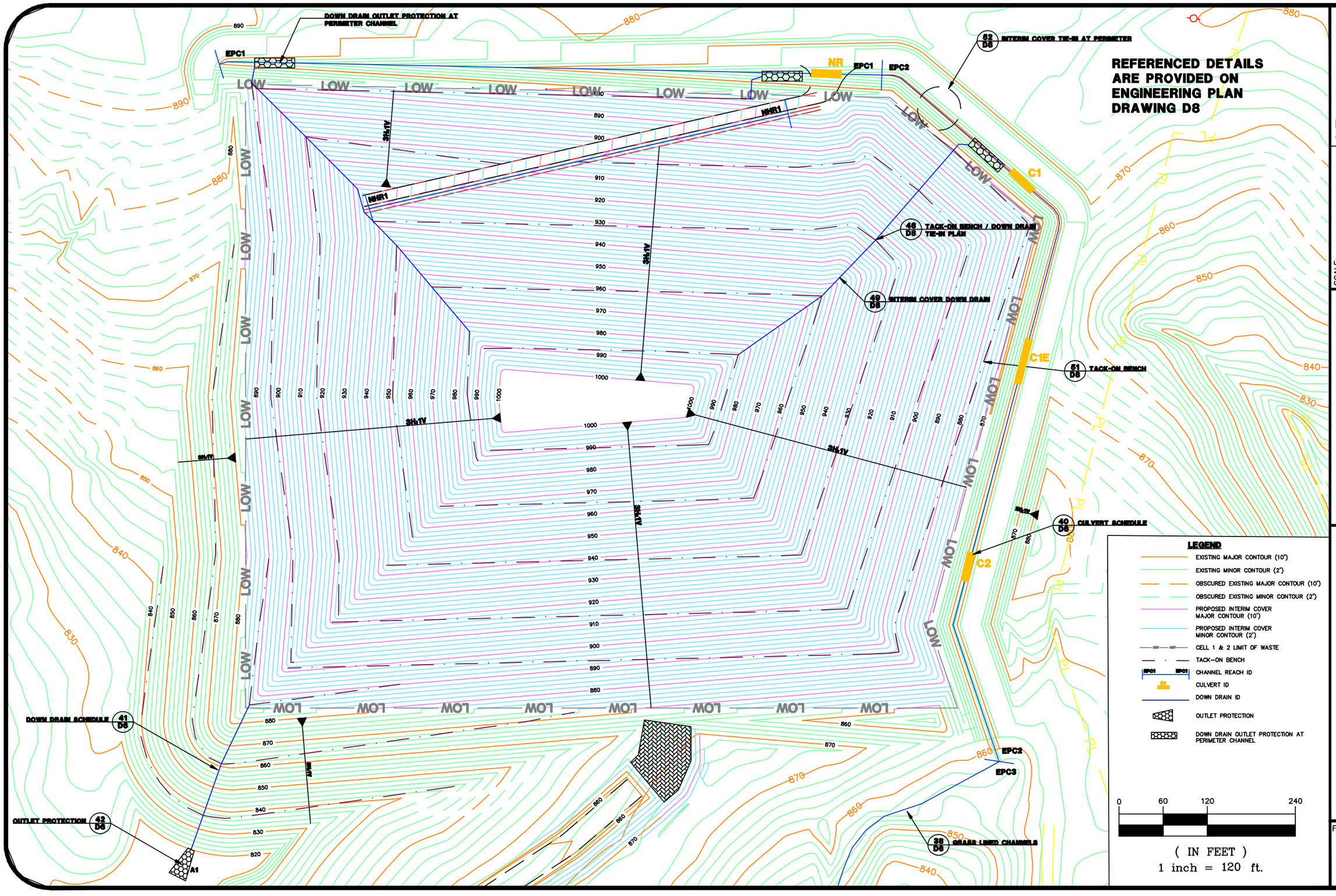


FIGURE NO. 6

CELL 1 & 2 STEP 4 OPERATIONAL COVER
INDUSTRIAL LANDFILL NO. 1
MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

S&ME
9751 SOUTHERN PINE BLVD.
CHARLOTTE, N.C. 28273
(704)523-4726
WWW.SMEINC.COM

SCALE: 1" = 120'	DATE: 11-24-09
PROJECT NO. 1356-08-122	DRAWN BY: CLD
ENGINEERING LICENSE NO: F-0176	CHECKED BY: KRD



DATE: 11-24-09
DRAWN BY: CLD
CHECKED BY: KRD
SCALE: 1" = 120'
PROJECT NO. 1356-08-122
ENGINEERING LICENSE NO: F-0176

S&ME
9751 SOUTHERN PINE BLVD.
CHARLOTTE, N.C. 28273
(704)523-4726
WWW.SMEINC.COM

CELL 1 & 2 INTERIM COVER INDUSTRIAL LANDFILL NO. 1

MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

FIGURE NO.
7

DRAINAGE BLANKET

CHECK DAM

DRAINAGE BLANKET

CHECK DAM

3H:1V

3H:1V

3H:1V

3H:1V

5.0%

5.0%

5.0%

LEGEND

- PROTECTIVE COVER GRADE 10'
- PROTECTIVE COVER GRADE 2'
- PROPOSED STAGE GRADE 10'
- PROPOSED STAGE GRADE 2'
- TACK-ON BENCH

0 60 120 240

(IN FEET)

1 inch = 120 ft.

DATE: 11-24-09

DRAWN BY: CLD

CHECKED BY: KRD

SCALE: 1" = 120'

PROJECT NO. 1356-08-122

ENGINEERING LICENSE NO: F-0176

S&ME

9751 SOUTHERN PINE BLVD.
CHARLOTTE, N.C. 28273
(704)523-4726

WWW.SMEINC.COM

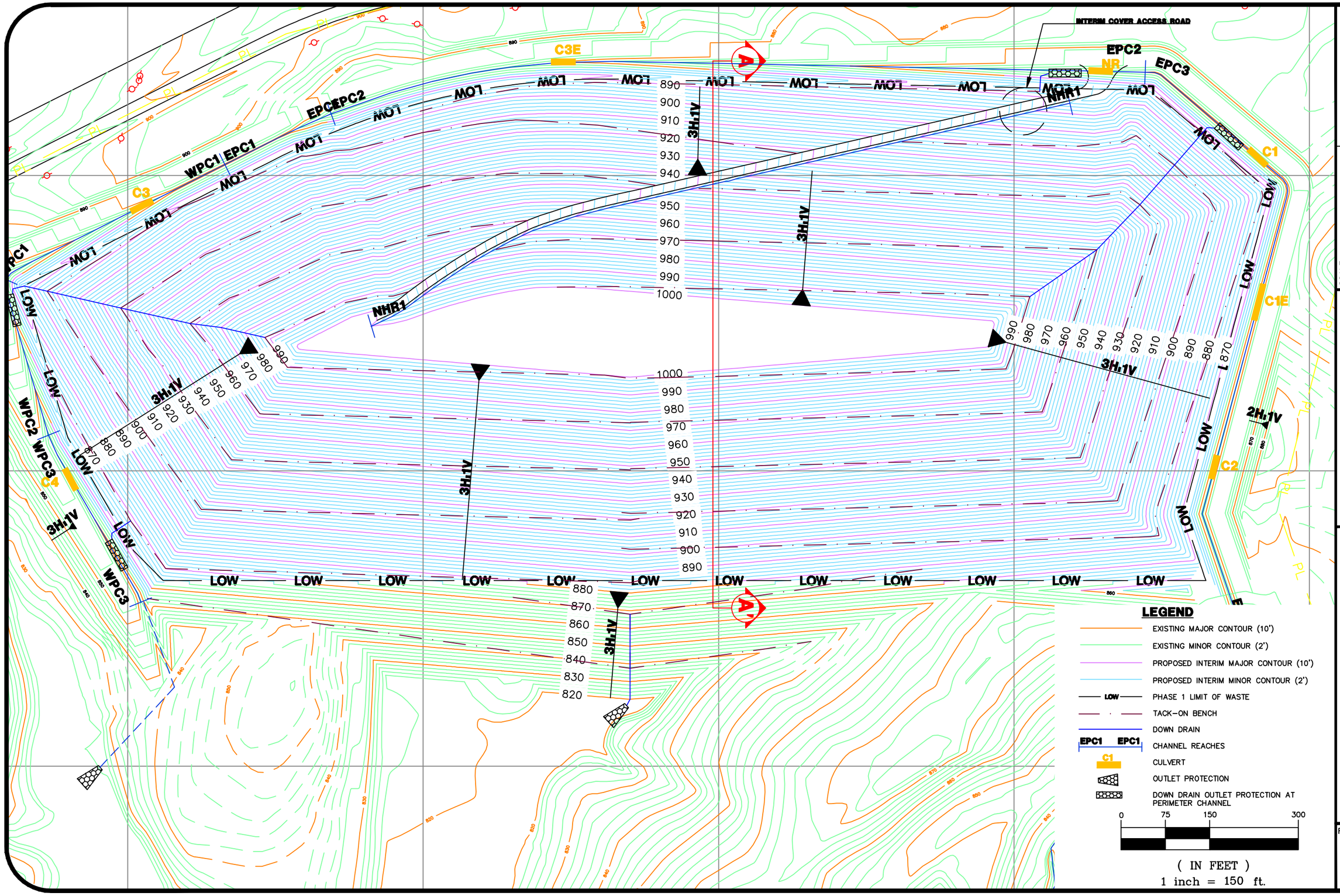
CELLS 3 AND 4 - STEP 1
INDUSTRIAL LANDFILL NO. 1

MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

FIGURE NO.

8

G:\1356\DUKE ENERGY\08-122 Marshall ILF #1\DWG\Industrial Landfill #1\PTC\op plans\OPERATION PLAN\FIG 8.dwg



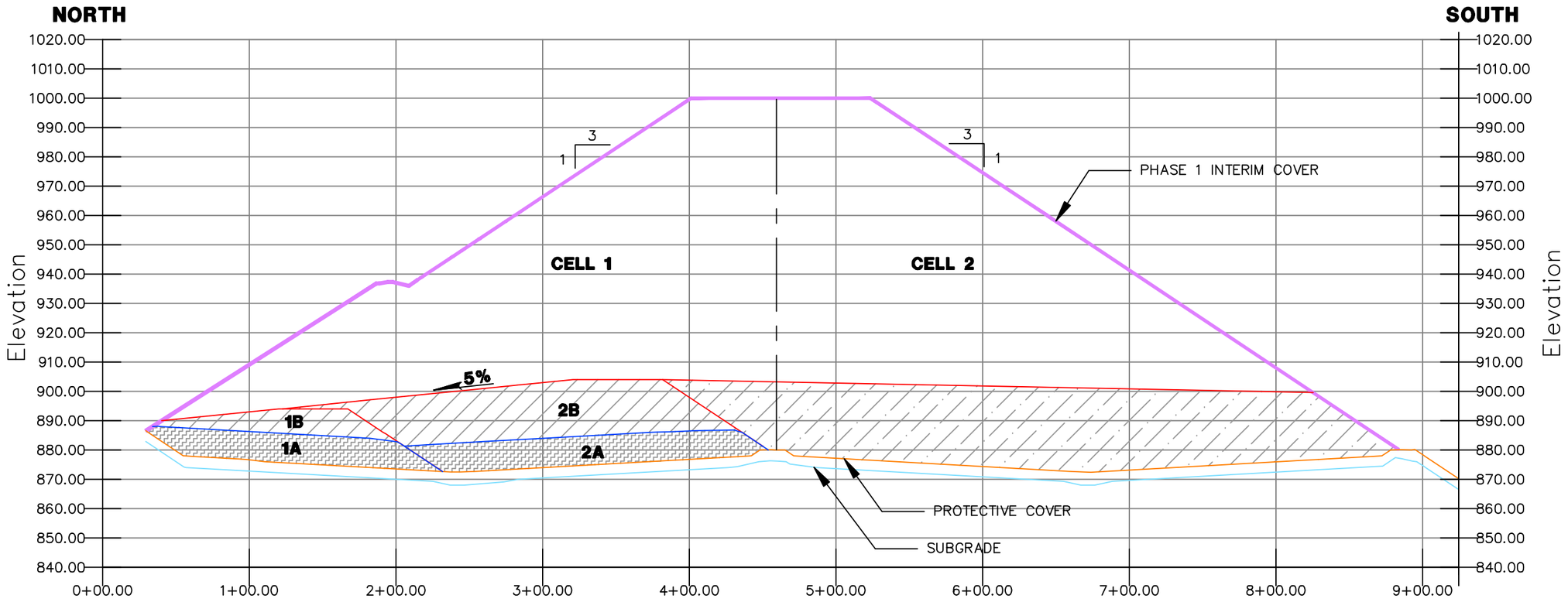
DATE: 11-24-09
DRAWN BY: CLD
CHECKED BY: KRD
SCALE: 1" = 150'
PROJECT NO. 1356-08-122
ENGINEERING LICENSE NO: F-0176

S&ME
9751 SOUTHERN PINE BLVD.
CHARLOTTE, N.C. 28273
(704)523-4726
WWW.SMEINC.COM

PHASE 1 INTERIM COVER PLAN
INDUSTRIAL LANDFILL NO. 1

MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

FIGURE NO.
9



NOTE:

CELL 1 AND 2 FILLING SHALL PROGRESS IN 10–FT THICK OPERATIONAL LIFTS TO REACH PROPOSED INTERIM COVER GRADES IN A SEQUENCE SIMILAR TO THAT ILLUSTRATED FOR STEPS 1A, 1B, 2A, AND 2B.

VERTICAL

0 20 40 80

(IN FEET)
1 inch = 40 ft.

HORIZONTAL

0 40 80 160

(IN FEET)
1 inch = 80 ft.

DATE: 11–24–09
DRAWN BY: CLD
CHECKED BY: KRD
SCALE: AS SHOWN
PROJECT NO. 1356–08–122
ENGINEERING LICENSE NO: F–0176

S&ME
9751 SOUTHERN PINE BLVD.
CHARLOTTE, N.C. 28273
(704)523–4726
WWW.SMEINC.COM

CROSS SECTION A - A'
INDUSTRIAL LANDFILL NO. 1

MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

FIGURE NO.
10

DEFINITION
Controlling runoff and erosion on disturbed areas by establishing perennial vegetative cover with seed.

PURPOSE
To reduce erosion and decrease sediment yield from disturbed areas, and to permanently stabilize such areas in a manner that is economical, adapts to site conditions, and allows selection of the most appropriate plant materials.

SPECIFICATIONS

SEEDBED REQUIREMENTS
Establishment of vegetation should not be attempted on sites that are unsuitable due to inappropriate soil texture, poor drainage, concentrated overland flow, or steepness of slope until measures have been taken to correct these problems.

To maintain a good stand of vegetation, the soil must meet certain minimum requirements as a growth medium. The existing soil should have these criteria:

- Enough fine–grained (silt and clay) material to maintain adequate moisture and nutrient supply (available water capacity of at least .05 inches water to 1 inch of soil).
- Sufficient pore space to permit root penetration.
- Sufficient depth of soil to provide an adequate root zone. The depth to rock or impermeable layers such as hardpans should be 12 inches or more, except on slopes steeper than 2:1 where the addition of soil is not feasible.
- A favorable pH range for plant growth, usually 6.0 – 6.5.
- Free from large roots, branches, stones, large clods of earth, or trash of any kind. Clods and stones may be left on slopes steeper than 3:1 if they are to be hydro seeded.

If any of the above criteria are not met – i.e., if existing soil is too coarse, dense, shallow or acidic to foster vegetation – special amendments are required. The soil conditioners described below may be beneficial or, preferably, topsoil may be applied.

SEEDBED PREPARATION
Install necessary mechanical erosion and sedimentation control practices before seeding, and complete grading according to the approved plan.

Lime and fertilizer needs should be determined by soil tests. Directions, sample cartons, and information sheets are available through county Agricultural Extension offices. Testing is also done by commercial laboratories.

When soil tests results are not available, follow rates suggested in the seeding specifications shown at right. Application rates usually fall into the following ranges:

- Ground agricultural limestone:
  Light–textured, sandy soils: 1 to 1–1/2 tons/acre
  Heavy–textured, clayey soils: 2–3 tons/acre
- Fertilizer:
  Grasses: 800–1200 lb/acre of 10–10–10 (or the equivalent)
  Grass–legume mixtures: 800–1200 lb/acre of 5–10–10 (or the equivalent)

Apply lime and fertilizer evenly and incorporate into the top 4–6 inches of soil by disking or other suitable means. Operate machinery on the contour. When using a hydro seeder, apply lime and fertilizer to a rough, loose surface.

Roughen surfaces prior to seeding.

Complete seedbed preparation by breaking up large clods and raking into a smooth, uniform surface (slopes less than 3:1). Fill in or level depressions that can collect water. Broadcast seed into a freshly loosened seedbed that has not been sealed by rainfall.

SEEDING
Seeding dates given in the seeding mixture specifications are designated as "best" or "possible". Seedings properly carried out within the "best" dates have a high probability of success. It is also possible to have satisfactory establishment when seeding outside these dates. However, as you deviate from them, the probability of failure increases rapidly. Seeding on the last date shown under "possible" may reduce changes of success by 30–50%. Always take this into account in scheduling land–disturbing activities.

Use certified seed for permanent seeding whenever possible.

Labeling of non–certified seed is also required by law. Labels contain important information on seed purity, germination, and presence of wood seeds. Seeds must meet State standards for content of noxious weeds. Do no accept seed containing "prohibited" noxious weed seed.

Inoculate legume seed with the Rhizobium bacteria appropriate to the species of legume. Apply seed uniformly with a cyclone seeder, drop–type spreader, drill, cultipacker seeder, or hydro seeder on a firm, friable seedbed.

When using a drill or cultipacker seeder, plant small grains no more than 1 inch deep, grasses and legumes no more than 1/2 inch. Equipment should be calibrated in the field for the desired seeding rate.

When using broadcast–seeding methods, subdivide the area into workable sections and determine the amount of seed needed for each section. Apply one–half the seed while moving back and forth across the area, making a uniform pattern: then apply the second half in the same way, but moving at right angles to the first pass.

Mulch all plantings immediately after seeding.

HYDRO SEEDING
Surface roughening is particularly important when hydro seeding, as a roughened slope will provide some natural coverage for lime, fertilizer, and seed. The surface should not be compacted or smooth. Fine seedbed preparation is not necessary for hydro seeding operations: large clods, stones, and irregularities provide cavities in which seeds can lodge.

Rate of wood fiber (cellulose) application should be at least 2,000 lb/acre.

Apply legume inoculants at four times the recommended rate when adding inoculant to a hydro seeder slurry.

If a machinery breakdown of 1/2 to 2 hours occurs, add 50% more seed to the tank, based on the proportion of the slurry remaining. This should compensate for damage to seed. Beyond 2 hours, a full rate of new seed may be necessary.

Lime is not normally applied with a hydraulic seeder because it is abrasive. It can be blown onto steep slopes in dry form.

MAINTENANCE
Generally, a stand of vegetation cannot be determined to be fully established until soil cover has been maintained for one full year from planting. Inspect seeded areas for failure and make necessary repairs and reseedings within the same season, if possible.

Reseeding––If a stand has inadequate cover, re–evaluate choice of plant materials and quantities of lime and fertilizer. Re–establish the stand after seedbed preparation or over– seed the stand. Consider seeding temporary, annual species if the time of year is not appropriate for permanent seeding.

If vegetation fails to grow, soil must be tested to determine if acidity or nutrient imbalance is responsible.

Fertilization––On the typical disturbed site, full establishment usually requires re–fertilization in the second growing season. Fine turf requires annual maintenance fertilization. Use soil tests if possible or follow the guidelines given for the specific seeding mixture.

TEMPORARY SEEDING SPECIFICATIONS

Seeding mixture (fall)

Species*	Rate (lb/acre)
Rye (grain)	120

Seeding Mixture (late winter early spring)

Species*	Rate (lb/acre)
Rye (grain) Red clover or winter wheat	120

Omit Annual Lespedeza when duration of temporary cover is not to extend beyond July.

Seeding mixture (summer)

Species*	Rate (lb/acre)
German Millet	40

Seeding dates (Piedmont)

Fall:	Aug. 15 – Dec. 30
Late winter (early spring):	Jan. 1 – May 1 Late
Summer:	May 1 – Aug. 15

Soil amendments
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10–10–10 fertilizer.

Mulch
Apply 4,000 lb/acre straw. Anchor mulch by tacking with asphalt, roving or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring. tool.

Maintenance
Re–fertilize if growth is not fully adequate. Reseed, re–fertilize and mulch immediately following erosion or other damage.

Pursuant to G.S. 113A–57(2), the angle for graded slopes and fills shall be no greater than the angle that can be retained by vegetative cover or other adequate erosion–control devices or structures. In any event, slopes left exposed will, within 21 calendar days of completion of any phase of grading, be planted or otherwise provided with temporary or permanent ground cover, devices, or structures sufficient to restrain erosion.

Pursuant to G.S. 113A–57(3), provisions for permanent groundcover sufficient to restrain erosion must be accomplished for all disturbed areas within 15 working days or 90 calendar days (whichever is shorter) following completion of construction or development.

*REF: 6.10 A,B and C, NC Erosion and Sediment Control Planning and Design Manual, 2006

PERMANENT SEEDING SPECIFICATIONS

Seeding mixture

Species	Rate (lb/acre)
Annual ryegrass	40
Foxtail millet	30
Tall fescue	31
Red top	21
Durana clover	8

Nurse plants
Between May 1 and Aug. 15, add 10 lb/acre German millet or 15 lb/acre Sudan grass. Prior to May 1 or after Aug. 15, add 40 lb/acre rye (grain).

Seeding dates

	Best	Possible
Fall:	Aug. 25 – Sept. 15	Aug. 20 – Oct. 25
Late winter:	Feb. 15 – Mar. 21	Feb. 1 –Apr. 15

Fall is best for tall fescue and late winter for lespedezas. Over seeding of Kobe lespedeza over fall–seeded tall fescue is very effective.

Soil amendments
Apply lime and fertilizer according to soil tests, or apply 4,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10–10–10 fertilizer.

Mulch
Apply 4,000–5,000 lb/acre grain straw or equivalent cover of another suitable mulching material. Anchor mulch by tacking with asphalt, roving, or netting. Netting is the preferred anchoring method on steep slopes.

Maintenance
Re–fertilize in the second year unless growth is fully adequate. May be mowed once or twice a year, but mowing is not necessary. Reseed, fertilize, and mulch damaged areas immediately.

Pursuant to G.S. 113A–57(3), provisions for permanent groundcover sufficient to restrain erosion must be accomplished for all disturbed areas within 15 working days or 90 calendar days (whichever is shorter) following completion of construction or development.

GENERAL SEEDING SPECIFICATIONS

DATE: 11–24–09
DRAWN BY: CHR
CHECKED BY: KRD
SCALE: N.T.S.
PROJECT NO. 1356–08–122
ENGINEERING LICENSE NO: F–0176

S&ME
9751 SOUTHERN PINE BLVD.
CHARLOTTE, N.C. 28273
(704)523–4726
WWW.SMEINC.COM

SEEDING SPECIFICATION
INDUSTRIAL LANDFILL NO.1
MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

FIGURE NO.
11

C:\1356\DUKE ENERGY\08-122 MARSHALL LF #1\DWG\INDUSTRIAL LANDFILL #1\PCOP PLANS.DWG

EMERGENCY ACTION PLAN (EAP)
INDUSTRIAL LANDFILL NO. 1
MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

S&ME Project No. 1356-08-122
S&ME Engineering License No. F-0176

Prepared for:
Duke Energy Carolinas, LLC
526 South Church Street
Charlotte, North Carolina 28202

Prepared by:
S&ME, Inc.
9751 Southern Pine Boulevard
Charlotte, North Carolina 28273

November 24, 2009

Revised February 3, 2010

TABLE OF CONTENTS

1. STATEMENT OF PURPOSE

The purpose of this Emergency Action Plan (EAP) is to provide guidance to identify potential slope failure events of the landfill, and minimize their impacts within the Marshall Steam Station property owned by Duke Energy Carolinas, LLC (Duke Energy).

This EAP establishes slope instability identification criteria, identifies emergency response entities, identifies impacted areas, establishes procedures for notification and provides contact information for emergency notifications. This EAP provides a framework for consistent and appropriate response to slope failure events, should they occur. Implementation and familiarity with the elements of the EAP will reduce the risk associated with landfill operations and help to mitigate impacts resulting from slope failure events.

2. PROJECT DESCRIPTION & IMPACTS

The proposed landfill is located on the northern portion of the Duke Energy – Marshall Steam Station property approximately 1.5 miles north of the Marshall Steam Station in parts within the footprint of an inactive ash basin. Waste fill heights are expected to be on the order of 240 feet with slopes constructed at 3 (horizontal) to 1 (vertical) slopes.

The proposed landfill is bound by existing ground and an earthen dike at the southeast corner. Adjacent to the inactive ash basin to the east is a closed asbestos landfill. To the west of the proposed landfill is the existing structural fill area. To the north of the proposed landfill is Island Point Road. Impacted areas are located on Duke Energy's Marshall Steam Station property.

3. SLOPE FAILURE IDENTIFICATION CRITERIA

3.1 Alert Status

The following conditions indicate a potential emergency situation. If one or more of these conditions are observed, the owner should initiate Notification Sequence 1 immediately:

i. cracking on landfill slope faces;

ii. bulging on landfill slope faces;

iii. wet spots, seepage, or flow emerging from or near the landfill slope faces; and

iv. shallow sloughing up to about three feet deep.

While under Alert Status, the owner shall continuously monitor slope conditions of the landfill. The owner shall communicate regularly with North Carolina Department of Environment and Natural Resources (NCDENR) personnel and the Engineer. The owner

shall evaluate if conditions warrant a transition to Emergency Status, and notify the emergency management authorities.

3.2 Emergency Status

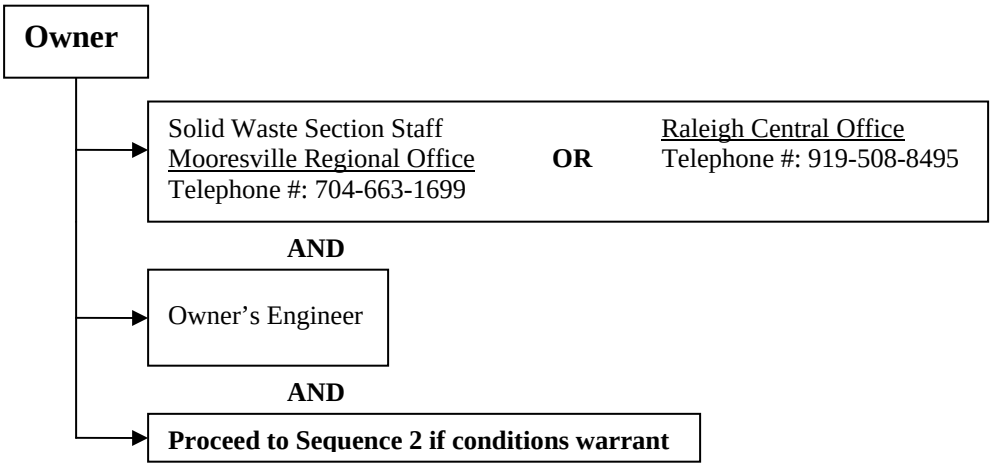
The following conditions indicate slope failure is possible. If one or more of these conditions is observed, the owner should initiate Notification Sequence 2 immediately:

i. slope faces in the process of cracking, sliding, or sloughing.

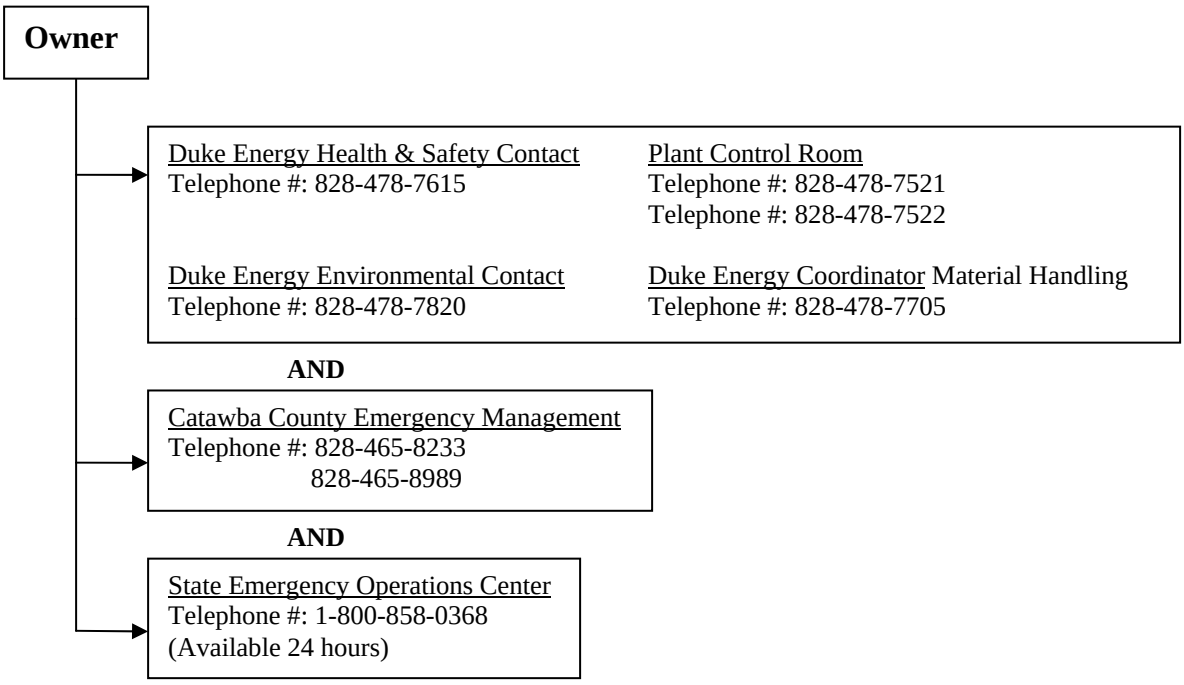
ii. turbid seepage (that is, muddy seepage) and or boils emerging from the landfill slope faces.

4. NOTIFICATION SEQUENCE

Sequence 1: If one of the **Alert Conditions** listed in Section 3.1 of this plan has been observed, but slope failure does not appear imminent then the following notification sequence is followed by the **Owner**:



Sequence 2: If one of the **Emergency Conditions** listed in Section 3.2 of this plan is occurring or slope failure appears to be otherwise imminent, the following notification sequence is followed by the Owner:



In the event of an **Emergency Condition**, if directed by the station, assemble at the designated Assembly Area.

PERMIT TO CONSTRUCT APPLICATION
OPERATIONS QUALITY ASSURANCE PLAN
INDUSTRIAL LANDFILL NO. 1
MARSHALL STEAM STATION
TERRELL, NORTH CAROLINA

S&ME Project No. 1356-08-122

Prepared for:
Duke Energy Carolinas, LLC
526 South Church Street
Charlotte, North Carolina 28202

Prepared by:
S&ME, Inc.
S&ME Engineering License No. F-0176

9751 Southern Pine Boulevard
Charlotte, North Carolina 28273

November 24, 2009

Revised February 3, 2010

TABLE OF CONTENTS

1. PROJECT DESCRIPTION

Quality assurance (QA) monitoring and testing of waste placement during operations of the Marshall Steam Station - Industrial Landfill No. 1 shall be performed as presented herein. QA monitoring and testing will be provided by an engineering and testing firm independent of the operator specializing in the observation and testing of soils.

2. QA MONITORING AND TESTING

2.1 Waste Placement

Waste shall be placed and compacted in loose lifts to achieve a 12-inch compacted lift thickness. These incremental lifts shall be placed to achieve a vertical operational lift thickness of 10 feet. The waste filling sequence shall be consistent with the Operations Plan. In general the waste filling sequence shall progress in 10-ft thick operational lifts, with each lift completed across a whole cell before beginning the next lift.

2.2 QA Field Monitoring

QA field monitoring shall be performed to verify that operations are being performed in accordance with the general steps outlined in Section 2 of the Operations Plan. The engineering technician responsible for field monitoring shall document the waste type, location of waste placement, and general placement and compaction methods during waste placement. Documentation shall include information, such as the operator's equipment types and number of passes to achieve the minimum compaction requirements. Waste placement monitoring documentation shall be maintained with the on-site operation records.

2.3 QA Field Testing

QA field testing shall be performed to monitor the compaction and moisture conditioning during waste placement. Waste shall be compacted to a minimum 95 percent of its Standard Proctor (ASTM D 698) maximum dry density. Compacted moisture content shall be within 5 percent of optimum moisture content.

In-place density and moisture content testing shall be performed at a frequency of one test per 10,000 cubic yards of waste placed. In-place density testing shall be performed using the Sand-Cone Method (ASTM D 1556), Nuclear Methods (ASTM D 6938), or the Drive-Cylinder Method (ASTM D 2937). Moisture content testing shall be performed using the Direct Heating Method (ASTM D 4959) or Nuclear Methods (ASTM D 6938). Density testing shall generally be performed and test locations documented on a one-acre grid, and including areas within 25 feet of exterior slopes. Waste placement testing records shall be maintained with the on-site operations records.

In the event that an in-place density and moisture content test fails, the area of waste placement shall be reworked, reconditioned, and retested until the minimum compaction requirement is met.

2.4 Laboratory Testing

Laboratory testing shall be performed at a frequency of one Standard Proctor test (ASTM D 698) per 50,000 cubic yards of waste placed. Laboratory testing records shall be maintained with the on-site operations records.

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

June 15, 2009

Mr. David Renner, General Manager III
Duke Energy Carolinas, LLC- Marshall Steam Station
8320 East NC Highway 150.
Terrell, North Carolina 28682

Subject: NPDES major modification
Permit No. NC0004987
Marshall Steam Station
Catawba County

Dear Mr. Renner:

Division personnel have reviewed and approved your request for major modification. Accordingly, we are forwarding the attached NPDES discharge permit. This permit is modified pursuant to the requirements of North Carolina General Statute 143-215.1 and the Memorandum of Agreement between North Carolina and the U.S. Environmental Protection Agency dated October 17, 2007 (or as subsequently amended.)

This permit modification addresses the request for a major modification regarding the elimination or modification of monitoring frequencies for several constituents discharged from Outfalls 002 and 004.

The Division has reviewed Duke Energy's comments submitted on April 30, 2009 and has the following responses.

Regarding the request that the weekly average selenium limit be changed to a monthly average limit. The Division's established procedure for compliance periods for metals shall be daily maximum and weekly average limits. North Carolina water quality standards are adopted based on chronic criteria. Based on the Division's procedure, effluent limitations for selenium will be added at Outfall 002 and weekly monitoring for selenium will remain at Outfall 004. The limits will be a weekly average of 29 ug/l and a daily maximum of 56 ug/l. These limits are based on the results of a reasonable potential analysis that indicated the potential to exceed the North Carolina standard for selenium. Because of the complexity of selenium removal and reduction, Duke Energy has requested and will be given a three year compliance schedule to meet this limit. The compliance schedule by Duke Energy is included in Special Condition A. 23

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org
An Equal Opportunity \ Affirmative Action Employer

with specific dates corresponding to the timetables submitted. Duke Energy must come into compliance with the selenium limit by July 1, 2012.

Regarding the language in the toxicity condition, staff has confirmed that the forms (TGP3B and THP3B) listed in paragraph 5 are correct.

The following modifications included in the March 24th draft remain in the final permit modification:

- Weekly effluent monitoring for cadmium, chromium, and silver at Outfall 002 and Outfall 004 has been deleted. Data analysis indicated that there was no reasonable potential for these parameters to exceed water quality standards in the receiving stream. There was very minimal detection of these three metals in the review of three years of effluent data.

- Weekly effluent monitoring for total suspended solids (TSS) at Outfall 004 has been deleted. Outfall 004 is an internal outfall discharging into the ash basin (Outfall 002). Because TSS has an effluent limit and monitoring at Outfall 002, the monitoring requirement at Outfall 004 can be removed.

- The monitoring frequency for total arsenic, chloride, total mercury, and total nickel has been reduced from weekly to quarterly at Outfall 002 and Outfall 004. Analysis of the data indicated there was no reasonable potential shown to exceed the state water quality standards. Because of the effluent concentrations discharged, these constituents are still considered to be parameters of concern. Quarterly monitoring is the minimum frequency required in order for the Division to evaluate future effluent data.

- The monitoring frequency for total zinc has been reduced from weekly to monthly monitoring at Outfall 002 and Outfall 004. The reasonable potential analysis indicated the potential to only exceed the acute allowable concentration for this action level parameter. Because of a record of consistently passing the toxicity tests and zinc concentrations not be problematic, it is recommended that the monitoring frequency can be reduced from weekly to monthly.

- Please note that there have been minor language changes and the addition of a new paragraph regarding data submittal in special condition A.14. Chronic Toxicity Pass/Fail permit limit. (The new paragraph is located second from the end of the condition).

If any parts, measurement frequencies or sampling requirements contained in this permit modification are unacceptable to you, you have the right to an adjudicatory hearing upon written request within thirty (30) days following receipt of this letter. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the office of Administrative Hearings, 6714 Mail Service Center, Raleigh, North Carolina 27699-6714. Unless such a demand is made, this permit shall be final and binding.

Please take notice that this permit is not transferable. The Division may require modification revocation and reissuance of the permit. This permit does not affect the legal requirements to obtain other permits which may be required by the Division of Water Quality or permits required by the Division of Land Resources, Coastal Area Management Act, or any other Federal or Local governmental permits may be required.

If you have any questions or need additional information, please contact Ms. Jacquelyn Nowell at telephone number (919) 807-6386 or email jackie.nowell@ncdenr.gov.

Sincerely,

Coleen H. Sullins

cc: EPA Region IV
Mooresville Regional Office/Surface Water Protection Section
DEH/ Public Water Supply Section/Mooresville Regional Office
Aquatic Toxicology Unit
NPDES File/NC0004987
Central Files

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org
An Equal Opportunity \ Affirmative Action Employer

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

PERMIT

TO DISCHARGE WASTEWATER UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

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

Duke Energy Carolinas, LLC

is hereby authorized to discharge wastewater from a facility located at

Marshall Steam Station
At the intersection of NC Highway 150 and NCSR 1841
Terrell
Catawba County

to receiving waters designated as the Catawba River (Lake Norman) in the Catawba River Basin in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, III and IV hereof.

This permit shall become effective July 1, 2009.

This permit and authorization to discharge shall expire at midnight on April 30, 2010.

Signed this day June 15, 2009.

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

SUPPLEMENT TO PERMIT COVER SHEET

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

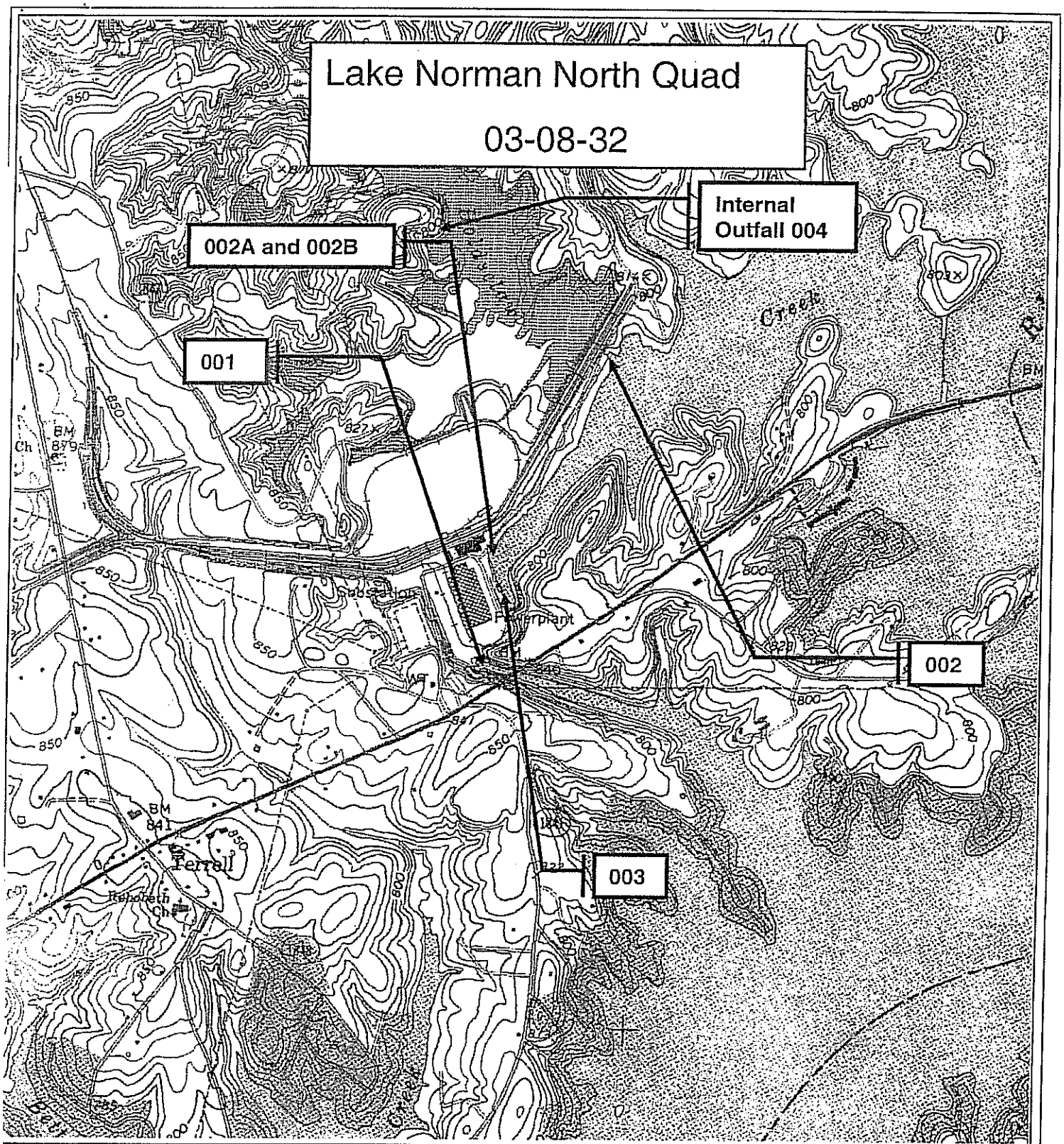
Duke Energy Carolinas, LLC

is hereby authorized to:

1. Continue to discharge once-through cooling water and intake screen backwash through outfall 001; treated wastewater (consisting of metal cleaning wastes, coal pile runoff, ash transport water, domestic wastewater, low volume wastes, and flue gas desulfurization (FGD) wet scrubber wastewater) from the ash settling basin through outfall 002; treated FGD wet scrubber wastewater through internal outfall 004 (upstream of the ash settling basin); yard sump overflows through outfalls 002A and 002B; and non-contact cooling water from the induced draft fan control house through outfall 003. All discharges result from activities at Duke Energy's Marshall Steam Station at the intersection of NC Highway 150 and NCSR 1841 in Terrell, Catawba County;

2. Continue to operate a FGD wet scrubber wastewater treatment system discharging to the ash settling basin through internal outfall 004; and

3. Discharge from said treatment works at the locations specified on the attached map into the Catawba River (Lake Norman) which is classified WS-IV and B CA waters in the Catawba River Basin.



Outfall Information

Outfall #:	001
Receiving Stream:	Catawba River
Latitude:	35°35'42"
Longitude:	80°57'49"

Outfall #:	002A and 002B
Receiving Stream:	Catawba River
Latitude:	35°35'57"
Longitude:	80°57'47"

Outfall #:	002
Receiving Stream:	Catawba River
Latitude:	35°36'22"
Longitude:	80°57'40"

Outfall #:	003
Receiving Stream:	Catawba River
Latitude:	35°35'51"
Longitude:	80°57'45"

North

Facility Location

Duke Power Corporation
NC0004987
Marshall Steam Station

PART I

SECTION A: FINAL LIMITATIONS AND CONTROLS

1. Effluent Limitations and Monitoring Requirements (Outfall 001)

During the period beginning on the effective date of this permit and lasting until expiration, the Permittee is authorized to discharge from **Outfall 001 (once-through cooling water).** Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location
Flow (MGD)	Monitor & Report		Daily	Pump logs or similar readings	Effluent
Temperature (November 1 - June 30)	33.3 °C		Daily	Grab	Effluent
Temperature (July 1 - October 31)	34.4 °C		Daily	Grab	Effluent
Free Available Chlorine[1]	0.2 mg/L	0.5 mg/L	Daily	Grab	Effluent

NOTES:

1 Once-through cooling water shall not be chlorinated. Should the facility wish to chlorinate once-through cooling water, a permit modification must be issued prior to commencement of chlorination. The monitoring requirement and effluent limitations only apply if chlorination is commenced.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

The Regional Administrator has determined pursuant to Section 316(a) of the Act that the thermal component of the discharge assures the protection and propagation of a balanced, indigenous population of shellfish and wildlife in and on the receiving body of water. Water quality temperature standards must be maintained outside the approved 316(a) mixing zone.

PART I

2. Effluent Limitations and Monitoring Requirements (Outfall 002)

During the period beginning on the effective date of this permit and lasting until expiration, the Permittee is authorized to discharge from **Outfall 002 (ash settling basin discharge).** Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location[1]
Flow (MGD)	Monitor & Report			Monthly	Pump logs or similar readings	Effluent
Oil and Grease	9.0 mg/L		12.0 mg/L	Quarterly	Grab	Effluent
Total Suspended Solids[2]	20.0 mg/L		65.0 mg/L	Monthly	Grab	Effluent
Total Arsenic	Monitor & Report			Quarterly	Grab	Effluent
Chloride	Monitor & Report			Quarterly	Grab	Effluent
Total Copper	1.0 mg/L		1.0 mg/L	See note 3	Grab	Effluent
Total Iron	1.0 mg/L		1.0 mg/L	See note 3	Grab	Effluent
Total Mercury	Monitor & Report			Quarterly	Grab	Effluent
Total Nickel	Monitor & Report			Quarterly	Grab	Effluent
Total Selenium	Monitor & Report			Weekly	Grab	Effluent
Total Selenium[4]		29 ug/l	56 ug/l	Weekly	Grab	Effluent
Total Zinc	Monitor & Report			Monthly	Grab	Effluent
Total Nitrogen (NO_2+NO_3+TKN)	Monitor & Report			Monthly	Grab	Effluent
Total Phosphorus	Monitor & Report			Quarterly	Grab	Effluent
Chronic Toxicity	See Part I, Section A, #14			Quarterly	Grab	Effluent
pH	Between 6.0 and 9.0 Standard Units			Monthly	Grab	Effluent
Pollutant Analysis	See Part I, Section A, #20				Grab	Effluent

NOTES:

1 Effluent sampling shall be conducted at the discharge from the ash settling basin prior to mixing with any other waste stream(s).

2 A total suspended solids monthly average of 40 mg/L is permitted provided the Permittee can demonstrate that the difference between the monthly average of 20 mg/L and 40 mg/L is the result of the concentration of total suspended solids in the intake water.

3 Monitoring shall be per occurrence of chemical metal cleaning and samples shall be from a representative discharge.

4 There will be a three year compliance schedule for the weekly average limit of 29 ug/l and the daily maximum limit of 56 ug/l for selenium. The limits shall become effective on July 1, 2012. See Part I Section A.23 for Selenium Compliance Schedule

There shall be no discharge of floating solids or visible foam in other than trace amounts.

PART I

3. Effluent Limitations and Monitoring Requirements (Outfall 002A)

During the period beginning on the effective date of this permit and lasting until expiration, the Permittee is authorized to discharge from **Outfall 002A (yard sump #1 overflows).** Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location[1]
Flow (MGD)			Episodic	Estimate	Effluent
pH			Episodic	Grab	Effluent
Total Suspended Solids			Episodic	Grab	Effluent
Total Iron			See note 2	Grab	Effluent

NOTES:

1 Effluent samples shall be collected at a point upstream of the discharge to the Catawba River.

2 Sampling for iron is required when TSS is reported as greater than 100 mg/L.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

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

PART I

4. Effluent Limitations and Monitoring Requirements (Outfall 002B)

During the period beginning on the effective date of this permit and lasting until expiration, the Permittee is authorized to discharge from **Outfall 002B (yard sump #2 overflows).** Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location[1]
Flow (MGD)			Episodic	Estimate	Effluent
pH			Episodic	Grab	Effluent
Total Suspended Solids			Episodic	Grab	Effluent
Total Iron			See note 2	Grab	Effluent

NOTES:

1 Effluent samples shall be collected at a point upstream of the discharge to the Catawba River.

2 Sampling for iron is required when TSS is reported as greater than 100 mg/L.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

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

5. Effluent Limitations and Monitoring Requirements (Outfall 003)

During the period beginning on the effective date of this permit and lasting until expiration, the Permittee is authorized to discharge from **Outfall 003 (non-contact cooling water from the induced draft fan control house).** Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location
Flow (MGD)					
Temperature[1]					
Total Residual Chlorine[2]					
Free Available Chlorine[2]	0.2 mg/L	0.5 mg/L			
pH	Between 6.0 and 9.0 Standard Units				

NOTES:

1 The temperature of the effluent shall be such as not to cause an increase in the temperature of the receiving stream of more than 2.8°C and in no case cause the ambient water temperature to exceed 29°C.

2 Monitoring requirements apply only if chlorine is added to the cooling water. Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine at any one time.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Limitations shall be met at the discharge effluent. Monitoring frequencies are not specified as the discharge is to the intake canal for outfall 001.

PART I

6. Effluent Limitations and Monitoring Requirements (Outfall 004)

During the period beginning on the effective date of this permit and lasting until expiration, the Permittee is authorized to discharge from **Internal Outfall 004 (treated FGD wet scrubber wastewater to ash settling basin).** Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location[1]
Flow (MGD)	Monitor & Report		Monthly	Pump logs or similar readings	E
Total Arsenic	Monitor & Report		Quarterly	Grab	E
Chloride	Monitor & Report		Quarterly	Grab	E
Total Mercury	Monitor & Report		Quarterly	Grab	E
Total Nickel	Monitor & Report		Quarterly	Grab	E
Total Selenium	Monitor & Report		Weekly	Grab	E
Total Zinc	Monitor & Report		Monthly	Grab	E

NOTES:

1 Sample Location: E - Effluent from the constructed wetland prior to discharge to the ash settling basin.

All flows shall be reported on monthly DMRs. Should no flow occur during a given month, the words "No Flow" shall be clearly written on the front of the DMR. All samples shall be of a representative discharge.

PART I

7. DEFINITIONS

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

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

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

The term "FGD wet scrubber wastewater" means wastewater resulting from the use of the flue-gas desulfurization wet scrubber.

8. TOXICITY RE-OPENER CONDITION

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

9. MONITORING FREQUENCIES

If the Permittee, after monitoring for at least six months, determines that effluent limits contained herein are consistently being met, it may be requested of the Director that the monitoring requirements be reduced to a lesser frequency.

10. POLYCHLORINATED BIPHENYL COMPOUNDS

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

11. BIOCIDE CONDITION

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

12. INTAKE SCREEN BACKWASH

Continued intake screen backwash discharge and overflow from the settling basin are permitted without limitations or monitoring requirements.

13. BEST MANAGEMENT PRACTICES

It has been determined from information submitted that the plans and procedures in place at Marshall Steam Station are equivalent to that of a Best Management Practice (BMP).

PART I

14. CHRONIC TOXICITY PASS/FAIL PERMIT LIMIT (QUARTERLY)- OUTFALL 002

The effluent discharge shall at no time exhibit observable inhibition of reproduction or significant mortality to *Ceriodaphnia dubia* at an effluent concentration of 12%.

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

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

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

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

Attention: Environmental Sciences Section
North Carolina Division of
Water Quality
1621 Mail Service Center
Raleigh, North Carolina 27699-1621

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

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

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

Should the permittee fail to monitor during a month in which toxicity monitoring is required, monitoring will be required during the following month.
Should any test data from this monitoring requirement or tests performed by the North Carolina Division of Water Quality indicate potential impacts to the receiving stream, this permit may be re-opened and modified to include alternate monitoring requirements or limits.

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

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

15. ASH SETTLING BASIN

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

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

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

16. CHEMICAL METAL CLEANING WASTES

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

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

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

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

17. FLOATING MATERIALS

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

18. DIKE INSPECTIONS

The permittee shall check the diked areas for leaks by a visible inspection and shall report any leakage detected.

19. CHEMICAL DISCHARGES

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

20. PRIORITY POLLUTANT ANALYSIS

The Permittee shall conduct a priority pollutant analysis (in accordance with 40 CFR Part 136) once per permit cycle at outfall 002 and submit the results with the application for permit renewal.

21. WAIVERS

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

22. SECTION 316 (B) OF CWA

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

23. COMPLIANCE SCHEDULE FOR SELENIUM LIMITATION

The permittee shall have a three year schedule of compliance for the effluent limitation for total selenium. The following are interim milestones for the installation of the proposed treatment system. The date for compliance with the selenium limit shall be July 1, 2012

- Technology selection, treatment system design and obtaining an authorization to construct permit for the wastewater treatment system by August 31, 2010
- Construction of wastewater treatment system and commissioning by June 30, 2012
- Compliance with selenium limit – July 1, 2012

PART II
STANDARD CONDITIONS FOR NPDES PERMITS

Section A. Definitions

2/Month
Samples are collected twice per month with at least ten calendar days between sampling events.

3/Week
Samples are collected three times per week on three separate calendar days.

Act or "the Act"
The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 USC 1251, et. seq.

Annual Average
The arithmetic mean of all "daily discharges" of a pollutant measured during the calendar year. In the case of fecal coliform, the geometric mean of such discharges.

Arithmetic Mean
The summation of the individual values divided by the number of individual values.

Bypass
The known diversion of waste streams from any portion of a treatment facility including the collection system, which is not a designed or established or operating mode for the facility.

Calendar Day
The period from midnight of one day until midnight of the next day. However, for purposes of this permit, any consecutive 24-hour period that reasonably represents the calendar day may be used for sampling.

Calendar Quarter
One of the following distinct periods: January through March, April through June, July through September, and October through December.

Composite Sample
A sample collected over a 24-hour period by continuous sampling or combining grab samples of at least 100 ml in such a manner as to result in a total sample representative of the wastewater discharge during the sample period. The Director may designate the most appropriate method (specific number and size of aliquots necessary, the time interval between grab samples, etc.) on a case-by-case basis. Samples may be collected manually or automatically. Composite samples may be obtained by the following methods:

(1) Continuous: a single, continuous sample collected over a 24-hour period proportional to the rate of flow.
(2) Constant time/variable volume: a series of grab samples collected at equal time intervals over a 24 hour period of discharge and combined proportional to the rate of flow measured at the time of individual sample collection, or
(3) Variable time/constant volume: a series of grab samples of equal volume collected over a 24 hour period with the time intervals between samples determined by a preset number of gallons passing the sampling point. Flow measurement between sample intervals shall be determined by use of a flow recorder and totalizer, and the preset gallon interval between sample collection fixed at no greater than 1/24 of the expected total daily flow at the treatment system, or
(4) Constant time/constant volume: a series of grab samples of equal volume collected over a 24-hour period at a constant time interval. **Use of this method requires prior approval by the Director. This method may only be used in situations where effluent flow rates vary less than 15 percent.** The following restrictions also apply:
    - Influent and effluent grab samples shall be of equal size and of no less than 100 milliliters

- Influent samples shall not be collected more than once per hour.
- Permittees with wastewater treatment systems whose detention time $\leq$ 24 hours shall collect effluent grab samples at intervals of no greater than 20 minutes apart during any 24-hour period.
- Permittees with wastewater treatment systems whose detention time exceeds 24 hours shall collect effluent grab samples at least every X hours [X = days detention time] over a 24-hour period. Effluent samples shall be collected at least every six hours; there must be a minimum of four samples during a 24-hour sampling period.

Continuous flow measurement
Flow monitoring that occurs without interruption throughout the operating hours of the facility. Flow shall be monitored continually except for the infrequent times when there may be no flow or for infrequent maintenance activities on the flow device.

Daily Discharge
The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants measured in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. The "daily discharge" concentration comprises the mean concentration for a 24-hour sampling period as either a composite sample concentration or the arithmetic mean of all grab samples collected during that period. (40 CFR 122.2)

Daily Maximum
The highest "daily discharge" for conventional and other non-toxicant parameters. NOTE: Permittees may not submit a "daily average" calculation [for determining compliance with permit limits] for toxicants. See the relevant Federal effluent guideline[s] for the appropriate calculation interval.

Daily Sampling
Parameters requiring daily sampling shall be sampled 5 out of every 7 days per week unless otherwise specified in the permit. The Division expects that sampling shall be conducted on weekdays except where holidays or other disruptions of normal operations prevent weekday sampling. If sampling is required for all seven days of the week for any permit parameter(s), that requirement will be so noted on the Effluent Limitations and Monitoring Page(s).

DWQ or "the Division"
The Division of Water Quality, Department of Environment and Natural Resources.

EMC
The North Carolina Environmental Management Commission.

Facility Closure
The cessation of wastewater treatment at a permitted facility, or the cessation of all activities that require coverage under the NPDES. Completion of facility closure will allow this permit to be rescinded.

Geometric Mean
The Nth root of the product of the individual values where N = the number of individual values. For purposes of calculating the geometric mean, values of "0" (or "< [detection level]") shall be considered = 1.

Grab Sample
Individual samples of at least 100 ml collected over a period of time not exceeding 15 minutes. Grab samples can be collected manually. Grab samples must be representative of the discharge (or the receiving stream, for instream samples).

Hazardous Substance
Any substance designated under 40 CFR Part 116 pursuant to Section 311 of the Clean Water Act.

Instantaneous flow measurement
A measure of flow taken at the time of sampling, when both the sample and flow will be representative of the total discharge.

Monthly Average (concentration limit)
The arithmetic mean of all "daily discharges" of a pollutant measured during the calendar month. In the case of fecal coliform, the geometric mean of such discharges.

Permit Issuing Authority
The Director of the Division of Water Quality.

Quarterly Average (concentration limit)
The average of all samples taken over a calendar quarter.

Severe property damage
Substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage excludes economic loss caused by delays in production.

Toxic Pollutant:
Any pollutant listed as toxic under Section 307(a)(l) of the Clean Water Act.

Upset
An incident beyond the reasonable control of the Permittee causing unintentional and temporary noncompliance with permit effluent limitations and/or monitoring requirements. An upset does not include noncompliance caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

Weekly Average (concentration limit)
The arithmetic mean of all "daily discharges" of a pollutant measured during the calendar week. In the case of fecal coliform, the geometric mean of such discharges.

Section B. General Conditions

1. Duty to Comply
   The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application [40 CFR 122.41].

   a. The Permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

   b. The Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. [40 CFR 122.41 (a)(2)]

   c. The Clean Water Act provides that any person who *negligently* violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under

section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than 2 years, or both. [40 CFR 122.41 (a) (2)]

d. Any person who *knowingly* violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both. [40 CFR 122.41 (a) (2)]

e. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions. [40 CFR 122.41 (a) (2)]

f. Under state law, a civil penalty of not more than $25,000 per violation may be assessed against any person who violates or fails to act in accordance with the terms, conditions, or requirements of a permit. [North Carolina General Statutes § 143-215.6A]

g. Any person may be assessed an administrative penalty by the Administrator for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000. [40 CFR 122.41 (a) (3)]

2. Duty to Mitigate
The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit with a reasonable likelihood of adversely affecting human health or the environment [40 CFR 122.41 (d)].

3. Civil and Criminal Liability
Except as provided in permit conditions on "Bypassing" (Part II. C. 4), "Upsets" (Part II. C. 5) and "Power Failures" (Part II. C. 7), nothing in this permit shall be construed to relieve the Permittee from any responsibilities, liabilities, or penalties for noncompliance pursuant to NCGS 143-215.3, 143-215.6 or Section 309 of the Federal Act, 33 USC 1319. Furthermore, the Permittee is responsible for consequential damages, such as fish kills, even though the responsibility for effective compliance may be temporarily suspended.

4. Oil and Hazardous Substance Liability
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties to which the Permittee is or may be subject to under NCGS 143-215.75 et seq. or Section 311 of the Federal Act, 33 USG 1321. Furthermore, the Permittee is responsible for consequential damages, such as fish kills, even though the responsibility for effective compliance may be temporarily suspended.

5. Property Rights
The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations [40 CFR 122.41 (g)].

6. Onshore or Offshore Construction
This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any navigable waters.

7. Severability
The provisions of this permit are severable. If any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby [NCGS 150B-23].

8. Duty to Provide Information
The Permittee shall furnish to the Permit Issuing Authority, within a reasonable time, any information which the Permit Issuing Authority may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee shall also furnish to the Permit Issuing Authority upon request, copies of records required by this permit [40 CFR 122.41 (h)].

9. Duty to Reapply
If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit [40 CFR 122.41 (b)].

10. Expiration of Permit
The Permittee is not authorized to discharge after the expiration date. In order to receive automatic authorization to discharge beyond the expiration date, the Permittee shall submit such information, forms, and fees as are required by the agency authorized to issue permits no later than 180 days prior to the expiration date. Any Permittee that has not requested renewal at least 180 days prior to expiration, or any Permittee that does not have a permit after the expiration and has not requested renewal at least 180 days prior to expiration, will subject the Permittee to enforcement procedures as provided in NCGS 143-215.6 and 33 USC 1251 et. seq.

11. Signatory Requirements
All applications, reports, or information submitted to the Permit Issuing Authority shall be signed and certified [40 CFR 122.41 (k)].

a. **All permit applications shall be signed as follows:**
   (1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (a) a president, secretary, treasurer or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or (b) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures .
   (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
   (3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official [40 CFR 122.22].

b. All reports required by the permit and other information requested by the Permit Issuing Authority shall be signed by a person described in paragraph a. above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
   1. The authorization is made in writing by a person described above;
   2. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or well field, superintendent, a position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and
   3. The written authorization is submitted to the Permit Issuing Authority [40 CFR 122.22]

c. Changes to authorization: If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative [40 CFR 122.22]

d. Certification. Any person signing a document under paragraphs a. or b. of this section shall make the following certification [40 CFR 122.22]:
"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

12. Permit Actions
This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition [40 CFR 122.41 (f)].

13. Permit Modification, Revocation and Reissuance, or Termination
The issuance of this permit does not prohibit the permit issuing authority from reopening and modifying the permit, revoking and reissuing the permit, or terminating the permit as allowed by the laws, rules, and regulations contained in Title 40, Code of Federal Regulations, Parts 122 and 123; Title 15A of the North Carolina Administrative Code, Subchapter 2H .0100; and North Carolina General Statute 143-215.1 et. al.

14. Annual Administering and Compliance Monitoring Fee Requirements
The Permittee must pay the annual administering and compliance monitoring fee within thirty days after being billed by the Division. Failure to pay the fee in a timely manner in accordance with 15A NCAC 2H.0105 (b) (2) may cause this Division to initiate action to revoke the permit.

Section C. Operation and Maintenance of Pollution Controls

1. Certified Operator
Upon classification of the permitted facility by the Certification Commission, the Permittee shall employ a certified water pollution control treatment system operator in responsible charge (ORC) of the water pollution control treatment system. Such operator must hold a certification of the grade equivalent to or greater than the classification assigned to the water pollution control treatment system by the Certification Commission. The Permittee must also employ one or more certified Back-up ORCs who possess a currently valid certificate of the type of the system. Back-up ORCs must possess a grade equal to (or no more than one grade less than) the grade of the system [15A NCAC 8G.0201].

The ORC of each Class I facility must:

- Visit the facility at least weekly
- Comply with all other conditions of 15A NCAC 8G.0204.

The ORC of each Class II, III and IV facility must:

- Visit the facility at least five days per week, excluding holidays
- Properly manage and document daily operation and maintenance of the facility
- Comply with all other conditions of 15A NCAC 8G.0204.

Once the facility is classified, the Permittee shall submit a letter to the Certification Commission designating the operator in responsible charge:

a. Within 60 calendar days prior to wastewater being introduced into a new system
b. Within 120 calendar days of:
   - Receiving notification of a change in the classification of the system requiring the designation of a new ORC and back-up ORC
   - A vacancy in the position of ORC or back-up ORC.

2. Proper Operation and Maintenance

The Permittee shall at all times provide the operation and maintenance resources necessary to operate the existing facilities at optimum efficiency. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the Permittee to install and operate backup or auxiliary facilities only when necessary to achieve compliance with the conditions of the permit [40 CFR 122.41 (e)].

3. Need to Halt or Reduce not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the condition of this permit [40 CFR 122.41 (c)].

4. Bypassing of Treatment Facilities

a. Bypass not exceeding limitations [40 CFR 122.41 (m) (2)]
   The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Paragraphs b. and c. of this section.

b. Notice [40 CFR 122.41 (m) (3)]
   (1) Anticipated bypass. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass; including an evaluation of the anticipated quality and effect of the bypass.
   (2) Unanticipated bypass. The Permittee shall submit notice of an unanticipated bypass as required in Part II. E. 6. (24-hour notice).

c. Prohibition of Bypass
   (1) Bypass from the treatment facility is prohibited and the Permit Issuing Authority may take enforcement action against a Permittee for bypass, unless:
      (A) Bypass was unavoidable to prevent loss of life, personal injury or severe property damage;
      (B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
      (C) The Permittee submitted notices as required under Paragraph b. of this section.

(2) Bypass from the collection system is prohibited and the Permit Issuing Authority may take enforcement action against a Permittee for a bypass as provided in any current or future system-wide collection system permit associated with the treatment facility.

(3) The Permit Issuing Authority may approve an anticipated bypass, after considering its adverse effects, if the Permit Issuing Authority determines that it will meet the three conditions listed above in Paragraph c. (I) of this section.

5. Upsets

a. Effect of an upset [40 CFR 122.41 (n) (2)]: An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph b. of this condition are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

b. Conditions necessary for a demonstration of upset: A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The Permittee facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in Part II. E. 6. (b) of this permit.
(4) The Permittee complied with any remedial measures required under Part II. B. 2. of this permit.

c. Burden of proof [40 CFR 122.41 (n) (4)]: The Permittee seeking to establish the occurrence of an upset has the burden of proof in any enforcement proceeding.

6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be utilized/disposed of in accordance with NCGS 143-215.1 and in a manner such as to prevent any pollutant from such materials from entering waters of the State or navigable waters of the United States. The Permittee shall comply with all existing Federal regulations governing the disposal of sewage sludge. Upon promulgation of 40 CFR Part 503, any permit issued by the Permit Issuing Authority for the utilization/disposal of sludge may be reopened and modified, or revoked and reissued, to incorporate applicable requirements at 40 CFR 503. The Permittee shall comply with applicable 40 CFR 503 Standards for the Use and Disposal of Sewage Sludge (when promulgated) within the time provided in the regulation, even if the permit is not modified to incorporate the requirement. The Permittee shall notify the Permit Issuing Authority of any significant change in its sludge use or disposal practices.

7. Power Failures

The Permittee is responsible for maintaining adequate safeguards (as required by 15A NCAC 2H.0124 – Reliability) to prevent the discharge of untreated or inadequately treated wastes during electrical power failures either by means of alternate power sources, standby generators or retention of inadequately treated effluent.

Section D. Monitoring and Records

1. Representative Sampling

Samples collected and measurements taken, as required herein, shall be characteristic of the volume and nature of the permitted discharge. Samples collected at a frequency less than daily shall be taken on a day and time that is characteristic of the discharge over the entire period the sample represents. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Permit Issuing Authority [40 CFR 122.41 (j)].

2. Reporting

Monitoring results obtained during the previous month(s) shall be summarized for each month and reported on a monthly Discharge Monitoring Report (DMR) Form (MR 1, 1.1, 2, 3) or alternative forms approved by the Director, postmarked no later than the last calendar day of the month following the completed reporting period.

The first DMR is due on the last day of the month following the issuance of the permit or in the case of a new facility, on the last day of the month following the commencement of discharge. Duplicate signed copies of these, and all other reports required herein, shall be submitted to the following address:

NC DENR / Division of Water Quality / Water Quality Section
ATTENTION: Central Files
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

3. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10% from the true discharge rates throughout the range of expected discharge volumes. Flow measurement devices shall be accurately calibrated at a minimum of once per year and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. The Director shall approve the flow measurement device and monitoring location prior to installation.

Once-through condenser cooling water flow monitored by pump logs, or pump hour meters as specified in Part I of this permit and based on the manufacturer's pump curves shall not be subject to this requirement.

4. Test Procedures

Test procedures for the analysis of pollutants shall conform to the EMC regulations (published pursuant to NCGS 143-215.63 et. seq.), the Water and Air Quality Reporting Acts, and to regulations published pursuant to Section 304(g), 33 USC 1314, of the Federal Water Pollution Control Act (as Amended), and 40 CFR 136; or in the case of sludge use or disposal, approved under 40 CFR 136, unless otherwise specified in 40 CFR 503, unless other test procedures have been specified in this permit [40 CFR 122.41].

To meet the intent of the monitoring required by this permit, all test procedures must produce minimum detection and reporting levels that are below the permit discharge requirements and all data generated must be reported down to the minimum detection or lower reporting level of the procedure. If no approved methods are determined capable of achieving minimum detection and reporting levels below permit discharge requirements, then the most sensitive (method with the lowest possible detection and reporting level) approved method must be used.

5. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than two years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both [40 CFR 122.41].

6. Records Retention

Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR 503), the Permittee shall retain records of all monitoring information, including:

- all calibration and maintenance records.
- all original strip chart recordings for continuous monitoring instrumentation

- copies of all reports required by this permit
- copies of all data used to complete the application for this permit

These records or copies shall be maintained for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time [40 CFR 122.41].

7. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the Permittee shall record the following information [40 CFR 122.41]:

a. The date, exact place, and time of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical techniques or methods used; and
f. The results of such analyses.

8. Inspection and Entry

The Permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Director), upon the presentation of credentials and other documents as may be required by law, to;

a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location [40 CFR 122.41 (i)].

Section E Reporting Requirements

1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit.

2. Planned Changes

The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility [40 CFR 122.41 (l)]. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for new sources at 40 CFR 122.29 (b); or
b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42 (a) (1).
c. The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

3. Anticipated Noncompliance

The Permittee shall give advance notice to the Director of any planned changes to the permitted facility or other activities that might result in noncompliance with the permit [40 CFR 122.41 (l) (2)].

4. Transfers
This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to document the change of ownership. Any such action may incorporate other requirements as may be necessary under the Clean Water Act [40 CFR 122.41 (l) (3)].

5. Monitoring Reports
Monitoring results shall be reported at the intervals specified elsewhere in this permit [40 CFR 122.41 (l) (4)].

a. Monitoring results must be reported on a Discharge Monitoring Report (DMR) (See Part II. D. 2) or forms provided by the Director for reporting results of monitoring of sludge use or disposal practices.
b. If the Permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included in the calculation and reporting of the data submitted on the DMR.

6. Twenty-four Hour Reporting
a. The Permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance, and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance [40 CFR 122.41 (l) (6)].

b. The Director may waive the written report on a case-by-case basis for reports under this section if the oral report has been received within 24 hours.

c. Occurrences outside normal business hours may also be reported to the Division's Emergency Response personnel at (800) 662-7956, (800) 858-0368 or (919) 733-3300.

7. Other Noncompliance
The Permittee shall report all instances of noncompliance not reported under Part II. E. 5 and 6. of this permit at the time monitoring reports are submitted. The reports shall contain the information listed in Part II. E. 6. of this permit [40 CFR 122.41 (l) (7)].

8. Other Information
Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information [40 CFR 122.41 (l) (8)].

9. Noncompliance Notification
The Permittee shall report by telephone to either the central office or the appropriate regional office of the Division as soon as possible, but in no case more than 24 hours or on the next working day following the occurrence or first knowledge of the occurrence of any of the following:

a. Any occurrence at the water pollution control facility which results in the discharge of significant amounts of wastes which are abnormal in quantity or characteristic, such as the dumping of the contents of a sludge digester; the known passage of a slug of hazardous substance through the facility; or any other unusual circumstances.
b. Any process unit failure, due to known or unknown reasons, that render the facility incapable of adequate wastewater treatment such as mechanical or electrical failures of pumps, aerators, compressors, etc.
c. Any failure of a pumping station, sewer line, or treatment facility resulting in a by-pass directly to receiving waters without treatment of all or any portion of the influent to such station or facility.

Persons reporting such occurrences by telephone shall also file a written report within 5 days following first knowledge of the occurrence.

10. Availability of Reports
Except for data determined to be confidential under NCGS 143-215.3 (a)(2) or Section 308 of the Federal Act, 33 USC 1318, all reports prepared in accordance with the terms shall be available for public inspection at the offices of the Division. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in NCGS 143-215.1 (b)(2) or in Section 309 of the Federal Act.

11. Penalties for Falsification of Reports
The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $25,000 per violation, or by imprisonment for not more than two years per violation, or by both [40 CFR 122.41].

12. Annual Performance Reports
Permittees who own or operate facilities that collect or treat municipal or domestic waste shall provide an annual report to the Permit Issuing Authority and to the users/customers served by the Permittee (NCGS 143-215.1C). The report shall summarize the performance of the collection or treatment system, as well as the extent to which the facility was compliant with applicable Federal or State laws, regulations and rules pertaining to water quality. The report shall be provided no later than sixty days after the end of the calendar or fiscal year, depending upon which annual period is used for evaluation.

PART III
OTHER REQUIREMENTS

Section A. Construction
The Permittee shall not commence construction of wastewater treatment facilities, nor add to the plant's treatment capacity, nor change the treatment process(es) utilized at the treatment plant unless the Division has issued an Authorization to Construct (AtC) permit. Issuance of an AtC will not occur until Final Plans and Specifications for the proposed construction have been submitted by the Permittee and approved by the Division.

Section B. Groundwater Monitoring
The Permittee shall, upon written notice from the Director, conduct groundwater monitoring as may be required to determine the compliance of this NPDES permitted facility with the current groundwater standards.

Section C. Changes in Discharges of Toxic Substances
The Permittee shall notify the Permit Issuing Authority as soon as it knows or has reason to believe (40 CFR 122.42):

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels";
   (1) One hundred micrograms per liter (100 µg/L);
   (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2.4-dinitrophenol and for 2-methyl-4.6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
   (3) Five times the maximum concentration value reported for that pollutant in the permit application.

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels";

(l) Five hundred micrograms per liter (500 µg/L);
(2) One milligram per liter (l mg/L) for antimony;
(3) Ten times the maximum concentration value reported for that pollutant in the permit application.

Section D. Evaluation of Wastewater Discharge Alternatives

The Permittee shall evaluate all wastewater disposal alternatives and pursue the most environmentally sound alternative of the reasonably cost effective alternatives. If the facility is in substantial non-compliance with the terms and conditions of the NPDES permit or governing rules, regulations or laws, the Permittee shall submit a report in such form and detail as required by the Division evaluating these alternatives and a plan of action within 60 days of notification by the Division.

Section E. Facility Closure Requirements

The Permittee must notify the Division at least 90 days prior to the closure of any wastewater treatment system covered by this permit. The Division may require specific measures during deactivation of the system to prevent adverse impacts to waters of the State. This permit cannot be rescinded while any activities requiring this permit continue at the permitted facility.

PART IV
SPECIAL CONDITIONS FOR MUNICIPAL FACILITIES

Section A. Publicly Owned Treatment Works (POTWs)

All POTWs must provide adequate notice to the Director of the following:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; and
2. Any substantial change in the volume or character of pollutants being introduced by an indirect discharger as influent to that POTW at the time of issuance of the permit.
3. For purposes of this paragraph, adequate notice shall include information on (1) the quality and quantity of effluent introduced into the POTW, and (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

Section B. Municipal Control of Pollutants from Industrial Users.

1. Effluent limitations are listed in Part I of this permit. Other pollutants attributable to inputs from industries using the municipal system may be present in the Permittee's discharge. At such time as sufficient information becomes available to establish limitations for such pollutants, this permit may be revised to specify effluent limitations for any or all of such other pollutants in accordance with best practicable technology or water quality standards.

2. Under no circumstances shall the Permittee allow introduction of the following wastes in the waste treatment system:
   a. Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21;
   b. Pollutants which will cause corrosive structural damage to the POTW, but in no case Discharges with pH lower than 5.0, unless the works is specifically designed to accommodate such Discharges;
   c. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in Interference;
   d. Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a Discharge at a flow rate and/or pollutant concentration which will cause Interference with the POTW;
   e. Heat in amounts which will inhibit biological activity in the POTW resulting in Interference, but in no case heat in such quantities that the temperature at the POTW Treatment Plant exceeds 40°C (104°F) unless the Division, upon request of the POTW, approves alternate temperature limits;

f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
g. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;
h. Any trucked or hauled pollutants, except at discharge points designated by the POTW.

3. With regard to the effluent requirements listed in Part I of this permit, it may be necessary for the Permittee to supplement the requirements of the Federal Pretreatment Standards (40 CFR, Part 403) to ensure compliance by the Permittee with all applicable effluent limitations. Such actions by the Permittee may be necessary regarding some or all of the industries discharging to the municipal system.

4. The Permittee shall require any industrial discharges sending influent to the permitted system to meet Federal Pretreatment Standards promulgated in response to Section 307(b) of the Act. Prior to accepting wastewater from any significant industrial user, the Permittee shall either develop and submit to the Division a Pretreatment Program for approval per 15A NCAC 2H .0907(a) or modify an existing Pretreatment Program per 15A NCAC 2H .0907(b).

5. This permit shall be modified, or alternatively, revoked and reissued, to incorporate or modify an approved POTW Pretreatment Program or to include a compliance schedule for the development of a POTW Pretreatment Program as required under Section 402(b)(8) of the Clean Water Act and implementing regulations or by the requirements of the approved State pretreatment program, as appropriate.

Section C. Pretreatment Programs

Under authority of sections 307(b) and (c) and 402(b)(8) of the Clean Water Act and implementing regulations 40 CFR Part 403, North Carolina General Statute 143-215.3 (14) and implementing regulations 15A NCAC 2H .0900, and in accordance with the approved pretreatment program, all provisions and regulations contained and referenced in the Pretreatment Program Submittal are an enforceable part of this permit.

The Permittee shall operate its approved pretreatment program in accordance with Section 402(b)(8) of the Clean Water Act, the Federal Pretreatment Regulations 40 CFR Part 403, the State Pretreatment Regulations 15A NCAC 2H .0900, and the legal authorities, policies, procedures, and financial provisions contained in its pretreatment program submission and Division approved modifications there of. Such operation shall include but is not limited to the implementation of the following conditions and requirements:

1. Sewer Use Ordinance (SUO)
The Permittee shall maintain adequate legal authority to implement its approved pretreatment program.

2. Industrial Waste Survey (IWS)
The Permittee shall update its Industrial Waste Survey (IWS) to include all users of the sewer collection system at least once every five years.

3. Monitoring Plan
The Permittee shall implement a Division-approved Monitoring Plan for the collection of facility specific data to be used in a wastewater treatment plant Headworks Analysis (HWA) for the development of specific pretreatment local limits. Effluent data from the Plan shall be reported on the DMRs (as required by Part II, Section D, and Section E.5.).

4. Headworks Analysis (HWA) and Local Limits
The Permittee shall obtain Division approval of a Headworks Analysis (HWA) at least once every five years, and as required by the Division. Within 180 days of the effective date of this permit (or any subsequent permit modification) the Permittee shall submit to the Division a written technical evaluation of the need to revise local limits (i.e., an updated HWA or documentation of why one is not needed) [40 CFR 122.44]. The Permittee shall develop, in accordance with 40 CFR 403.5(c) and 15A NCAC 2H .0909, specific Local Limits to implement the prohibitions listed in 40 CFR 403.5(a) and (b) and 15A NCAC 2H .0909.

5. Industrial User Pretreatment Permits (IUP) & Allocation Tables

In accordance with NCGS 143-215.1, the Permittee shall issue to all significant industrial users, permits for operation of pretreatment equipment and discharge to the Permittee's treatment works. These permits shall contain limitations, sampling protocols, reporting requirements, appropriate standard and special conditions, and compliance schedules as necessary for the installation of treatment and control technologies to assure that their wastewater discharge will meet all applicable pretreatment standards and requirements. The Permittee shall maintain a current Allocation Table (AT) which summarizes the results of the Headworks Analysis (HWA) and the limits from all Industrial User Pretreatment Permits (IUP). Permitted IUP loadings for each parameter cannot exceed the treatment capacity of the POTW as determined by the HWA.

6. Authorization to Construct (AtC)

The Permittee shall ensure that an Authorization to Construct permit (AtC) is issued to all applicable industrial users for the construction or modification of any pretreatment facility. Prior to the issuance of an AtC, the proposed pretreatment facility and treatment process must be evaluated for its capacity to comply with all Industrial User Pretreatment Permit (IUP) limitations.

7. POTW Inspection & Monitoring of their SIUs

The Permittee shall conduct inspection, surveillance, and monitoring activities as described in its Division approved pretreatment program in order to determine, independent of information supplied by industrial users, compliance with applicable pretreatment standards. The Permittee must:

a. Inspect all Significant Industrial Users (SIUs) at least once per calendar year; and
b. Sample all Significant Industrial Users (SIUs) at least twice per calendar year for all permit-limited pollutants, once during the period from January 1 through June 30 and once during the period from July 1 through December 31, except for organic compounds which shall be sampled once per calendar year;

8. SIU Self Monitoring and Reporting

The Permittee shall require all industrial users to comply with the applicable monitoring and reporting requirements outlined in the Division-approved pretreatment program, the industry's pretreatment permit, or in 15A NCAC 2H .0908.

9. Enforcement Response Plan (ERP)

The Permittee shall enforce and obtain appropriate remedies for violations of all pretreatment standards promulgated pursuant to section 307(b) and (c) of the Clean Water Act (40 CFR 405 et. seq.), prohibitive discharge standards as set forth in 40 CFR 403.5 and 15A NCAC 2H .0909, and specific local limitations. All enforcement actions shall be consistent with the Enforcement Response Plan (ERP) approved by the Division.

10. Pretreatment Annual Reports (PAR)

The Permittee shall report to the Division in accordance with 15A NCAC 2H .0908. In lieu of submitting annual reports, Modified Pretreatment Programs developed under 15A NCAC 2H .0904 (b) may be required to meet with Division personnel periodically to discuss enforcement of pretreatment requirements and other pretreatment implementation issues.

For all other active pretreatment programs, the Permittee shall submit two copies of a Pretreatment Annual Report (PAR) describing its pretreatment activities over the previous twelve months to the Division at the following address:

NC DENR / DWQ / Pretreatment Unit
1617 Mail Service Center
Raleigh, NC 27699-1617

These reports shall be submitted according to a schedule established by the Director and shall contain the following:

a.) Narrative
A brief discussion of reasons for, status of, and actions taken for all Significant Industrial Users (SIUs) in Significant Non-Compliance (SNC);

b.) Pretreatment Program Summary (PPS)
A pretreatment program summary (PPS) on specific forms approved by the Division;

c.) Significant Non-Compliance Report (SNCR)
The nature of the violations and the actions taken or proposed to correct the violations on specific forms approved by the Division;

d.) Industrial Data Summary Forms (IDSF)
Monitoring data from samples collected by both the POTW and the Significant Industrial User (SIU). These analytical results must be reported on Industrial Data Summary Forms (IDSF) or other specific format approved by the Division;

e.) Other Information
Copies of the POTW's allocation table, new or modified enforcement compliance schedules, public notice of SIUs in SNC, and any other information, upon request, which in the opinion of the Director is needed to determine compliance with the pretreatment implementation requirements of this permit;

11. Public Notice
The Permittee shall publish annually a list of Significant Industrial Users (SIUs) that were in Significant Non-Compliance (SNC) as defined in the Permittee's Division-approved Sewer Use Ordinance with applicable pretreatment requirements and standards during the previous twelve month period. This list shall be published within four months of the applicable twelve-month period.

12. Record Keeping
The Permittee shall retain for a minimum of three years records of monitoring activities and results, along with support information including general records, water quality records, and records of industrial impact on the POTW.

13. Funding and Financial Report
The Permittee shall maintain adequate funding and staffing levels to accomplish the objectives of its approved pretreatment program.

14. Modification to Pretreatment Programs
Modifications to the approved pretreatment program including but not limited to local limits modifications, POTW monitoring of their Significant Industrial Users (SIUs), and Monitoring Plan modifications, shall be considered a permit modification and shall be governed by 15 NCAC 2H .0114 and 15A NCAC 2H .0907.

CORPORATE EHS SERVICES

Duke Energy Corporation
526 South Church St
Charlotte, NC 28202

Mailing Address:
EC13K / PO Box 1006
Charlotte, NC 28201-1006

October 26, 2009

Mr. Charles H. Weaver, Jr.
State of North Carolina
Department of Environment and Natural Resources
Division of Water Quality
NPDES Unit
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

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

Dear Mr. Weaver:

Duke Energy Carolinas, LLC requests the subject permit be renewed and reissued. The above referenced permit expires April 30, 2010. As mandated by North Carolina Administrative Code 15A NCAC 2H.0105 (e), this permit application for renewal is being submitted at least 180 days prior to expiration of the current permit.

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

EPA Form 1
EPA Form 2C
EPA Form 2F
Site Maps
Water Flow Diagram
Supplemental Information

Duke Power requests notification that this application is complete.

Additionally, the attached report, "Assessment of Balanced and Indigenous Populations in Lake Norman Near Marshall Steam Station," continues to indicate the maintenance of a balanced indegnious populations. Therefore, this report supports renewal of the current thermal monitoring requirements of outfall #001.

The elimination of monitoring for the following parameters at outfalls #002 and #004 is requested based on historical monitoring data.

- Total Arsenic
- Chloride
- Total Mercury
- Total Nickel

Thank you in advance for your assistance on this matter. Should you have questions regarding this application, please contact me at (704) 382-4309.

Sincerely,

Allen Stowe
Water Management

Attachments

cc w/: Mr. Robert Krebs - NCDENR Mooresville R.O.
Mr. Jay Sauber – NCDENR, Raleigh, N.C. (BIP Report 3 copies)

Allen Stowe/msscovperappl2009

bc w/attachments: Donna Burrell – Marshall Steam Station
Penny Stafford

bc w/o attachments: Ron Lewis
Debbie Nispel
Dave Renner
Robert Wylie

File Number: 8-6
Record Number: 248464
Certified Mail: 7008 1140 0002 2718 4380

Please print or type in the unshaded areas only.

Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

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

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

LABEL ITEMS
I. EPA I.D. NUMBER
III. FACILITY NAME
V. FACILITY MAILING ADDRESS
VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

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

II. POLLUTANT CHARACTERISTICS

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

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

III. NAME OF FACILITY

1 SKIP: Marshall Steam Station

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*: 2 Stowe, Allen/Env. Spc. III

B. PHONE *(area code & no.)*: (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: 4 Charlotte

C. STATE: NC

D. ZIP CODE: 28201

VI. FACILITY LOCATION

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

B. COUNTY NAME: Catawba

C. CITY OR TOWN: 6 Terrell

D. STATE: NC

E. ZIP CODE: 28682

F. COUNTY CODE *(if known)*:

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.): (704) 382-4309

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

F. CITY OR TOWN: Charlotte

G. STATE: NC

H. ZIP CODE: 28201

IX. INDIAN LAND

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)	
9 N NC0004987	9 P	
B. UIC (Underground Injection of Fluids)	**E. OTHER (specify)**	
9 U	9 03676T44 / NCG010000	(specify) Air Permit/General Stormwater
C. RCRA (Hazardous Wastes)	**E. OTHER (specify)**	
9 R NCD043678879	9 SWP 18-09 / WQ0000452	(specify) Landfill Permut/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

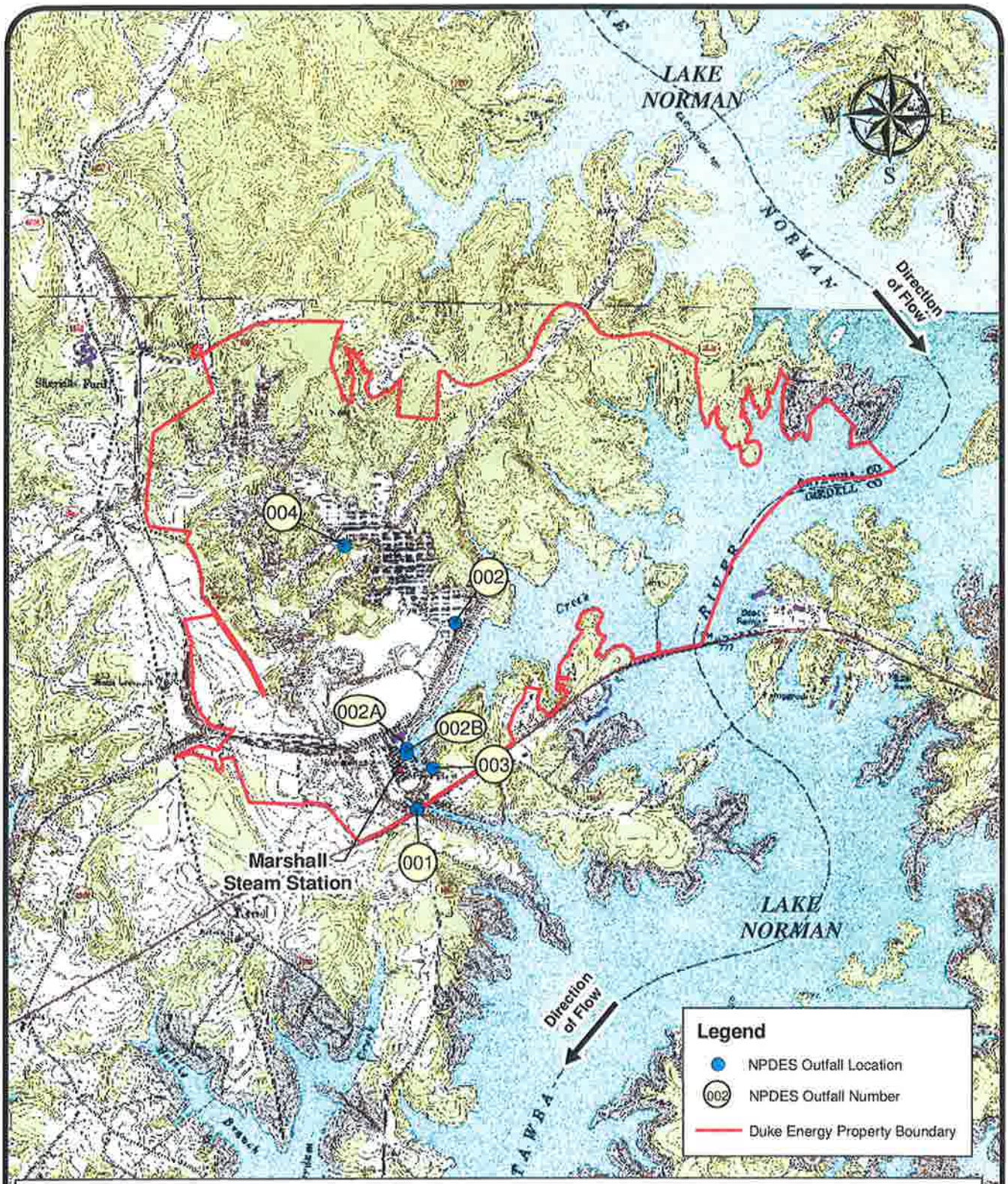
XIII. CERTIFICATION (see instructions)

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
David Renner - General Manager III, Regulated Fossil Stations	David Renner	10-26-09

COMMENTS FOR OFFICIAL USE ONLY

C



REFERENCE:

BACKGROUND DATA: USGS TOPOGRAPHIC QUAD, WAS OBTAINED FROM NCDOT GEOGRAPHICAL INFORMATION (GIS) WEBSITE. THE PROPERTY DATA WAS OBTAINED FROM THE CATAWBA COUNTY NORTH CAROLINA GIS DEPARTMENT. PLEASE NOTE THIS DATA IS FOR INFORMATIONAL PURPOSES ONLY.

0 0.5 1 Kilometers

0 0.5 1 Miles

SCALE:	AS SHOWN
DATE:	10-15-2009
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**

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		Screen discharge to surface water	1T	
	(Once through non-contact)	1093.4 MGD		4A	
	includes intake screen backwash				
002	Ash basin discharge with sanitary	8.3 MGD	chemical coagulation, settling, neutralization,	2D	2K
	system effluent and storm water		ion exchange, surface water discharge	1U	
				2J	
				4A	
002A 002B	Emergency Overflow of yard drain	Intermittent	surface water discharge	4A	
	sump #1 (002A) and sunp #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	1.2 MGD	sedimentation	1U	
			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	C. DURATION (*in days*)
002A	Emergency overflow of yard drain sump #1 (see supplmental information)	See Supple-mental Informat-ion		See Supple-mental Informat-ion		See Supple-mental Informat-ion		See Supple-mental Informat-ion
002B	Emergency overflow of yard drain sump #2 (see supplmental information)	See Supple-mental Informat-ion		See Supple-mental Informat-ion		See Supple-mental Informat-ion		See Supple-mental Informat-ion

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*)

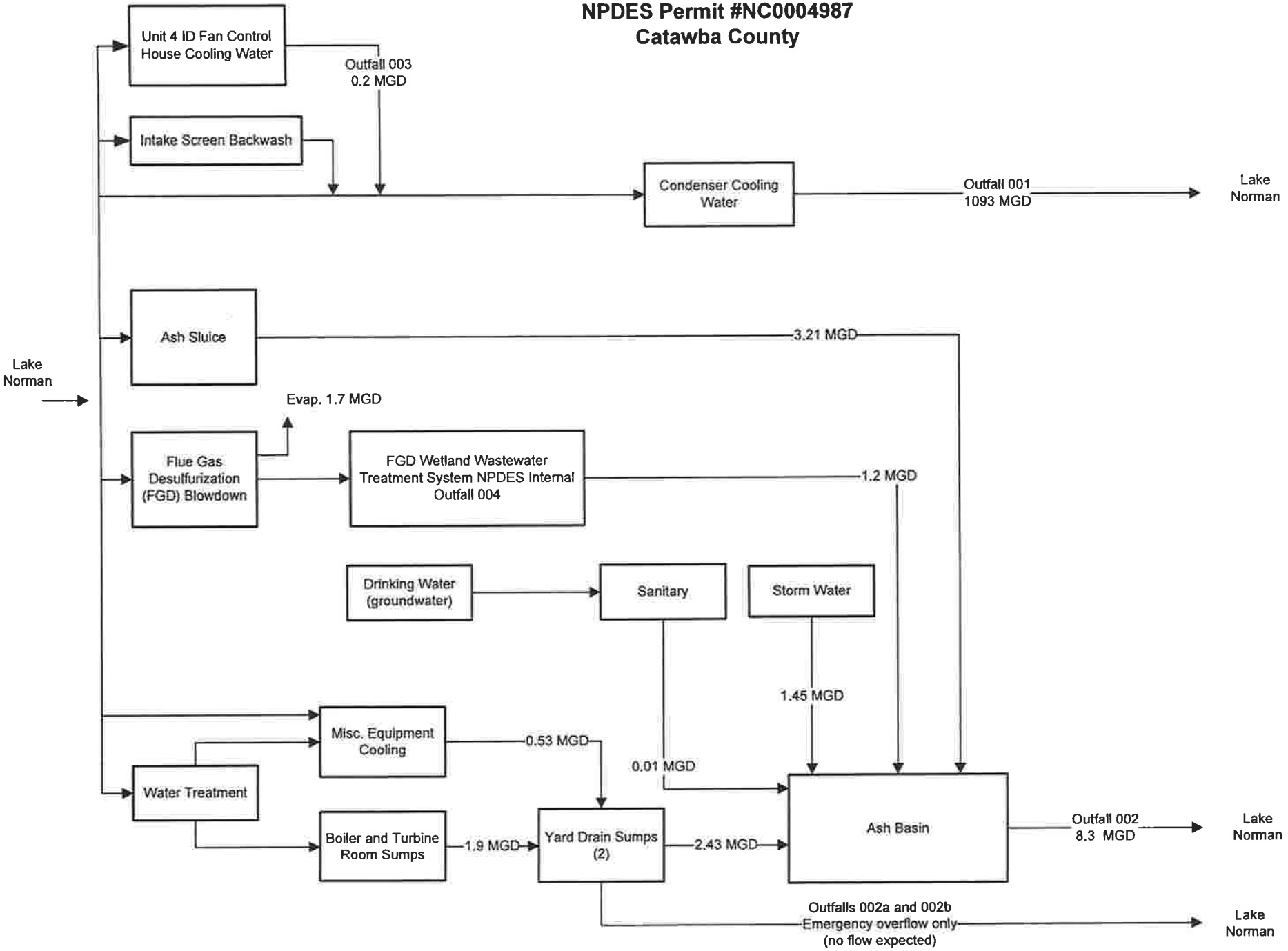
A. NAME	B. ADDRESS	C. TELEPHONE (*area code & no.*)	D. POLLUTANTS ANALYZED (*list*)
Shealy Environmental Services,Inc.	106 Vantage Point Drive West Columbia, SC 29172	803-791-9700	All parameters except dioxin and radiological
SGS Environmental Services, Inc.	5500 Business Dr. Wilmington, NC 28405	910-350-1903	Dioxin
GEL Laboratories LLC	2040 Savage Road Charleston, SC 29417	843-556-8171	Radiological

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.*)
David Renner, General Manager III, Regulated Fossil Stations	(828) 478-7600
C. SIGNATURE	**D. DATE SIGNED**
David Renner	10-26-09

Marshall Steam Station Water Schematic
NPDES Permit #NC0004987
Catawba County



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**

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

OUTFALL NO. 001

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	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	3. UNITS a. Concentration	3. UNITS b. Mass	4. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	a. LONG TERM AVG. VALUE (2) Mass	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand (BOD)	< 2.0	< 24419.1					1	mg/L	lbs/Day	< 2.0	<	1
b. Chemical Oxygen Demand (COD)	17	207562.7					1	mg/L	lbs/Day	13		1
c. Total Organic Carbon (TOC)	4.6	56164.0					1	mg/L	lbs/Day	3.8		1
d. Total Suspended Solids (TSS)	4.0	48838.3					1	mg/L	lbs/Day	< 4.0	<	1
e. Ammonia (as N)	< 0.10	< 1221.0					1	mg/L	lbs/Day	< 0.10	<	1
f. Flow	VALUE 1463.1		VALUE 1462		VALUE 1093.4		730	MGD	N/A	VALUE		
g. Temperature (winter)	VALUE 26.8		VALUE 23.1		VALUE 20.9		181	DEGREES CELSIUS		VALUE 14.4		1
h. Temperature (summer)	VALUE 36.9		VALUE 33.8		VALUE 31.8		183	DEGREES CELSIUS		VALUE		
i. pH	MINIMUM 7.20	MAXIMUM	MINIMUM	MAXIMUM			1	STANDARD UNITS		7.28		

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	2. MARK "X" Believed b. 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	a. LONG TERM AVG. VALUE (2) Mass	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		< 0.20	< 2441.9					1	mg/L	lbs/Day	< 0.20	<	1
b. Chlorine, Total Residual	X		< 0.0050	< 61.0					1	mg/L	lbs/Day	< 0.0050	<	1
c. Color	X		35	N/A		N/A		N/A	1	Std. Units	N/A	25	N/A	1
d. Fecal Coliform	X		12	N/A		N/A		N/A	1	Colonies /100 ml	N/A	7	N/A	1
e. Fluoride (16984-48-8)	X		< 0.10	< 1221.0					1	mg/L	lbs/Day	< 0.10	<	1
f. Nitrate-Nitrite (as N)	X		0.29	3540.8					1	mg-N/L	lbs/Day	0.27		1

CONTINUE ON PAGE V-2

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

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		0.19	2319.8					1	mg-N/L	lbs/Day	0.20		1
h. Oil and Grease	X		< 5.0	< 61047.8					1	mg/L	lbs/Day	< 5.00	<	1
i. Phosphorous (as P), Total (7723-14-0)	X		0.025	317.4					1	mg-P/L	lbs/Day	0.022		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		2.37	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		4.4	53722.1					1	mg/L	lbs/Day	4.5		1
l. Sulfide (as S)	X		< 1.0	< 12209.6					1	mg/L	lbs/Day	< 1.0	<	1
m. Sulfite (as SO3) (14265-45-3)	X		1.0	12209.6					1	mg/L	lbs/Day	1.0		1
n. Surfactants	X		0.087	1062.2					1	mg/L	lbs/Day	0.055		1
o. Aluminum, Total (7429-90-5)	X		0.280	3418.7					1	mg/L	lbs/Day	0.190		1
p. Barium, Total (7440-39-3)	X		< 0.050	< 610.5					1	mg/L	lbs/Day	< 0.050	<	1
q. Boron, Total (7440-42-8)	X		0.079	964.6					1	mg/L	lbs/Day	0.079		1
r. Cobalt, Total (7440-48-4)	X		< 0.020	< 244.2					1	mg/L	lbs/Day	< 0.020	<	1
s. Iron, Total (7439-89-6)	X		0.523	6385.6					1	mg/L	lbs/Day	0.462		1
t. Magnesium, Total (7439-95-4)	X		1.70	20756.3					1	mg/L	lbs/Day	1.80		1
u. Molybdenum, Total (7439-98-7)	X		< 0.020	< 244.2					1	mg/L	lbs/Day	< 0.020	<	1
v. Manganese, Total (7439-96-5)	X		0.027	329.7					1	mg/L	lbs/Day	0.019		1
w. Tin, Total (7440-31-5)	X		< 0.010	< 122.1					1	mg/L	lbs/Day	< 0.010	<	1
x. Titanium, Total (7440-32-6)	X		< 0.050	< 610.5					1	mg/L	lbs/Day	< 0.050	<	1

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. 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
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
2M. Arsenic, Total (7440-38-2)	X			< 1.0	< 12.21					1	ug/L	lbs/Day	< 1.0	<	1
3M. Beryllium, Total (7440-41-7)	X			< 1.0	< 12.21					1	ug/L	lbs/Day	< 1.0	<	1
4M. Cadmium, Total (7440-43-9)	X			< 1.0	< 12.21					1	ug/L	lbs/Day	< 1.0	<	1
5M. Chromium, Total (7440-47-3)	X			1.30	15.87					1	ug/L	lbs/Day	1.20		1
6M. Copper, Total (7440-50-8)	X			< 0.0050	< 61.05					1	mg/L	lbs/Day	< 0.0050	<	1
7M. Lead, Total (7439-92-1)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
8M. Mercury, Total (7439-97-6)	X			0.00154	0.02					1	ug/L	lbs/Day	0.000913		1
9M. Nickel, Total (7440-02-0)	X			< 1.0	< 12.21					1	ug/L	lbs/Day	< 1.0	<	1
10M. Selenium, Total (7782-49-2)	X			< 1.0	< 12.21					1	ug/L	lbs/Day	< 1.0	<	1
11M. Silver, Total (7440-22-4)	X			< 1.0	< 12.21					1	ug/L	lbs/Day	< 1.0	<	1
12M. Thallium, Total (7440-28-0)	X			< 0.00050	< 6.1					1	mg/L	lbs/Day	< 0.00050	<	1
13M. Zinc, Total (7440-66-6)	X			0.0039	47.62					1	mg/L	lbs/Day	0.0033		1
14M. Cyanide, Total (57-12-5)	X			< 0.010	< 122.10					1	mg/L	lbs/Day	< 0.010	<	1
15M. Phenols, Total	X			0.0055	67.2					1	mg/L	lbs/Day	0.0055		1
DIOXIN															
2,3,7,8 Tetra chlorodibenzo P Dioxin (1764-01-6)			X	DESCRIBE RESULTS < 0.0102						1	ng/L		< 0.0102		1

CONTINUE ON PAGE V-4

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

Marshall Steam Station

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" a. Re-quired	b. Believed present	c. Believed 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															
1V. Acrolein (107-02-8)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
2V. Acrylonitrile (107-13-1)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
3V. Benzene (71-43-2)	X			< 2.0	< 24.42					1	ug/L	lbs/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	lbs/Day	< 2.0	<	1
6V. Carbon Tetrachloride (56-23-5)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
7V. Chlorobenzene (108-90-7)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
8V. Chlorodi-bromomethane (124-48-1)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
9V. Chloroethane (75-00-3)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
10V. 2-Chloro-ethylVinyl Ether (110-75-8)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
11V. Chloroform (67-66-3)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2	<	1
12V. Dichloro-bromomethane (75-27-4)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
13V. Dichloro-difluoromethane (75-51-8)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
14V. 1,1-Dichloro-ethane (75-34-3)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
15V. 1,2-Dichloro-ethane (107-06-2)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
16V. 1,1-Dichloro-ethylene (75-35-4)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
17V. 1,2-Dichloro-propane (78-87-5)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
18V. 1,3-Dichloro-propylene (542-75-6)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
19V. Ethylbenzene (100-41-4)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
20V. Methyl Bromide (74-83-9)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
21V. Methyl Chloride (74-87-3)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1

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	lbs/Day	< 2.0	<	1
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
24V. Tetrachloroethylene (127-18-4)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
25V. Toluene (108-88-3)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
27V. 1,1,1-Trichloroethane (71-55-6)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
28V. 1,1,2-Trichloroethane (79-00-5)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
29V. Trichloroethylene (79-01-6)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
30V. Trichlorofluoromethane (75-69-4)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
31V. Vinyl Chloride (75-01-4)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
2A. 2,4-Dichlorophenol (120-83-2)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
3A. 2,4-Dimethylphenol (105-67-9)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
5A. 2,4-Dinitrophenol (51-28-5)	X			< 20	< 244.19					1	ug/L	lbs/Day	< 20	<	1
6A. 2-Nitrophenol (88-75-5)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
7A. 4-Nitrophenol (100-02-7)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
8A. P-Chloro-M-Cresol (59-50-7)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
9A. Pentachlorophenol (87-86-5)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
10A. Phenol (108-95-2)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
11A. 2,4,6-Trichlorophenol (88-06-2)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" a.re-quired	Believed b.pre-sent	Believed c.ab-sent	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. Concen-tration	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			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
2B. Acenaphtylene (208-96-8)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
3B. Anthracene (120-12-7)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
4B. Benzidine (92-87-5)	X			< 50	< 610.48					1	ug/L	lbs/Day	< 50	<	1
5B. Benzo (a) Anthracene (56-55-3)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
6B. Benzo (a) Pyrene (50-32-8)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
7B. 3,4-Benzo-fluoranthene (205-99-2)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
8B. Benzo (ghi) Perylene (191-24-2)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
9B. Benzo (k) Fluoranthene (207-08-9)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
10B. Bis (2-Chloro-ethoxyl) Methane (111-91-1)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
12B.Bis (2-Chloroiso-propyl) Ether (108-60-1)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
13B. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
15B. Butyl Benzyl Phthalate (85-68-7)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
16B. 2-Chloro-naphthalene (91-58-7)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
18B. Chrysene (218-01-9)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
19B. Dibenzo (a,h) Anthracene (53-70-3)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
20B. 1,2-Dichloro-benzene (95-50-1)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
21B. 1,3-Dichloro-benzene (541-73-1)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1

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 - BASE/NEUTRAL COMPOUNDS (continued)															
22B. 1,4-Dichlorobenzene (106-46-7)	X			< 2.0	< 24.42					1	ug/L	lbs/Day	< 2.0	<	1
23B. 3,3-Dichlorobenzidine (91-94-1)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
24B. Diethyl Phthalate (84-66-2)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
25B. Dimethyl Phthalate (131-11-3)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
26B. Di-N-Butyl Phthalate (84-74-2)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
27B. 2,4-Dinitrotoluene (121-14-2)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
28B. 2,6-Dinitrotoluene (606-20-2)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
29B. Di-N-Octyl Phthalate (117-84-0)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
30B. 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
31B. Fluoranthene (206-44-0)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
32B. Fluorene (86-73-7)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
33B. Hexachlorobenzene (118-74-1)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
34B. Hexachlorobutadiene (87-68-3)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
35B. Hexachlorocyclopentadiene (77-47-4)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
36B. Hexachloroethane (67-72-1)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
38B. Isophorone (78-59-1)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
39B. Naphthalene (91-20-3)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
40B. Nitrobenzene (98-95-3)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
41B. N-Nitrosodimethylamine (62-75-9)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1

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

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	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			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
44B. Phenanthrene (85-01-8)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
45B. Pyrene (129-00-0)	X			< 5.0	< 61.05					1	ug/L	lbs/Day	< 5.0	<	1
46B. 1,2,4-Tri-chlorobenzene (120-82-1)	X			< 2.0	< 24.42					1	ug/L	lbs/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												

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

CONTINUED FROM PAGE V-8

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 - PESTICIDES (continued)															
17P. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)			X	< 0.25	< 3.05					1	ug/L	lbs/Day	< 0.25		1
19P. PCB-1254 (11097-69-1)			X	< 0.25	< 3.05					1	ug/L	lbs/Day	< 0.25		1
20P. PCB-1221 (11104-28-2)			X	< 0.25	< 3.05					1	ug/L	lbs/Day	< 0.25		1
21P. PCB-1232 (11141-16-5)			X	< 0.25	< 3.05					1	ug/L	lbs/Day	< 0.25		1
22P. PCB-1248 (12672-29-6)			X	< 0.25	< 3.05					1	ug/L	lbs/Day	< 0.25		1
23P. PCB-1260 (11096-82-5)			X	< 0.25	< 3.05					1	ug/L	lbs/Day	< 0.25		1
24P. PCB-1016 (12674-11-2)			X	< 0.25	< 3.05					1	ug/L	lbs/Day	< 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**

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

OUTFALL NO. 002

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	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	3. UNITS a. Concentration	3. UNITS b. Mass	4. INTAKE (optional) a. LONG TERM AVG. VALUE (1) Concentration	a. LONG TERM AVG. VALUE (2) Mass	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand (BOD)	< 2.0	< 170.2					1	mg/L	lbs/Day			
b. Chemical Oxygen Demand (COD)	< 10	< 851.2					1	mg/L	lbs/Day			
c. Total Organic Carbon (TOC)	2.3	195.6					1	mg/L	lbs/Day			
d. Total Suspended Solids (TSS)	6.0	510.7	6	510.7	1.1	76.2	25	mg/L	lbs/Day			
e. Ammonia (as N)	0.64	54.5					1	mg/L	lbs/Day			
f. Flow	VALUE 10.2		VALUE 10.2		VALUE 8.3		27	MGD	N/A	VALUE		
g. Temperature (winter)	VALUE 20.4		VALUE		VALUE		1	DEGREES CELSIUS		VALUE		
h. Temperature (summer)	VALUE		VALUE		VALUE			DEGREES CELSIUS		VALUE		
i. pH	MINIMUM 6.40	MAXIMUM 8.1	MINIMUM 6.4	MAXIMUM 8.1			25	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	2. MARK "X" Believed b. 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	a. LONG TERM AVG. VALUE (2) Mass	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		3.0	255.4					1	mg/L	lbs/Day			
b. Chlorine, Total Residual	X		< 0.0050	< 0.4					1	mg/L	lbs/Day			
c. Color	X		10	N/A		N/A		N/A	1	Std. Units	N/A			
d. Fecal Coliform	X		< 2	< N/A		N/A		N/A	1	Colonies /100 ml	N/A			
e. Fluoride (16984-48-8)	X		0.65	55.3					1	mg/L	lbs/Day			
f. Nitrate-Nitrite (as N)	X		1.4	119.2					1	mg-N/L	lbs/Day			

CONTINUE ON PAGE V-2

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
NC0004987	002

ITEM V-B CONTINUED FROM FRONT

Marshall Steam Station

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT							4. UNITS				
	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		4.3	366.0	4.3	366.0	2.8	193.9	26	mg-N/L	lbs/Day			
h. Oil and Grease	X		< 5.0	< 425.6	< 5	< 425.6	< 5	< 346.3	9	mg/L	lbs/Day			
i. Phosphorous (as P), Total (7723-14-0)	X		0.016	1.4	0.016	1.4	0.004	0.3	9	mg-P/L	lbs/Day			
j. Radioactivity														
(1) Alpha, Total	X		< 5.00	< N/A		N/A		N/A	1	pCi/L	N/A			
(2) Beta, Total	X		3.93	N/A		N/A		N/A	1	pCi/L	N/A			
(3) Radium, Total	X		< 1.00	< N/A		N/A		N/A	1	pCi/L	N/A			
(4) Radium 226, Total	X		< 1.00	< N/A		N/A		N/A	1	pCi/L	N/A			
k. Sulfate (as SO4) (14808-79-8)	X		140	11916.7					1	mg/L	lbs/Day			
l. Sulfide (as S)	X		< 1.0	< 85.1					1	mg/L	lbs/Day			
m. Sulfite (as SO3) (14265-45-3)	X		1.0	85.1					1	mg/L	lbs/Day			
n. Surfactants	X		0.072	6.1					1	mg/L	lbs/Day			
o. Aluminum, Total (7429-90-5)	X		0.360	30.6					1	mg/L	lbs/Day			
p. Barium, Total (7440-39-3)	X		0.076	6.5					1	mg/L	lbs/Day			
q. Boron, Total (7440-42-8)	X		8.40	715.0					1	mg/L	lbs/Day			
r. Cobalt, Total (7440-48-4)	X		< 0.020	< 1.7					1	mg/L	lbs/Day			
s. Iron, Total (7439-89-6)	X		0.840	71.5	0.84	71.5	0.84	58.2	1	mg/L	lbs/Day			
t. Magnesium, Total (7439-95-4)	X		48.0	4085.7					1	mg/L	lbs/Day			
u. Molybdenum, Total (7439-98-7)	X		< 0.020	< 1.7					1	mg/L	lbs/Day			
v. Manganese, Total (7439-96-5)	X		0.840	71.5					1	mg/L	lbs/Day			
w. Tin, Total (7440-31-5)	X		< 0.010	< 0.9					1	mg/L	lbs/Day			
x. Titanium, Total (7440-32-6)	X		< 0.050	< 4.3					1	mg/L	lbs/Day			

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
NC0004987	002

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. Required	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			< 5.0	< 0.43					1	ug/L	lbs/Day			
2M. Arsenic, Total (7440-38-2)	X			14.2	1.21	5.85	0.50	3.24	0.22	106	ug/L	lbs/Day			
3M. Beryllium, Total (7440-41-7)	X			< 1.0	< 0.09					1	ug/L	lbs/Day			
4M. Cadmium, Total (7440-43-9)	X			1.3	0.11	0.25	0.02	0.01	0.00	106	ug/L	lbs/Day			
5M. Chromium, Total (7440-47-3)	X			6.40	0.54	1.96	0.17	0.24	0.02	106	ug/L	lbs/Day			
6M. Copper, Total (7440-50-8)	X			0.0090	0.77	0.009	0.77	0.008	0.55	2	mg/L	lbs/Day			
7M. Lead, Total (7439-92-1)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
8M. Mercury, Total (7439-97-6)	X			0.00721	0.00	0.00401	0.00	0.00213	0.00	105	ug/L	lbs/Day			
9M. Nickel, Total (7440-02-0)	X			28.3	2.41	21.84	1.86	14.84	1.03	106	ug/L	lbs/Day			
10M. Selenium, Total (7782-49-2)	X			57.20	4.87	42.78	3.64	16.43	1.14	106	ug/L	lbs/Day			
11M. Silver, Total (7440-22-4)	X			1.0	0.09	0.25	0.02	0.01042	0.00	106	ug/L	lbs/Day			
12M. Thallium, Total (7440-28-0)	X			< 0.00050	< 0.0					1	mg/L	lbs/Day			
13M. Zinc, Total (7440-66-6)	X			60.0000	5107.14	46.856	3988.34	18.93	1311.16	106	mg/L	lbs/Day			
14M. Cyanide, Total (57-12-5)	X			< 0.010	< 0.85					1	mg/L	lbs/Day			
15M. Phenols, Total	X			< 0.0050	< 0.4					1	mg/L	lbs/Day			
DIOXIN															
2,3,7,8 Tetra chlorodBenzo P Dioxin (1764-01-6)			X	DESCRIBE RESULTS < 0.0102						1	ng/L		< 0.0102		1

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
NC0004987	002

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 - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
2V. Acrylonitrile (107-13-1)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
3V. Benzene (71-43-2)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
4V. Bis (Chloro-methyl) Ether (542-88-1)			X												
5V. Bromoform (75-25-2)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
6V. Carbon Tetrachloride (56-23-5)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
7V. Chlorobenzene (108-90-7)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
8V. Chlorod-bromomethane (124-48-1)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
9V. Chloroethane (75-00-3)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
10V. 2-Chloro-ethylVinyl Ether (110-75-8)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
11V. Chloroform (67-66-3)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
12V. Dichloro-bromomethane (75-27-4)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
13V. Dichloro-difluoromethane (75-51-8)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
14V. 1,1-Dichloro-ethane (75-34-3)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
15V. 1,2-Dichloro-ethane (107-06-2)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
16V. 1,1-Dichloro-ethylene (75-35-4)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
17V. 1,2-Dichloro-propane (78-87-5)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
18V. 1,3-Dichloro-propylene (542-75-6)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
19V. Ethylbenzene (100-41-4)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
20V. Methyl Bromide (74-83-9)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
21V. Methyl Chloride (74-87-3)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
NC0004987	002

CONTINUED FROM PAGE V-4

Marshall Steam Station

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. re-quired	b. Believed present	c. 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 (continued)															
22V. Methylene Chloride (75-09-2)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
24V. Tetrachloroethylene (127-18-4)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
25V. Toluene (108-88-3)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
27V. 1,1,1-Trichloroethane (71-55-6)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
28V. 1,1,2-Trichloroethane (79-00-5)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
29V. Trichloroethylene (79-01-6)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
30V. Trichlorofluoromethane (75-69-4)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
31V. Vinyl Chloride (75-01-4)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
GC/MS FRACTION - ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
2A. 2,4-Dichlorophenol (120-83-2)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
3A. 2,4-Dimethylphenol (105-67-9)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
5A. 2,4-Dinitrophenol (51-28-5)	X			< 20	< 1.70					1	ug/L	lbs/Day			
6A. 2-Nitrophenol (88-75-5)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
7A. 4-Nitrophenol (100-02-7)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
8A. P-Chloro-M-Cresol (59-50-7)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
9A. Pentachlorophenol (87-86-5)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
10A. Phenol (108-95-2)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
11A. 2,4,6-Trichlorophenol (88-06-2)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
NC0004987	002

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	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. Concentration	b. Mass	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			< 5.0	< 0.43					1	ug/L	lbs/Day			
2B. Acenaphtylene (208-96-8)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
3B. Anthracene (120-12-7)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
4B. Benzidine (92-87-5)	X			< 50	< 4.26					1	ug/L	lbs/Day			
5B. Benzo (a) Anthracene (56-55-3)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
6B. Benzo (a) Pyrene (50-32-8)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
7B. 3,4-Benzo-fluoranthene (205-99-2)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
8B. Benzo (ghi) Perylene (191-24-2)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
9B. Benzo (k) Fluoranthene (207-08-9)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
10B. Bis (2-Chloro-ethoxyl) Methane (111-91-1)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
12B.Bis (2-Chloroiso-propyl) Ether (108-60-1)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
13B. Bis (2-Ethyl-hexyl) Phehalate (117-81-7)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
15B. Butyl Benzyl Phthalate (85-68-7)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
16B. 2-Chloro-naphthalene (91-58-7)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
18B. Chrysene (218-01-9)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
19B. Dibenzo (a,h) Anthracene (53-70-3)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
20B. 1,2-Dichloro-benzene (95-50-1)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
21B. 1,3-Dichloro-benzene (541-73-1)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
NC0004987	002

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	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)																
22B. 1,4-Dichloro-benzene (106-46-7)	X			< 2.0	< 0.17					1	ug/L	lbs/Day				
23B. 3,3-Dichloro-benzidine (91-94-1)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
24B. Diethyl Phthalate (84-66-2)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
25B. Dimethyl Phthalate (131-11-3)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
26B. Di-N-Butyl Phthalate (84-74-2)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
27B. 2,4-Dinitro-toluene (121-14-2)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
28B. 2,6-Dinitro-toluene (606-20-2)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
29B. Di-N-Octyl Phthalate (117-84-0)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
30B. 1,2-Diphenyl-hydrazine (as Azo-benzene) (122-66-7)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
31B. Fluoranthene (206-44-0)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
32B. Fluorene (86-73-7)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
33B. Hexachloro-benzene (118-74-1)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
34B. Hexa-chlorobutadiene (87-68-3)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
35B. Hexachloro-cyclopentadiene (77-47-4)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
36B. Hexachloro-ethane (67-72-1)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
38B. Isophorone (78-59-1)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
39B. Naphthalene (91-20-3)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
40B. Nitrobenzene (98-95-3)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
41B. N-Nitro-sodimethylamine (62-75-9)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X			< 5.0	< 0.43					1	ug/L	lbs/Day				

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			< 5.0	< 0.43					1	ug/L	lbs/Day			
44B. Phenanthrene (85-01-8)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
45B. Pyrene (129-00-0)	X			< 5.0	< 0.43					1	ug/L	lbs/Day			
46B. 1,2,4-Trichlorobenzene (120-82-1)	X			< 2.0	< 0.17					1	ug/L	lbs/Day			
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												

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X" a. Re-quired	Believed b. Pre-sent	Believed c. Ab-sent	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 - PESTICIDES (continued)															
17P. Heptachlor Epoxide (1024-57-3)			X												
18P. PCB-1242 (53469-21-9)			x	< 0.25	< 0.02					1	ug/L	lbs/Day			
19P. PCB-1254 (11097-69-1)			X	< 0.25	< 0.02					1	ug/L	lbs/Day			
20P. PCB-1221 (11104-28-2)			X	< 0.25	< 0.02					1	ug/L	lbs/Day			
21P. PCB-1232 (11141-16-5)			X	< 0.25	< 0.02					1	ug/L	lbs/Day			
22P. PCB-1248 (12672-29-6)			X	< 0.25	< 0.02					1	ug/L	lbs/Day			
23P. PCB-1260 (11096-82-5)			X	< 0.25	< 0.02					1	ug/L	lbs/Day			
24P. PCB-1016 (12674-11-2)			X	< 0.25	< 0.02					1	ug/L	lbs/Day			
25P. Toxaphene (8001-35-2)			X												

Please print or type in the unshaded areas	EPA ID Number *(copy from item I of Form 1)* **NC0004987**	Form Approved. OMB No. 2040-0086 Approval expires 5-31-92

Form 2F NPDES

United States Environmental Protection Agency
Washington, DC 20460

Application for Permit to Discharge Storm Water Discharges Associated with Industrial Activity

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 28.6 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of this collection of information or suggestions for improving this form, including suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M St., SW, Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

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)*
SW 007	*35*	*35*	*56*	*80*	*57*	*52*	*Lake Norman (Catawba River)*

II. Improvements

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading or operation 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.

1. Identification of Conditions, Agreements, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	number	source of discharge		a. req.	b. proj.
N/A					

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

III. Site Drainage Map

Attach a site map showing topography (or indicating the outline of drainage areas served by the outfall(s) covered in the application if a topographic map is unavailable) depicting the facility including: each of its intake and discharge structures; the drainage area of each storm water outfall; paved areas and buildings within the drainage area of each storm water outfall, each known past or present areas used for outdoor storage or disposal of significant materials, each existing structure control measure to reduce pollutants in storm water runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each of its hazardous waste treatment, storage or disposal units (including each are not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); each well where fluids from the facility are injected underground; springs, and other surface water bodies which receive storm water discharges from the facility.

 Continued on Page 2

Continued from the Front

IV. Narrative Description of Pollutant Sources

A. For each outfall, provide an estimate of the area (include units) of impervious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)	Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)
SW001 – SW012	***See attached supplemental information.***				

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored or disposed in a manner to allow exposure to storm water; method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact by these materials with storm water runoff; materials loading and access areas; and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

See attached supplemental information.

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Treatment	List Codes from Table 2F-1
SW001 – SW012	***See attached supplemental information.***	

V. Non Stormwater Discharges

A. I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of nonstormwater discharges, and that all nonstormwater discharges from these outfall(s) are identified in either an accompanying Form 2C or Form 2E application for the outfall.

Name of Official Title *(type or print)*	Signature	Date Signed
David Renner, General Manager III Regulated Fossil Stations	David Renner	***10/26/2009***

B. provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

Visual inspection was performed on October 21, 2009. The outfalls were inspected after at least 72 hours of dry weather to determine if any process water was flowing from the storm water outfall.

VI. Significant Leaks or Spills

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

Within the past three years, there have not been any significant spills of hazardous substances in excess of reportable quantities set forth by Section 311 of the Clean Water Act or Section 102 of CERCLA.

EPA ID Number *(copy from Item I of Form 1)*
NC0004987

VII. Discharge Information

A,B,C, & D: See instruction before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided. Tables Vii-A, VII-B, and VII-C are included on separate sheets numbered VII-1 and VII-2.

E. Potential discharges not covered by analysis - is any toxic pollutant listed in table 2F-2, 2F-3, or 2F-4, 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)* X No *(go to Section IX)*

VIII. 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 *(list all such pollutants below)* X No *(go to Section IX)*

IX. Contact analysis Information

Were any of the analysis reported in item VII performed by a contact 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 X)*

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed
Pace Analytical Services, Inc	***9800 Kincey Ave Suite 100 Huntersville, NC 28078***	***704-875-9092***	***Oil& Grease***
Pace Analytical Services, Inc	***2225 Riverside Dr Asheville, NC 28804***	***828-254-7176***	***Wet chemistry & metals***

X. 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. Area Code and Phone No.
Dave Renner, General Manager III, Regulated Fossil Stations	***828 478-7600***
C. Signature *David Renner*	D. Date Signed ***October 26, 2009***

VII. Discharge Information *(Continued from page 3 of Form 2F)*

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.

Pollutant And CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number Of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite		
Oil & Grease	*< 5 mg/L*	N/A			*1*	***See Supplemental Information***
Biological Oxygen Demand (BOD5)	*< 8.0 mg/L*	*< 8.0 mg/L*			*1*	"
Chemical Oxygen Demand (COD)	*178 mg/L*				*1*	"
Total Suspended Solids (TSS)	*136 mg/L*				*1*	"
Total Nitrogen	*1.31 mg/L*				*1*	"
Total Phosphorus	*0.20 mg/L*				*1*	"
pH	Minimum *6.4 SU*	Maximum	Minimum	Maximum	*1*	"

Part B - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant And CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number Of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite		
Ammonia (as N)	*<0.10 mg/L*				*1*	***See Supplemental Information***
Chloride	*<5 mg/L*				*1*	"
Color	*100 units*				*1*	"
Nitrate-Nitrite (as N)	*0.40 mg/L*				*1*	"
Sulfate (as SO_4) (14808-79-8)	*25.7 mg/L*				*1*	"
Aluminum, Total (7429-90-5)	*3.310 mg/L*	*4.010 mg/L*			*1*	"
Barium, Total (7440-39-3)	*0.0636 mg/L*	*0.0716 mg/L*			*1*	"
Boron, Total (7440-42-8)	*0.030 mg/L*	*<0.050 mg/L*			*1*	"
Cobalt, Total (7440-48-4)	*<0.005 mg/L*	*<0.005 mg/L*			*1*	"
Iron, Total (7439-89-6)	*6.12 mg/L*	*7.48 mg/L*			*1*	"
Magnesium, Total (7439-95-4)	*2.46 mg/L*	*2.59 mg/L*			*1*	"
Manganese, Total (7439-96-5)	*0.135 mg/L*	*0.152 mg/L*			*1*	"
Titanium, Total (7440-32-6)	*0.270 mg/L*	*0.326 mg/L*			*1*	"
Arsenic, Total (7440-38-2)	*<0.005 mg/L*	*0.0074 mg/L*			*1*	"
Cadmium, Total (7440-43-9)	*<0.001 mg/L*	*<0.001 mg/L*			*1*	"
Chromium, Total (7440-47-3)	*<0.005 mg/L*	*0.0054 mg/L*			*1*	"
Copper, Total (7440-50-8)	*0.0161 mg/L*	0.018 mg/L			*1*	"
Mercury, Total (7439-97-6)	*<0.20 ug/L*	*<0.20 ug/L*			*1*	"
Nickel, Total (7440-02-0)	*0.006 mg/L*	*0.0064 mg/L*			*1*	"

Selenium, Total (7782-49-2)	*<0.010 mg/L*	*<0.010 mg/L*			*1*	***See Supplemental Information***
Silver, Total (7440-22-4)	*<0.005 mg/L*	*<0.005 mg/L*			*1*	*"*
Zinc, Total (7440-66-6)	*0.108 mg/L*	*0.117 mg/L*			*1*	*"*

Continued from the Front

Part C - List each pollutant shown in Tables 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant And CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number Of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite		
Phenols, Total	***<0.010 mg/L***				***1***	***See Supplemental Information***
Fecal Coliform CHT	***7000 CFU/100 mL***				***1***	*"*

Part D - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Total flow from rain event *(gallons or specify units)*
5/28/08	***240***	***0.72***	***> 120 hours***	***1.099 mgal***

7. Provide a description of the method of flow measurement or estimate.

Flow data derived from a theoretical flow calculation using local meteorological data and runoff area of the outfall.

NPDES

Supplemental Information

For

Marshall Steam Station
NPDES Permit No. NC0004987

October 2009

TABLE OF CONTENTS

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, aluminum sulfate (alum), 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 aluminum hydroxide precipitate formed as a result of adding aluminum sulfate (alum) and sodium hydroxide. The quantity of alum used per year is approximately 14,000 gallons. The total amount of caustic is roughly one quarter the amount of alum. 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 pyrite system.

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.

2.2.3.3 Chemical makeup tanks and drums rinsate

Intermittent rinse water containing small amounts of aluminum sulfate, sodium hydroxide, hydrazine, ammonium hydroxide.

---

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

2.2.3.4 Boiler blowdown

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	
1st Step (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
2nd Step (Copper Removal Solution)		
	Boiler #1 or #2	**Boiler #3 or #4**
Sodium Bromate	550 lb	NA
Ammonium Bicarbonate	1000 lb	NA
Ammonium Hydroxide (26°Be')	1000 gal	NA
Sodium Sulfite	100 lb	NA
3rd Step (Iron Removal Solution)		
	Boiler #1 or #2	**Boiler #3 or #4**
Hydrochloric Acid (31.5%) (20°Be')	7100 gal	4800 gal
Ammonium Bifluoride (0.5%)	2150 lb	1500 lb
Copper Complexer (0.75%) Thiourea or equivalent	2300 lb	NA

Rodine 213 (acid inhibitor)	142 lb	96 lb
Citric Acid	400 lb	300 lb

4th Step (Neutralization Solution)

	Boiler #1 or #2	Boiler #3 or #4
Soda Ash	4400 lb	NA
Trisodium Phosphate	NA	3000 lb

Prior to a boiler cleaning the ash basin water level is lowered and additional stop logs are added to the ash basin discharge structure. This process assures longer retention time of the chemical wastes for proper treatment through dilution, neutralization, precipitation, and ion-exchange as documented in the Ash Basin Equivalency Demonstration (October 1976).

Alternately, the boiler may be cleaned using ethylenediaminetetraacetic acid (EDTA). If EDTA is 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 basin, ash removal lines and rainfall run-off from the basin watershed area. Details of storm water the runoff that flows into the ash basin is described in section 4.3.

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 new 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 present lift stations serving the vendor facilities and Units 3 and 4 have been upgraded.

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 new 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 Recent 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 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 Wastewater from Future Plant Additions

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.

2.3 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 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].

4.0 STORMWATER

4.1 Site Description

The site covers 2,043 acres. The station includes a plant yard of 28 acres, a six acre switching station, and a coal storage yard of 36 acres. A 450-acre portion of the headwaters of Holdsclaw Creek serves as an ash-settling basin with regulated outflow to Lake Norman.

Marshall Steam Station has recently undergone a large amount of construction. The site has added a Flue Gas Desulfurization (FGD) system, a Selective Catalytic Reduction (SCR) system, a wetlands wastewater treatment plant, a limestone unloading/stacker system, a gypsum stacker, a FGD landfill and various storage and maintenance buildings.

Approximately 80 acres northeast of the FGD landfill are being used to place flyash in a structural fill. A 58 acre retired ash landfill is located east of the ash basin. A new ash landfill is currently under construction. The site has a sanitary wastewater treatment lagoon and several construction spoil areas. There are approximately six miles of rail access and three miles of paved roadways on-site.

Soils at Marshall Steam Station are typical of the region and are predominantly micaceous sandy silts and silty sands with some clayey sands in flatter areas. The topography is generally flat with rolling hills in outlying, undeveloped areas.

In developed areas, runoff is collected by catch basins and conveyed through a buried network of corrugated metal pipes (CMP). The network was originally designed to route flow to several primary trunk lines, which discharged directly to Lake Norman. In 1976 runoff from most areas with significant materials and activities was routed through either the yard holding sumps or the oil trap tank. Effluent from the yard holding sumps is pumped to the ash basin. Storm water processed through the oil trap tank is discharged to Lake Norman.

Storm water runoff from the FGD area enters yard drains and is then routed via gravity flow through subsurface piping to a storm water detention pond. This pond then discharges to the station transfer sump and then to Yard Sump No. 2. Yard sump No. 2 eventually discharges via the ash basin.

Runoff from the FGD Landfill, the Beneficial Structural Fill Area, the Closed Ash Landfill, the Gypsum Stacker, the Limestone Stacker, the FGD Constructed Wetlands and the Bottom Ash Operations all eventually drain into the ash basin.

Marshall Steam Station has 11 storm water discharges and six NPDES process water outfalls. Four of the NPDES outfalls also contain storm water. The storm water discharges are described in Section 4.3. The six NPDES discharges are described as follows:

- NPDES Outfall #001 – Once-Through Cooling Water

[2] **SPCC Plan required by 40 CFR 112.**

This discharge contains non-contact cooling water from plant equipment.

- NPDES Outfall #002 - Ash Settling Basin Discharge
  This discharge is the outflow from the ash-settling basin. Plant wastewater including ash sluicing, treated sewage, equipment discharge, and chemical waste goes to the ash basin. Runoff from the coal pile, bottom ash operations, beneficial structural fill area and the closed ash landfill is routed to the ash basin via surface ditches. Runoff from the plant yard is routed to the ash basin via the yard sumps. Additionally, drainage from the newly constructed areas of the site such as FGD storm water, FGD process water treated via the constructed wetlands system, treated water from the WWTP, the FGD landfill and drainage from the gypsum and limestone radial stackers go to the ash basin.

- NPDES Outfall 002A – Yard Sump #1 Overflows
  If the yard sump were inundated during a large storm event or spill, or if the power failed, the overflow would be conveyed to Lake Norman through Outfall SW007. Overflow from the yard sump is not a normal occurrence.

- NPDES Outfall 002B – Yard Sump #2 Overflows
  This outfall is the emergency overflow for yard sump #2.

- NPDES Outfall #003 – Non-contact Cooling Water from the Induced Draft Fan Control House
  This is air conditioning condensate from the heat exchanger for the Unit 4 ID Fans electronics. This outfall also conveys yard drainage and is dually listed as Outfall SW009 in Section 2.2.

- NPDES Internal Outfall #004 – Treated FGD Wet Scrubber Wastewater to Ash Settling Basin

4.2 Facility Drainage and Inventory of Significant Materials and Controls

Based on pipe networks and site topography, the Marshall Steam Station site was divided into individual drainage basins as shown on the attached site drawings. This section details eleven storm water outfalls to Lake Norman. To provide a complete description of the storm water drainage system, the yard sump system is also characterized. Additional outfalls have been excluded because either they have been abandoned or because runoff is from a small area, which does not contain significant materials.

A description of the drainage area, significant materials, and material control measures is presented for each drainage basin. In addition to the significant materials particular to each drainage basin, herbicides are applied to selected areas throughout Marshall Steam Station to eliminate undesirable vegetation along railways, ash pipelines, and the perimeter fence. Herbicides are also applied, as needed, in the gravel parking lots, switchyard, and laydown areas. Herbicides are sprayed around the fuel oil bulk storage tanks, yard sumps, transformers, trailers, and the intake structure. All herbicides used at Marshall Steam Station are approved by the company and considered safe to the environment when used according to directions. Records are retained at the site which document information such as: the areas treated, the herbicide used and the amounts of herbicide used

Flyash is loaded and transported daily through the site. New ash storage silos have been built to the west side of the intake canal, north of the plant.

4.3 Stormwater Outfall Drainage Areas

- **Outfalls SW001 through SW005, "Drainage Areas 1-5"- Miscellaneous Material Storage Area**

Discharge Structure Outfall SW001: 24 inch (") diameter (ϕ) CMP
Discharge Structure Outfall SW002: 2-18" ϕ CMP's
Discharge Structure Outfall SW003: 2-18" ϕ CMP's
Discharge Structure Outfall SW004: 2-18" ϕ CMP's
Discharge Structure Outfall SW005: This outfall was abandoned in 2001
Location: Intake Cove
Drainage Area: 8.9 acres

Area Description
These four outfalls are located along the road adjacent to the rail lines, northeast of the ash silos. These outfalls are grouped together because they perform similar functions. This drainage area includes the slopes of the ash basin dike and the adjacent road. The embankment of the ash basin dike is sloped at a ratio of two horizontal to one vertical (2H:1V) and covers approximately 30 percent of the drainage area. The road is 0.6 miles long. About five percent of the drainage area is paved.

These outfalls do not discharge directly into Lake Norman. Runoff from the slopes of the ash basin dike is conveyed under the haul road through these pipes. Then, discharge from these pipes plus surface runoff from the area east of the road flows to the intake canal. Including the area east of the haul road, the drainage area is 22 acres.

Any rainfall run-off and/or truck washing operations are collected in a local sump and pumped to the ash basin. The flyash loading area, flyash silos and truck washing areas are located within this drainage area. Additionally, ash haul trucks are washed down in this area to remove excess ash and prevent scattering ash on site roads.

Significant Materials/ Controls
Ash: None.

Storage:
Miscellaneous supplies such as steel and cable are stored outdoors in a lay-down area within this basin.

- **Outfall SW006, "Drainage Area 6"**

Discharge Structure: 18" ϕ CMP
Location: Intake Canal
Drainage Area: 1.4 acres

Area Description
This drainage area includes a portion of the plant yard and approximately 9,000 square feet (ft^2) of the roof of the warehouse. A storage shed east of the warehouse with roof area of about 3,300 ft^2 is also included. A concrete pad of approximately 12,500 ft^2 was poured between the warehouse and storage shed; the pad is covered but not enclosed. Railway lines

pass through the area. The embankment leading to the coal pile is sloped at a 2H:1V ratio and covers 35 percent of the drainage area. Approximately 40 percent of the drainage basin is roofed or paved.

Significant Materials / Controls

Oil: A two inch diameter, above grade, pipeline passes through this area and carries fuel oil from the 500,000 gallon bulk storage tank to the tractor shed

Ash: Piping and discharge from the ash silo area flow through this drainage area. Drainage from the ash silos flows through the area and ends up in yard sump # 2.

- **Outfall SW007 / NPDES Outfall 002A, "Drainage Area 7"**

Discharge Structure: 60" ϕ CMP
Location: Intake Canal
Drainage Area: 55 acres

Area Description

This drainage area includes a portion of the plant yard, the switchyard, the limestone stacking area, the limestone unloading area and some vegetated land. The plant yard contains a two acre parking lot and 1/2 mile of paved roadway. Roof area from the office annex, service building, and warehouse totals 35,000 ft^2. Four miles of railway access cross the area. Railway and other embankments cover about 13 acres with maximum slope being 1.5H:1V. Approximately four percent of the drainage area is surfaced or roofed. Emergency overflow from yard sump #1 would be discharged at this outfall.

It should be noted that while the newly constructed limestone stacking area is located within this drainage area, drainage from this area is designed to flow into a detention pond which discharges into Yard Sump #1.

Significant Materials / Controls

Gas: A 1,000 gallon, above-grade, gasoline tank is located in the yard area west of yard sump #1. The tank has integral spill containment.

Oil: Transformers containing a total of 340 gallons of oil are located in the switchyard.

Gypsum and Limestone: The Limestone Unloading area is located within this drainage area. Additionally, conveyors which transport limestone and gypsum are located within this drainage area.

See details of yard sump #1 for emergency overflow discharge characteristics. Overflow from the yard sump is an NPDES permitted discharge. Sump overflow is not a normal occurrence.

- **Outfall SW008, "Drainage Area 8"**

Discharge Structure: 8" ϕ CMP
Location: Intake Canal
Drainage Area: 0.1 acres

Area Description

This drainage area includes portions of the plant yard access road. Approximately 70 percent of this area is paved.

Significant Materials / Controls
Significant materials are not typically stored in this drainage area.

- **Outfall SW009 / NPDES Outfall 003, "Drainage Area 9"**

Discharge Structure: 36" ϕ CMP
Location: Intake Canal
Drainage Area: 3.6 acres

Area Description
This drainage area includes a portion of the plant yard and about one acre of grassy, undeveloped land. The powerhouse roof for Unit 4 covers 63,800 ft^2. The roofs of various other structures such as the ID fan electronics building cover approximately 4000 ft^2. In this area, the plant yard covers about 2.2 acres and contains 600 feet of railways and 600 feet of paved roadways. About 50 percent of the total drainage area is either paved or roofed. On the south and east sides of this basin, the plant yard is surrounded by embankments which slope towards the plant yard at 1.5H:1V. Office trailers, equipment, and materials are stored temporarily in this area during outages.

The building, which houses the electronic equipment that controls the Unit 4 variable speed, ID fans is located in this drainage area. The electronics must be air conditioned, and the non-contact drain water from the air conditioner heat exchanger is discharged at this outfall as NPDES permitted discharge #003. There are four transformers associated with the variable speed ID fans. These transformers are located within this drainage basin, but the containment pits beneath them drain to yard sump #2. Units 3 and 4 precipitators are located in this drainage area.

A transfer sump is located within this drainage area. This sump accepts drainage from a storm water detention pond located south of this area and transfers this drainage into yard sump # 2. In the unlikely event of an overflow from this transfer sump, this storm water could enter drainage area 9 and be discharged via Outfall SW009. However, this sump has engineered controls in place (e.g. high level alarms, float valves, etc.) which should minimize this threat.

Significant Materials / Controls
Significant materials are not typically stored in this drainage area.

Storage:
This area is used temporarily as a laydown area during outages.

- **Outfall SW010, "Drainage Area 10"**

Discharge Structure: 30" ϕ CMP
Control Structure: 22,000 gallon oil trap tank
Location: Discharge Canal
Drainage Area: 11.7 acres

Area Description
This drainage basin includes a portion of the plant yard and the fuel oil unloading area. The plant yard contains the Unit 4 transformers, hydrogen and nitrogen tanks, three 46,000 gallon urea tanks and two 500,000 gallon oil tanks. One of the oil tanks is closed and locked out. Embankments with maximum slope of 1.5H:1V cover about 2.4 acres. There are

approximately 0.3 miles of paved roadway and 0.2 miles of railways. Ten percent of the area is paved.

All yard drainage in this basin is processed through a 22,000-gallon oil trap tank. Storm water passes through the tank and discharges to Lake Norman, and oil is contained within the trap tank. The oil trap tank is inspected periodically and cleaned out as needed.

Significant Materials / Controls

Oil: Two 500,000 gallon bulk storage fuel oil tanks are located in the southwest corner of the plant yard. Currently, only one of the tanks is in service; the other is closed and locked out. The tanks are aboveground, galvanized steel cylinders and are surrounded by an earthen berm sufficient in height to contain a total spill of both tanks plus rainfall. Rainfall collected within the containment berm is inspected for the presence of oil before being drained through a manually operated siphon to the oil trap tank.

In the fuel oil unloading area, fuel oil is transferred from an 8,000 gallon tanker truck by aboveground pipeline to the 500,000 gallon oil tank. DOT unloading procedures are followed. The unloading area encompasses about 0.9 acres and is surrounded by a four inch berm. Catch basins drain to a 12 inch CMP that is routed to the oil trap tank.

The Unit 4 main transformer and three smaller transformers located within this drainage area contain a total of 30,536 gallons of oil with 14,120 gallons in the Unit 4 transformer, 10,398 gallons for CT1, and 3,009 gallons each for 4T1 and 4T2 and 6,671 gallons for each SCR T3 and T4. The containment pits beneath the transformers drain to the oil trap tank. The transformer yard is surrounded by a 4 inch concrete curb.

Urea: Three 46,000 gallon urea ASTs have recently been installed within this drainage area and are located adjacent to the bulk fuel ASTs within the earthen berm.

- **Outfall SW011, "Drainage Area 11"**

Discharge Structure: 24" ϕ CMP
Location: Discharge Canal
Drainage Area: 0.6 acres

Area Description

This outfall conveys overflow from the raw water tank, which is used to store fire protection water. The basin is a small grassy area. There are no significant materials stored within this basin.

- **Outfall SW012, "Drainage Area 12"**

Discharge Structure: 24" ϕ CMP
Location: Discharge Canal
Drainage Area: 2.5 acres

Area Description

This outfall conveys sheet flow runoff from areas immediately north and west of the FGD. This drainage area includes a gravel parking area located north of the FGD. There are no significant materials stored within this basin.

4.4 Yard Sump Systems

There are two yard holding sumps at Marshall Steam Station.

- **Yard Sump #1**

Yard sump #1 is located west of the coal transfer house, and effluent is pumped to the ash basin. This yard sump collects runoff from two drainage basins, and the total drainage area is 8.8 acres. Emergency overflow for yard sump #1 would go to NPDES Outfall 002A, which is also Outfall SW007. The drainage basins which discharge into this sump are defined as 1A and 1B and are discussed below:

Yard Sump Drainage Area 1A:
Drainage Area: 3.4 acres

Area Description
Drainage area 1A consists of the Drainage collected from a portion of the plant yard west of the powerhouse which contains the Units 1, 2, and 3 transformers. From inside the powerhouse, the turbine room sumps and all equipment located in the western half of the building discharge effluent to this sump. Approximately 0.5 miles of railways and 0.25 miles of paved roadways cross the area. Approximately 21 percent of the drainage area is paved or roofed.

Significant Materials / Controls
Oil: The Units 1, 2, and 3 transformer yards are located in this drainage area and contain a total of 82,011 gallons of oil. Oil contents are as follows:

Unit 1: 18,270 gallons	1T: 3,043 gallons	CT 1 and 2: 10,395 gallons
Unit 2: 18,270 gallons	2T: 3,362 gallons	
Unit 3: 22,920 gallons	3T1: 2,810 gallons	3T2: 2,941 gallons
FGD T1: 8,490 gallons		
FGD T2: 9,088 gallons		

The transformers have containment pits beneath them, which vary in depth up to 24 inches. The transformer yard is surrounded by a 4 inch concrete curb.

Yard Sump Drainage Area 1B:
Drainage Area: 5.4 acres

Area Description
Drainage Area 1B is collected from a portion of the plant yard, which includes coal handling facilities, chemical storage, and compressible gas storage. The roofs of the coal handling facilities, storage sheds, and tractor shed cover approximately 20,000 ft^2. The newly constructed limestone stacker discharges into a storm water detention pond which is engineered to discharge into Yard Sump 1. Embankments cover about 1.3 acres and are sloped 2H:1V or less. Approximately 0.5 miles of railways and 0.25 miles of paved roadways cross the area. Approximately 35 percent of the drainage area is paved or roofed.

Significant Materials / Controls
Oil: A 1,000 gallon fuel oil tank is located beside the tractor shed. The tank sits on a concrete pad and is surrounded by a concrete berm; a drain valve controls discharge from the enclosure. Both a tractor and a bulldozer refueling station are located beside the tractor

shed. 2,000 gallons of oil and torque fluid are stored inside the tractor shed within a bermed area. A 500 gallon tank of hydraulic fluid is located beside the coal dumper/crusher building.

Two small transformers, each containing 188 gallons of oil, are located near the switchgear house. A transformer located at the sump #1 control system contains 270 gallons of oil.

Chemicals:

The chemical storage building contains sodium nitrate, ammonia, and hydrazine and has approximately 500 ft^2 of floor space. The concrete floor is sloped to floor drains which are routed to yard sump #1.

Hazardous Waste:

A 55 gallon drum is used to temporarily store paint waste in a satellite accumulation area. The drum is covered inside a cage.

Wastewater:

Plant wastewater from equipment discharges, floor drains, sumps, etc. is routed to yard sump #1. This wastewater may include oil, chemicals, and hazardous material spills.

- **Yard Sump #2**

Yard sump #2 is located east of the service building and north of Stack #1. The drainage area for this sump covers 39.2 acres. This yard sump collects runoff from two drainage basins. The drainage basins which discharge into this sump are defined as 2A and 2B and are discussed below:

Drainage Area 2A

Drainage Area: 9.2 acres

Area Description

Drainage is collected from the plant yard east of the powerhouse and 161,000 ft^2 of the powerhouse roof at Units 1, 2, and 3. From inside the powerhouse, boiler room sumps and all equipment located in the eastern half of the building discharge effluent to this sump. The plant yard includes the precipitators, smoke stacks, and ID fans. Cooling water from the ID fans bearings for all four units is processed through this sump. There are approximately 800 linear feet of paved roadway and 1,200 linear feet of railways in this area. The paved and roofed areas represent approximately 90 percent of the drainage area. Effluent from yard sumps is pumped to the ash-settling basin. Emergency overflow would discharge at NPDES 002B.

Significant Materials / Controls

Oil: Transformers located atop the precipitators contain a total of 10,848 gallons of oil. The maximum reservoir size in any one transformer is 176 gallons.

There are four transformers associated with the Unit 4 variable speed ID fans. These transformers are located within the drainage basin of outfall #SW009, but the containment pits beneath them drain to yard sump #2. The basins beneath the transformers are sufficiently deep to contain a total spill. Two of the transformers each contain 401 gallons of oil, and the other two hold 364 gallons each. The total amount of oil in these transformers is 1,530 gallons.

A transformer located at the yard sump #2 control system contains 270 gallons of oil.

There is a 900-gallon used oil tank located between Units 2 and 3 for Marshall Steam Station generated used oil.

Sulfuric Acid:

A 5,000 gallon tank of sulfuric acid is located near the southeast corner of Unit 2. The tank has a concrete pit with drain valve, which is capable of complete containment.

Ash:

Waste ash is sluiced across the area to the ash basin. Within the plant yard, the pipelines are contained in concrete trenches; storm water that collects in the trenches drains to yard sump #2. Beyond the plant yard, ash lines pass overland. There is a small berm between the ash lines and the ash haul road to direct spills back to the concrete trench.

Flyash is transferred from the plant to the ash silos now located on ash haul road through above grade pipelines. The two ash silos can each store 2861 tons of ash. The ash is transferred from the silos to trucks for transport to either off-site facilities or the on-site structural fill project.

Other facilities within the area, which collect, handle, or store ash include: baghouses, pumps, blowers, hoppers, and precipitators.

Wastewater:

Plant wastewater from equipment discharges, floor drains, sumps, etc. is routed to yard sump #2. This wastewater may include oil, chemical, and hazardous material spills. Cooling water from Units 1, 2, 3, and 4 ID fan bearings is discharged to this sump.

Drainage Area 2B

Drainage Area: 30 acres

Area Description

Drainage area 2B includes the newly constructed FGD, the Wastewater Treatment Plant and ancillary parking areas that serve these areas. Catch basins located along the additional 2000 ft^2 of roadway and parking lots within these areas route storm water into a detention pond located at the southeastern corner of the drainage area. Discharge from this pond is pumped into the transfer sump (located in the adjacent Drainage Area 9). The storm water is then pumped from the transfer sump into Yard Sump 2. Effluent from yard sumps is pumped to the ash-settling basin.

Significant Materials / Controls

Oil: Transformers located north of the switchgear building contain a total of 5,300-gallons of oil. The maximum reservoir size in each of the four transformers is 1,325-gallons. A containment pad is located at the base of these transformers.

An emergency quench pump fuel oil tank is located on the north end of the absorber building. This tank has a capacity of 100 gallons. This AST is located within containment. The fill station for this AST is located at the tank.

Wastewater:

Plant wastewater from equipment discharges, floor drains, sumps, etc. is routed to the WWTP located within this drainage area. After treatment, this waste water is pumped via underground piping to the constructed wetlands treatment system and is eventually discharged via the ash basin. This wastewater may include process water from the FGD as well as oils, chemicals, and hazardous material spills.

Gypsum and Limestone: Overhead conveyors which transport limestone and gypsum are located within this drainage area. However, these conveyors are covered and should not represent a significant threat to storm water. Additionally, areas where these conveyors cross roads or ponds are completely encapsulated to further minimize the threat of a release.

4.5 Other Drainage Areas

- **"Drainage Area 13"- Gypsum Radial Stacker**

Discharge Structure: Two 24" ϕ CMP
Location: Detention Pond
Drainage Area: 6 acres

Area Description

This drainage area consists of sheet flow and piped runoff from the gypsum stacking area and soil borrow area. Gypsum is a byproduct of the FGD area. It is transported by covered conveyors from the FGD site to the gypsum stacker area, where it is stacked in a radial fashion. The soil borrow area adjacent to the radial stacker also contributes to this drainage area. The drainage from the soil borrow area consists of the portion closest to the road. Drainage from these areas is engineered to flow into a storm water detention pond, which discharges into a finger of the ash basin. Discharge from this finger eventually reaches the ash basin.

Significant Materials / Controls

Oil: A 500-gallon AST and a 5,000-gallon AST containing fuel oil are located within this drainage area. These ASTs are situated within a plastic-lined containment basin with no drain. These ASTs are owned and operated by Southeastern Fly Ash (SEFA).

Gypsum: Gypsum is stacked in the area until it is shipped off by trucks to the wallboard facility. The gypsum piles are contained on three sides by a berm to prevent storm water runoff to these areas. The north side of the area is open to convey the storm water through roadside ditches into two pipes which drain into a detention pond.

- **"Drainage Area 14"- Soil Borrow Area**

Discharge Structure: 24" ϕ CMP
Location: Detention Pond
Drainage Area: 6 acres

Area Description

This drainage area consists of sheet flow from the soil borrow area. The drainage from the soil borrow area is limited to the half farthest from the road. Drainage from this area is engineered

to flow into a storm water detention pond which discharges into a small creek. No significant materials are located within this drainage area.

- **"Drainage Area 15"- FGD Landfill**

Discharge Structure: 24" ϕ CMP
Location: Finger of the Ash Basin
Drainage Area: 20 acres

Area Description
This drainage area is composed of the entire FGD landfill.

Significant Materials / Controls
Gypsum: Gypsum is one of the significant materials associated with the drainage area. Gypsum that cannot be sold and is not of quality is disposed of in this area. The surface water flow from the landfill will typically collect at the lower end of the cell and discharge into the storm water collection pond located at the southern end of the landfill. From the storm water basin, the runoff is piped into a finger of the ash basin that eventually discharges into the ash basin.

FGD Wastewater Treatment Sludge: The sludge scrapped from the bottom of the wastewater treatment facility is brought to the gypsum landfill. This process is performed because the wastewater sludge is mixed with the gypsum to form a more dense substance that will not be carried by the wind.

Other Materials in Landfill Include: asbestos, flyash, bottom ash, construction and demolition debris.

- **"Drainage Area 16" – Coal Pile**

Discharge Structure: Surface Ditches
Location: Discharges into Ash Basin
Drainage Area: 40 acres

Area Description
This drainage area is composed of the entire Coal Pile.

Significant Materials / Controls
The coal pile is the only significant material associated with the drainage area. The surface water flow from the coal pile accumulates into ditches which surround the coal pile area. These ditches channel storm water runoff into the ash basin. A berm, which surrounds the coal pile, ensures that drainage from this area remains confined.

- **"Drainage Area 17" – Sanitary Wastewater Lagoon**

Discharge Structure: 6 " Φ line to surface trench.
Location: Discharges into Ash Basin
Drainage Area: 4.5 acres

Area Description
This drainage area is composed of the sanitary wastewater treatment lagoon and surrounding land.

Significant Materials / Controls
This lagoon accepts sanitary wastes from the entire plant and performs aeration treatment on this waste before it is discharged into the ash basin.

Significant Materials / Controls
Sanitary wastewater would be the only significant material associated with the drainage area.

- **"Drainage Area 18" – FGD Constructed Wetland Treatment System**

Discharge Structure: 18" HDPE
Location: Discharges into Ash Basin
Drainage Area: 40 acres

Area Description:
The constructed wetland treatment system (CWTS) is designed to treat wastewater from the Flue Gas Desulfurization solid removal wastewater treatment system (WWTP). The wastewater is initially treated by the WWTP and pumped to the wetland system. All the rainfall runoff from the CWTS area flows into the ash basin.

Significant Materials / Controls
There are no significant materials. The wastewater is contained in the treatment system.

- **"Drainage Area 19" – Bottom Ash Operation and Pyrite Operation**

Discharge Structure: Surface Ditches
Location: Discharges into Ash Basin
Drainage Area: 35 acres

Area Description:
This area encompasses operations which involve the bottom ash operation and recovery of coal from pyrites. All storm water discharge from this area is routed via ditches into the ash basin.

Significant Materials / Controls
Coal and the numerous entities recovered from the coal are processed and/or staged within this area.

Oil: Charah (vendor) has a 550 gallon oil storage tank located in this drainage area. BKF has a 500 gallon oil storage tank located in this drainage area.

- **"Drainage Area 20" - Closed Ash Landfill**

Discharge Structure: Surface Ditches
Location: Discharges into Ash Basin
Drainage Area: 58 acres

Area Description:
This landfill is capped and is no longer in use.

Significant Materials / Controls:
There are no significant materials..

- **"Drainage Area 21"- Beneficial Structural Fill**

Discharge Structure: Surface Ditches
Location: Discharges into Ash Basin
Drainage Area: 84 Acres

Area Description:
This area is presently being used as a beneficial structural fill area.

Significant Materials/Controls:
Fly ash: Fly ash is a significant material located within this area.

5.0 Hazardous and Toxic Substances

5.1 Hazardous and Toxic Substances Table 2c-3

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

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

Duke Energy's operating experience during the past five years under the thermal limitations imposed in NPDES Permit No. NC0004987 substantiates EPA's 316(a) determination for Marshall (May 1975) that the "thermal component of the discharge assures the protection and propagation of shellfish, fish and wildlife in and on the receiving body of water." This is supported by the enclosed report entitled, "Assessment of Balanced and Indigenous Populations in Lake Norman near Marshall Steam Station".

In Duke's judgment the operating characteristics of the station have a minimal effect on the aquatic environment of Lake Norman. The character of the thermal discharge has not changed since the original 316(a) determination. Accordingly, Duke Energy requests that the thermal limitations in the present permit be continued.

6.2 Marshall Steam Station 316(b) Determination

In conjunction with the rulemaking process for the new Phase II 316(b) rule pertaining to fish impingement and entrainment, historical data and permitting records were reviewed. Initial 316(a) and 316(b) studies associated with enactment of the Clean Water Act concluded that the location, construction capacity, and design of the cooling water intake of Marshall and other Duke

Energy steam stations were not detrimental to the aquatic ecosystem and minimize adverse environmental impacts. Both North Carolina and EPA regulators concurred in 1976 that 316(b) fish impingement and entrainment studies were no longer needed at that time. When the new Phase II 316(b) Rule (Rule) was issued, Duke Energy developed Proposals for Information Collection (PICs) and initiated approved 316(b) field studies at its applicable steam stations for the eventual development of Comprehension Demonstration Studies (CDSs) to be used to determine Rule compliance. When the Rule was remanded back to EPA for revision, CDSs were no longer applicable and state agencies were instructed to use Best Professional Judgment (BPJ) in the interim to determine 316(b) impacts or the lack thereof. Currently, Duke Energy is summarizing the results of the 316(b) study at Marshall Steam Station and will be submitting an Impingement Characterization and Adverse Environmental Impact Report, BPJ Report, and 40 CFR §122.21(r)(2), (3), and (5) Source Waterbody Physical Data, Cooling Water Intake Structure Data, and Cooling Water System Data. These reports should be ready for submittal to the NCDENR in early 2010.

Ash Basin Capacity

Part I Section 15 of the existing NPDES permit for Marshall Steam Station requires the permittee to provide and maintain at all times a minimum free water volume (between the top of the sediment level and the minimum discharge elevation) equivalent to the sum of the maximum 24 hour plant discharges plus all direct rainfall and all runoff flows to the pond resulting from a 10 year, 24 hour rainfall event, when using a runoff coefficient of 1.0.

Determination of Wet Weather Detention Volume: Wet Weather Detention Volume is the sum of the runoff accumulated in the ash basin which results from a 10-yr 24-hr storm (assuming 100% runoff) plus the maximum 24-hr dry weather waste stream which discharges to the Ash Basin (refer to NPDES Permit NC0004961)

I. Estimate Runoff to the Ash Basin from a 10-yr 24-hr storm:

1. Natural Drainage Area of Ash Basin =	1180.0	Acres
Station Yard Drainage Area Pumped to Ash Basin =	14.7	Acres
Total =	1194.7	Acres
2. Precipitation from 10-yr 24-hr storm =	5.0	Inches
3. Total Stormwater Runoff to Ash Basin = (Assuming 100% runoff)	497.79	Acre-feet

II. Estimated Maximum 24-hr Dry Weather Waste Stream Discharging to Ash Basin:

1. Maximum recorded Ash Basin Discharge =	12,400,000	Gallons/day

2. Increase maximum daily disharge by 10% for conservatism and convert units to acre-feet = 41.86 Acre-feet

III. Wet Weather Detention Volume:

Sum of Parts I. and II. = 539.65 Acre-feet

IV. Estimated Quantity of Solids (Ash) to be discharged to Ash Basin through December 31, 2015.

Note: NPDES Permit expiration date is 2/28/10.

Time Period	Actual or Estimated Coal Consumption (1000's tons)	% Ash	Estimated Total Ash Production (1000's tons)	Estimated Ash Sent to Structural Fill or Re-Used (1000's tons)	Estimated Ash Discharged to Ash basin (1000's tons)**
2009	5013.00	11.10%	555.40	500.10	-31.70
2010	5012.40	11.20%	561.90	505.60	-35.70
2011	5088.80	11.80%	600.00	538.00	-5.00
2012	5083.40	11.10%	566.30	509.30	-10.10
2013	4954.40	10.60%	522.70	472.30	-16.60
2014	4929.00	10.60%	520.00	470.00	-17.00
2015	5231.20	10.60%	551.90	249.10	-12.20
Total	35312.20	77.00%	3878.20	3244.40	-128.30

* Calculation assumes an in-place ash density of 55 lbs. per cubic foot.
** Approximately 30,000 tons of ash are transferred from the ash basin to the on-site structural fill annually until 2011

V. Estimated Total Storage Volume Required through 2015:

Wet Weather Detention Volume = 539.6 Acre-feet

Required Storage Volume Through 12/31/2015 = 539.6 Acre-feet

VI. Results:

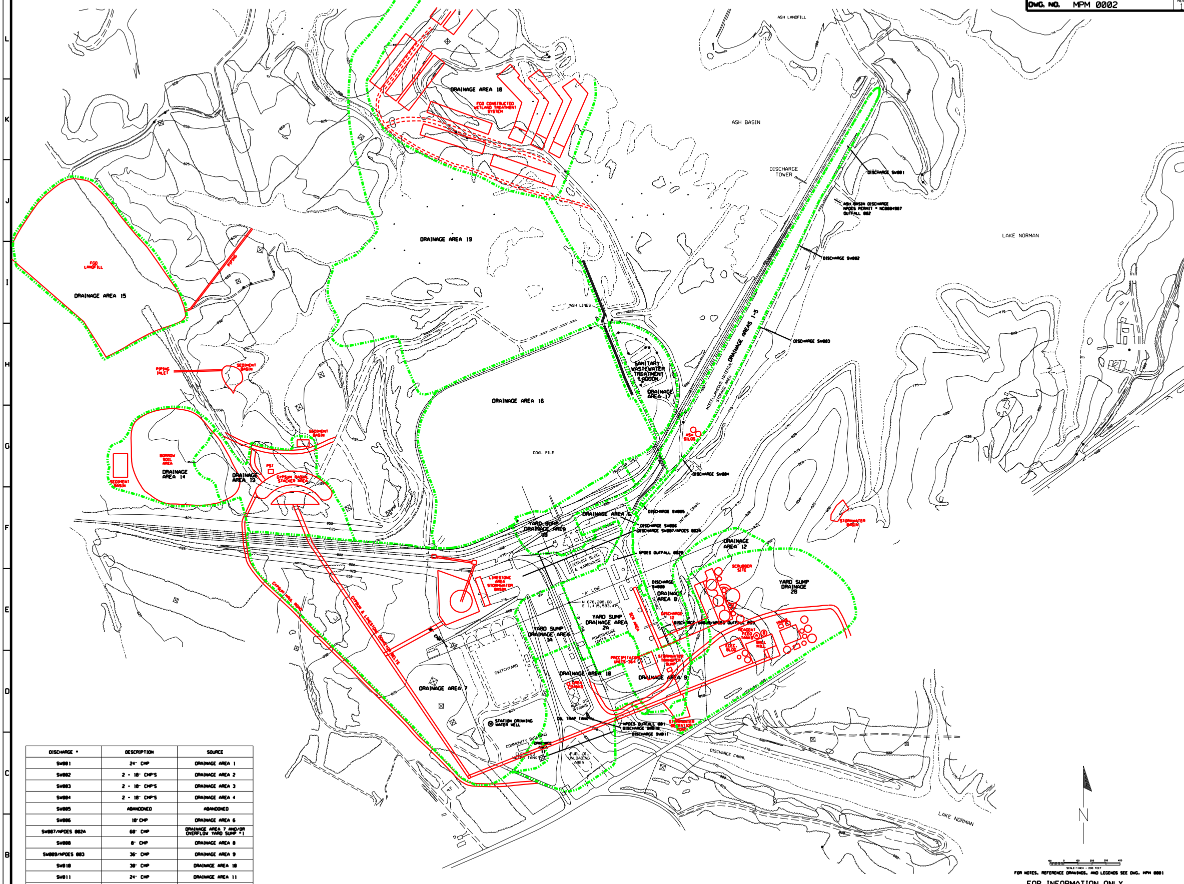
Ash Basin @ Pond Elevation 790'+0"	672.5	Acre-feet
2006 Ash Removal Project (200,000 Tons)	103.0	Acre-feet
Estimated Solids to Basin Oct. 2005 - Dec. 2008	35.1	Acre-feet
Total	740.4	Acre-feet

Note: Available Storage based on basin survey dated 8/25/2005

Available Storage > Required Storage

Based on these calculations, there is sufficient capacity in the ash basin to provide the retention volume specified in the permit through the year 2015.

DWG. NO. MPM 0002 REV. 1



DISCHARGE #	DESCRIPTION	SOURCE
SW001	24" CMP	DRAINAGE AREA 1
SW002	2 - 18" CMP'S	DRAINAGE AREA 2
SW003	2 - 18" CMP'S	DRAINAGE AREA 3
SW004	2 - 18" CMP'S	DRAINAGE AREA 4
SW005	ABANDONED	ABANDONED
SW006	18" CMP	DRAINAGE AREA 6
SW007/NPDES 002A	60" CMP	DRAINAGE AREA 7 AND/OR OVERFLOW YARD SUMP #1
SW008	8" CMP	DRAINAGE AREA 8
SW009/NPDES 003	36" CMP	DRAINAGE AREA 9
SW010	30" CMP	DRAINAGE AREA 10
SW011	24" CMP	DRAINAGE AREA 11
SW012	18" HDPE	DRAINAGE AREA 12
NPDES 001		CONDENSER COOLING WATER
NPDES 002		ASH BASIN DISCHARGE
NPDES 002B		YARD SUMP #2 OVERFLOW
NPDES 004		WETLAND TREATMENT SYSTEM DISCHARGE

ERN:

NOTES:

1. PLANT WASTEWATER, COAL PILE, COAL SIEVING OPERATIONS, BENEFICIAL STRUCTURAL FILL, CLOSED ASH LANDFILL, YARD SUMPS, FGD VIA THE CONTRUCTED WETLANDS, GYPSUM LANDFILL, AND GYPSUM AND LIMESTONE RADIAL STACKERS FLOW INTO THE ASH BASIN WHICH EVENTUALLY DISCHARGES VIA NPDES OUTFALL 002.
2. DRAINAGE AREA 20 "CLOSED ASH LANDFILL", NORTH OF THE FGD CONSTRUCTED WETLANDS AND DRAINAGE AREA 21 "BENEFICIAL STRUCTURAL FILL", NORTH OF THE GYPSUM LANDFILL ARE NOT SHOWN ON THIS DRAWING.

REFERENCE DRAWINGS

MM6443.00-0001.001 — FGD AREA CATCH BASIN LAYOUT
M-6032-10.02 — FGD AREA FINISHED SURFACE TREATMENT
M-6042-00.01 — FGD DRAINAGE PLAN
M-6042-00.02 — FGD DRAINAGE PLAN
M-6042-00.03 — FGD DRAINAGE PLAN
M-6023-03.00 — LIMESTONE UNLOADING AREA
M-6023-02.05 — GYPSUM RADIAL STACKER
M-6024-01.00 — GYPSUM LANDFILL & SOIL BORROW AREA

FOR NOTES, REFERENCE DRAWINGS, AND LEGENDS SEE DWG. MPM 0001

FOR INFORMATION ONLY

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	INSPECTED CIVIL	INSPECTED ELEC.	INSPECTED MECH.
1	EDITED TEXT AND DRAINAGE AREAS 1-5,6,7,10,11 AND YARD SUMP 1. ADDED DRAINAGE AREA 12.									
ORIG.	REL. FOR STORMWATER GROUP PERMIT APPLICATION									

DUKE POWER COMPANY
MARSHALL STEAM STATION

STORMWATER DRAINAGE

SITE PLAN

DESIGNER ____ DATE ____ INSP. ____ DATE ____
DRAWN ____ DATE ____ INSP. ____ DATE ____
CHECKED ____ DATE ____ APPR. ____ DATE ____

SCALE 1" = 200' | DWG. NO. MPM 0002 | REV. 1