PLAN FOR IDENTIFICATION OF NEW DISCHARGES

FOR

W.H. WEATHERSPOON POWER PLANT
491 POWER PLANT ROAD
LUMBERTON, NORTH CAROLINA 28358
ROBESON COUNTY
NPDES PERMIT #NC0005363

PREPARED FOR

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SUBMITTED: SEPTEMBER 2014

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1.0 INTRODUCTION

The purpose of this document is to address the requirements of North Carolina General Statute (GS)130A-309.210 (d) *Identification and assessment of discharges; correction of unpermitted discharges*, as modified by North Carolina Senate Bill 729, for the W. H. Weatherspoon Power Plant (Weatherspoon) ash basin operated under National Pollution Discharge Elimination System (NPDES) Permit NC005363.

The following requirements are contained in General statue 130A-309.210:

d) Identification of New Discharges. – No later than October 1, 2014, the owner of a coal combustion residuals surface impoundment shall submit a proposed Plan for the Identification of New Discharges to the Department for its review and approval as provided in this subsection.

(1) The proposed Plan for the Identification of New Discharges shall include, at a minimum, all of the following:

a. A procedure for routine inspection of the coal combustion residuals surface impoundment to identify indicators of potential new discharges, including toe drain outfalls, seeps, and weeps.

b. A procedure for determining whether a new discharge is actually present.

c. A procedure for notifying the Department when a new discharge is confirmed.

d. Any other information related to the identification of new discharges required by the Department.

(2) The Department shall approve the Plan for the Identification of New Discharges if it determines that the Plan complies with the requirements of this subsection and will be sufficient to protect public health, safety, and welfare; the environment; and natural resources.

(3) No later than 30 days from the approval of the Plan for the Identification of New Discharges, the owner shall begin implementation of the Plan in accordance with the Plan.

The North Carolina Senate Bill 729 establishes the submittal date of this Plan for Identification of New Discharges no later than October 1, 2014.

This bill also modified GS 130A to establish the following submittals that are related to this Plan. GS130A-309.210(a) was modified to require:

(2) No later than December 31, 2014, the owner of a coal combustion residuals surface impoundment shall submit a topographic map that identifies the location of all (i) outfalls from engineered channels designed or improved for the purpose of collecting water from the toe of the impoundment and (ii) seeps and weeps discharging from the impoundment that are not captured by engineered channels designed or improved for the purpose of collecting water from the toe of the impoundment to the Department. The topographic map shall comply with all of the following:

a. Be at a scale as required by the Department.

b. Specify the latitude and longitude of each toe drain outfall, seep, and weep.

c. Specify whether the discharge from each toe drain outfall, seep, and weep is continuous or intermittent.

d. Provide an average flow measurement of the discharge from each toe drain outfall, seep, and weep including a description of the method used to measure average flow.

e. Specify whether the discharge from each toe drain outfall, seep, and weep identified reaches the surface waters of the State. If the discharge from a toe drain outfall, seep, or weep reaches the surface waters of the State, the map shall specify the latitude and longitude of where the discharge reaches the surface waters of the State.

f. Include any other information related to the topographic map required by the Department.

The inspection procedures presented in this plan, developed to satisfy the requirements of GS130A-309.210(d), will be used as the basis for developing the topographic map required by GS130A-309.210(a)(2).

2.0 SITE DESCRIPTION

2.1 Plant Description

Duke Energy Progress, Inc. (Duke Energy) owns and operates the Weatherspoon Plant, a former coal-fired electricity-generating facility located in Robeson County, North Carolina, near the city of Lumberton. The location of the plant is shown on **Figure 1**. The Weatherspoon Plant started operations in 1949. Two additional units were added in the 1950s. Four oil and natural gas fueled combustion turbines were added in the 1970s.

As of October 2011, all of the coal-fired units were retired. The four oil and natural gas units continue to operate to meet peak demand. The facility is located southeast of Lumberton on the east side of North Carolina Highway 72. The topography around the property generally slopes downward toward the Lumber River.

The Weatherspoon Plant utilizes an approximate 225-acre cooling pond located adjacent to the Lumber River. The ash basin is located north of the cooling pond, northeast of the power plant, as shown on **Figure 2**.

2.2 Ash Basin Description

The power plant, cooling pond, and ash basin are located on the east side of the Lumber River. The ash basin is located north of the cooling pond, northeast of the power plant, as shown on **Figure 2**. The ash basin consists of an approximate 65 acre ash basin. The 500 foot compliance boundary circles the ash basin.

The ash basin is impounded by an earthen dike. Ash generated from coal combustion was stored on-site in the ash basin. Overflow from the ash basin drains to the northeast corner of the cooling pond. The Weatherspoon Plant NPDES permit (NC005363) authorizes the discharge of recirculated cooling water, ash sluice water, domestic wastewater, chemical metal cleaning water, and low volume wastewater including reject water from a reverse osmosis treatment water treatment unit from the cooling pond via Outfall 001 to the Lumber River under severe weather conditions and pond maintenance.

3.0 SITE GEOLOGY AND HYDROGEOLOGY

3.1 Site Geologic/Soil Framework

Geographically, the Weatherspoon Plant lies within the Coastal Plain Physiographic Province (*Geologic Map of North Carolina*, 1985).

The North Carolina Coastal Plain is approximately 90 to 150 miles wide from the Atlantic Ocean westward to its boundary with the Piedmont province (Winner, Jr. and Coble, 1989). Two natural subdivisions of the Coastal Plain were described by Stuckey (1965): the Tidewater region and the Inner Coastal Plain. The Weatherspoon Plant is located within the Inner Coastal Plain, which consists of the gently rolling land surface between the Tidewater region and the Fall Line (Winner, Jr. and Coble, 1989). The Weatherspoon Plant is located within a subdivision of the Inner Coastal Plain that is typified by swampy areas in the flat uplands between major river systems. The Weatherspoon Plant is located on the east side of the Lumber River.

Based on monitoring well logs, the surficial aquifer at the Weatherspoon Plant consists generally of gray, fine and medium grained sand, intermixed with clay and silt across the well screens. The boring logs do not indicate that the Peedee confining unit was encountered during drilling activities; however, the maximum depth of the compliance wells at the Weatherspoon Plant is approximately 20 feet below ground surface.

3.2 Site Hydrogeologic Framework

In the Robeson County part of the North Carolina Coastal Plain, groundwater is obtained from the surficial, Peedee, Yorktown, and Black Creek aquifers. The Coastal Plain groundwater system consists of aquifers comprised of permeable sands, gravels, and limestone separated by confining units of less permeable sediment.

The surface of groundwater at the Weatherspoon Plant is typically located at depths of 4 to 8 feet below ground surface, depending on precipitation and topography. Based on the results of work conducted at the Plant, the transmissivity for the surficial aquifer ranges between approximately 400 and 1,750 ft^2/day. Water level maps for the site indicate the general direction of groundwater flow appears to be southeast from the ash basin.

The average precipitation in the Lumberton, NC area is approximately 48 inches per year. Due to the relatively high transmissivity characteristic of the surficial aquifer, recharge rates are expected to be high.

4.0 IDENTIFICATION OF NEW DISCHARGES

4.1 Purpose of Inspection

The purpose of the inspection is to identify new discharges and indicators or potential new discharges, including toe drain outfalls, seeps, and weeps associated with the coal combustion residuals surface impoundments (ash basins).

4.2 Seepage

Seepage is considered to be the movement of wastewater from the ash basin through the ash basin embankment, the embankment foundation, the embankment abutments, or through residual material in areas adjacent to the ash basin. A seep is defined in this document as an expression of seepage at the ground surface. A weep is understood to have the same meaning as a seep.

Indicators of seepage include areas where water is observed on the ground surface and/or where vegetation suggests the presence of seepage. Seepage can emerge anywhere on the downstream face, beyond the toe, or on the downstream abutments at elevations below normal pool. Seepage may vary in appearance from a "soft," wet area to a flowing "spring." Seepage may show up first as only an area where the vegetation is lusher and darker green than surrounding vegetation. Cattails, reeds, mosses, and other marsh vegetation often become established in a seepage area (NCDENR, 1985). However, in many instances, indicators of seeps do not necessarily indicate the presence of seeps.

4.3 Area to be Inspected for New Discharges

The areas to be inspected are the areas of the site where water contained in the ash basin might infiltrate into the underlying residual material and be expressed as seepage. The extent of the areas to be inspected was determined based on the site topography, surface water drainage features around the ash basin, and proximity to the cooling pond. At the Weatherspoon Plant, flow of water from the ash basin would be radial. The areas to be inspected are shown on **Figure 2**.

4.4 Inspection Procedure

The inspection procedure for identification of new discharges and indicators of potential new discharges associated with the Weatherspoon Plant ash basin is provided in **Appendix A**. In addition to the specific requirements for the inspection, **Appendix A** also provides the general requirements, the frequency of inspections, documentation requirements, and provides a decision flow chart for determining if the potential new discharge is associated with the ash basin.

5.0 REFERENCES

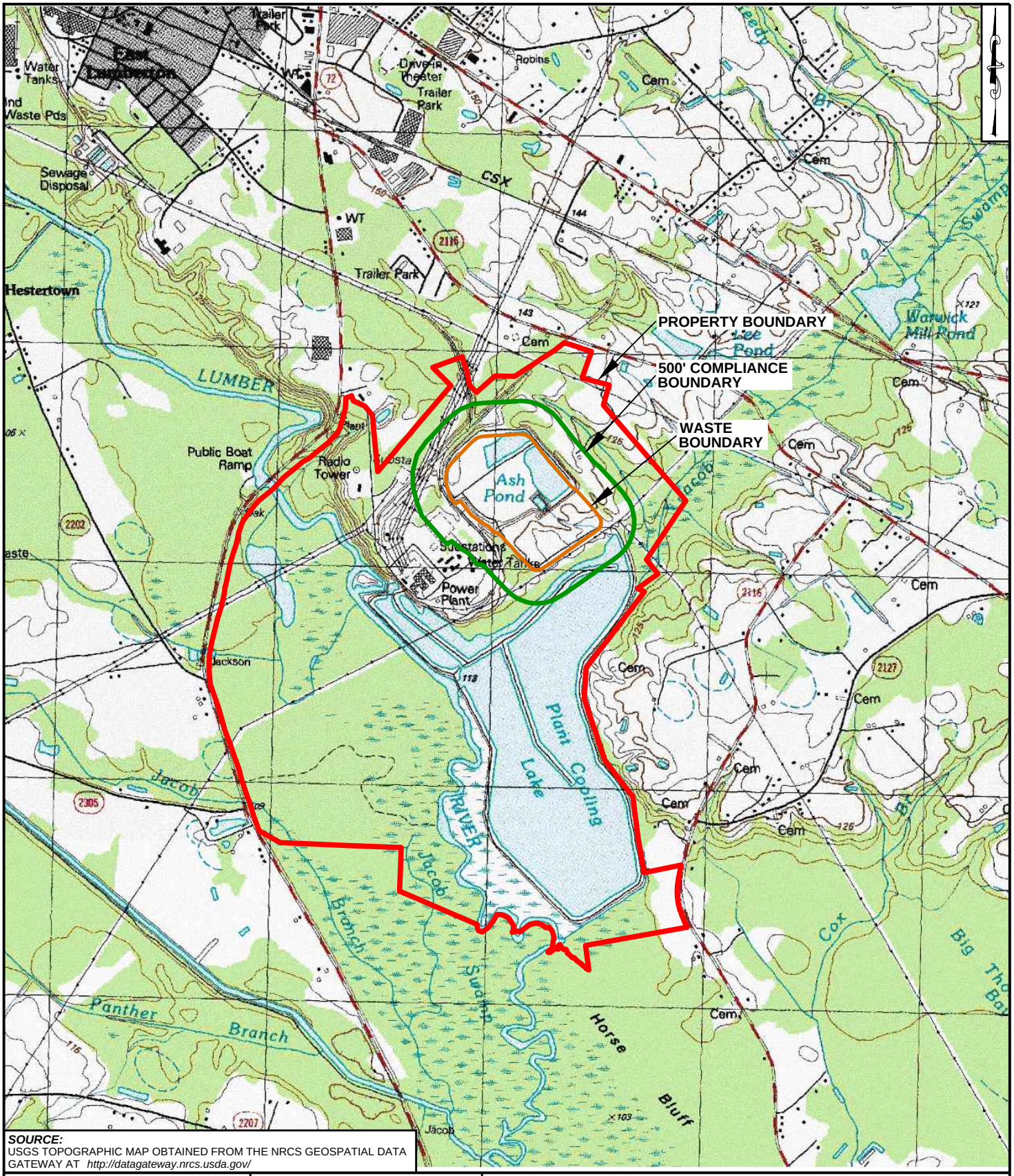
NCDENR, "Dam Operation, Maintenance, and Inspection Manual", 1985 (Revised 2007).

North Carolina Geological Survey, 1985, *Geologic map of North Carolina*: North Carolina Geological Survey, General Geologic Map, scale 1:500,000.

Stuckey, J.L., 1965, North Carolina: Its Geology and Mineral Resources, Raleigh, North Carolina Department of Conservation and Development, 550p.

Winner, M.D., Jr., and Coble, R.W., 1989, Hydrogeologic Framework of the North Carolina Coastal Plain Aquifer System: U.S. Geological Survey Open-File Report.

FIGURES



SOURCE:
USGS TOPOGRAPHIC MAP OBTAINED FROM THE NRCS GEOSPATIAL DATA GATEWAY AT *http://datagateway.nrcs.usda.gov/*

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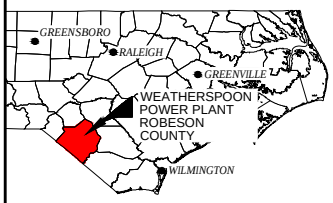
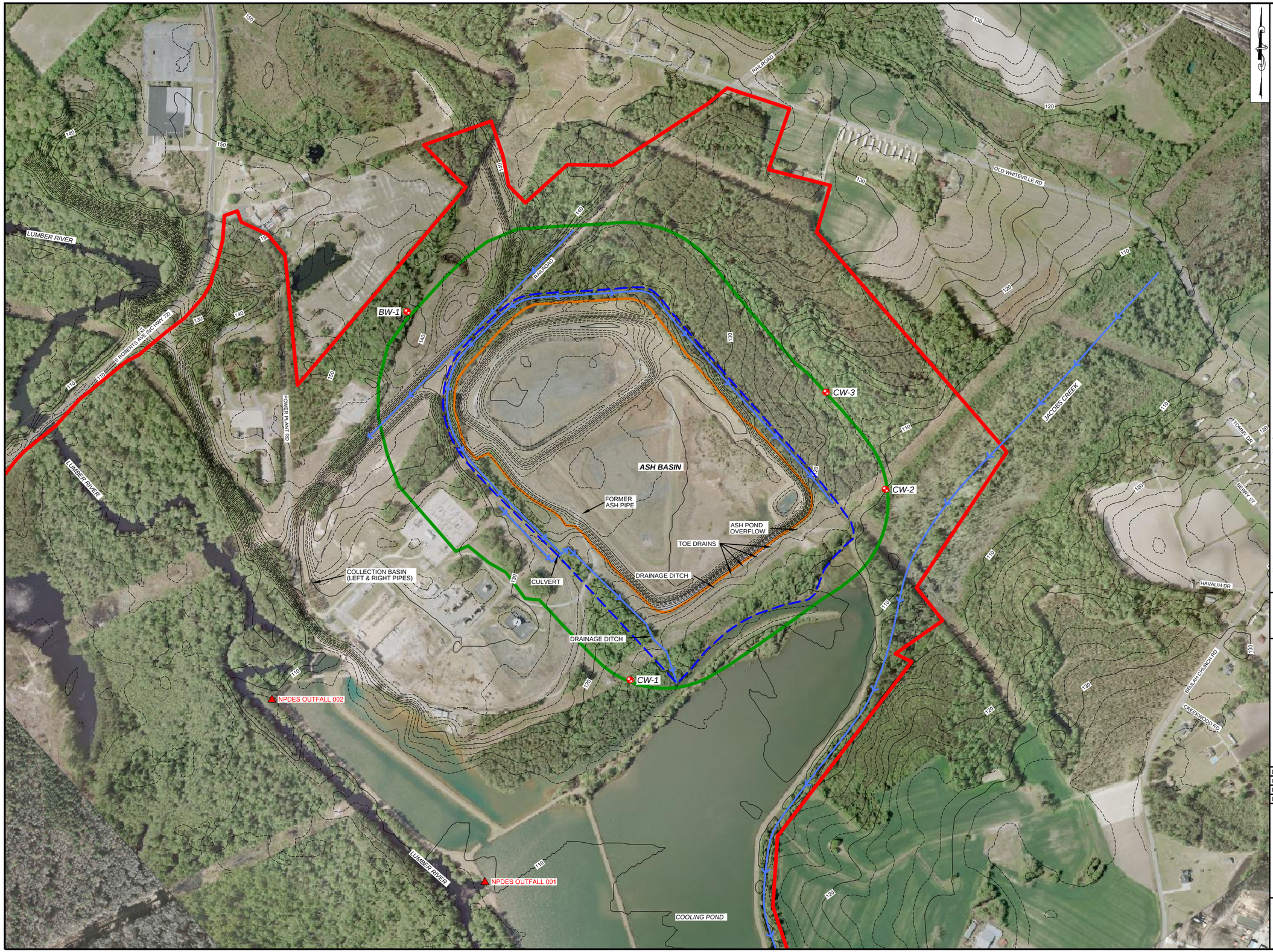


FIGURE 1
SITE LOCATION MAP
WEATHERSPOON POWER PLANT
491 POWER PLANT RD
LUMBERTON, NORTH CAROLINA
SOUTH EAST LUMBERTON, NC QUADRANGLE

DRAWN BY: S. ARLEDGE
PROJECT MANAGER:KATHY WEBB
LAYOUT:FIG 1 (USGS SITE LOCATION)
DATE: 2014-09-26
CONTOUR INTERVAL: 10 FEET
MAP DATE:1993

GRAPHIC SCALE
1000 0 1000 2000
IN FEET



LEGEND

- DUKE ENERGY PROGRESS WEATHERSPOON PLANT
- 500 ft COMPLIANCE BOUNDARY
- WASTE BOUNDARY
- BOUNDARY OF AREA TO BE INSPECTED FOR SEEPS
- FLOW DIRECTION
- 120 — 2007 LiDAR CONTOUR MAJOR
- 2007 LiDAR CONTOUR MINOR
- NPDES OUTFALL 001 — NPDES OUTFALL LOCATION
- CW-3 — ASH BASIN COMPLIANCE GROUNDWATER MONITORING WELL

SOURCES:

1. 2010 HIGH RESOLUTION AERIAL PHOTOGRAPHS AND 1997 WATER LINES OBTAINED FROM NC ONE MAP AT *http://data.nconemap.com/geoportal/catalog/raster/download.page*
2. 2014 AERIAL PHOTOGRAPH WAS OBTAINED FROM WSP FLOWN ON APRIL 17, 2014.
3. DRAWING HAS BEEN SET WITH A PROJECTION OF NORTH CAROLINA STATE PLANE COORDINATE SYSTEM FIPS 3200 (NAD 83).
4. 2ft CONTOUR INTERVALS FROM NCDOT LIDAR DATED 2007 *https://connect.ncdot.gov/resources/gis/pages/cont-elev_v2.aspx*

NOTE:

1. CONTOUR LINES ARE USED FOR REPRESENTATIVE PURPOSES ONLY AND ARE NOT TO BE USED FOR DESIGN OR CONSTRUCTION PURPOSES.

GRAPHIC SCALE

300 0 300 600

IN FEET

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DRAWN BY:	S. ARLEDGE	DATE:	2014-09-26
CHECKED BY:	H. FRANK	DATE:	2014-09-26
PROJECT MANAGER:	K. WEBB		
LAYOUT NAME:FIG 2 (SEEP INSPECTION AREA)			

DUKE ENERGY PROGRESS

WEATHERSPOON POWER PLANT
491 POWER PLANT RD
LUMBERTON, NORTH CAROLINA

FIGURE 2
AREAS TO BE INSPECTED FOR SEEPS

APPENDIX A

INSPECTION FOR IDENTIFICATION OF NEW DISCHARGES

1. Purpose of Inspection

The purpose of the inspection is to identify new discharges and indicators of potential new discharges, including toe drain outfalls, seeps, and weeps that arise after the initial submittal of maps required by North Carolina General Statute 130A-309.210(a)(2)(ii). Seepage is considered to be the movement of wastewater from the ash basin through the ash basin embankment, the embankment foundation, the embankment abutments, or through residual material in areas adjacent to the ash basin. Therefore, a seep is defined in this document as an expression or occurrence of potential wastewater at the ground surface. A weep is understood to have the same meaning as a seep. If new discharges or indicators of potential new discharges are identified, the decision flow chart (see Figure A-1) will be used to determine if the potential new discharge is from the ash basin and if notification to the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Water Resources (DWR) is required.

2. General Inspection Requirements

2.1. Inspections are to be performed on areas that are below the ash basin full pond elevation and within the area shown on **Figure A-2**. The scope of the inspections includes identification of seeps from residual ground and outfalls from engineered channels.

2.2. If required, a larger scale figure showing the locations of outfalls from engineered channels will be developed. If a separate figure showing outfalls from engineered channels is not developed, **Figure A-2** will be revised to show these features.

2.3. Inspections of areas on or adjacent to the ash basin embankments should be performed within two months after mowing, if possible.

2.4. Inspections should not be performed if the following precipitation amounts have occurred in the respective time period preceding the planned inspection:

2.4.1. Precipitation of 0.1 inches or greater within 72 hours, or

2.4.2. Precipitation of 0.5 inches or greater within 96 hours.

2.5. Record most recent ash basin water surface elevation.

2.6. Review previous inspections for new discharges prior to performing inspection.

2.7. Review the most recent previous dam inspections.

2.8. Conduct an interview with the Site Environmental Coordinator prior to performing inspection to inquire about possible changes to site conditions, such as pond elevations, operations, additions or removal of wastewater discharges to the ash basin, changes to site surface water drainage, etc.

3. Frequency of Inspections

Inspections will be performed on a semi-annual basis during the first quarter of the year (January to March representative of seasonal high precipitation and while vegetation is dormant) and during the third quarter (July to September representative of seasonal low precipitation and vegetative growth).

4. Qualifications

The inspections shall be performed under the direction of a qualified Professional Engineer or Professional Geologist.

5. Documentation of Inspection

The inspection shall be documented by the individual performing the inspection. The report should contain observations and descriptions of the seeps observed, changes in observations compared to previous inspections, estimates of flows quantities, and photographs of seeps and outfalls of engineered channels designed or improved for collecting water from the impoundment. Photographs are to be numbered and captioned.

6. Initial Inspection

An initial inspection should be performed to identify features and document baseline conditions including location, extent (i.e., dimensions of affected area), and flow. Seep locations should be recorded using a Global Positioning System (GPS) device. Photographs should be taken from vantage points that can be replicated during subsequent semi-annual inspections.

7. Inspection For New Seeps at Outfalls From Engineered Outfalls

Inspect the outfalls from engineered channels designed and/or improved (such as through the placement of rip-rap) associated with the ash basin dikes to identify new seeps or indicators of new seeps.

7.1. Inspect all outfalls from engineered channels designed and/or improved (such as through the placement of rip-rap).

7.2. Document the condition of the outfall of the engineered channel with photographs. Photographs are to be taken from a similar direction and scale as the original photographs taken during the initial inspection.

7.3. Observe outfall for seepage and for indicators of seeps.

7.4. Compare current seepage location, extent, and flow to seepage photographs and descriptions from previous inspections.

7.5. Record flow rate if measureable.

8. Inspection For New Seeps Not Captured by Engineered Channels

Inspect areas below the ash basin full pond elevation and within the boundary of the area to be inspected as shown on **Figure A-2** to identify new seeps or indicators of new seeps. Inspect topographic drainage features that potentially could contain new seeps that potentially discharge from the ash basin. Requirements for documentation of the inspection are found in Section 5.

8.1. Previously Identified Seeps

a) Inspect previously identified seep locations. Document the condition of the seeps with a photograph. Photographs are to be taken from similar direction and at a similar scale as the original photograph documenting the seep. Describe the approximate dimensions and flow conditions of the seep.

b) If measureable, record flow.

c) Observe seep to determine if changes to location, extent, of flow are present. Document changes to location, extent, and/or flow amount or pattern.

8.2. New Seep or Indicators of Seep

a) Mark the location of new seep or indicators of seep using a GPS device.

b) Document the condition of the seeps or indicators of seeps with a photograph.

c) Describe the approximate dimensions and flow conditions of the seep.

d) Map the location of new seep or indicator of seep using GPS coordinate points collected during the site visit.

e) If seep or indicator of seep was not caused by changes in surface water drainage and if the location is below the ash basin pond elevation, utilize the decision flow chart to determine if the seep represents a discharge from the ash basin and if notification to DWR is required.

9. Update Maps Identifying Seeps

If new seeps are identified during the inspection, **Figure A-2** shall be updated to show the location of the new seeps.

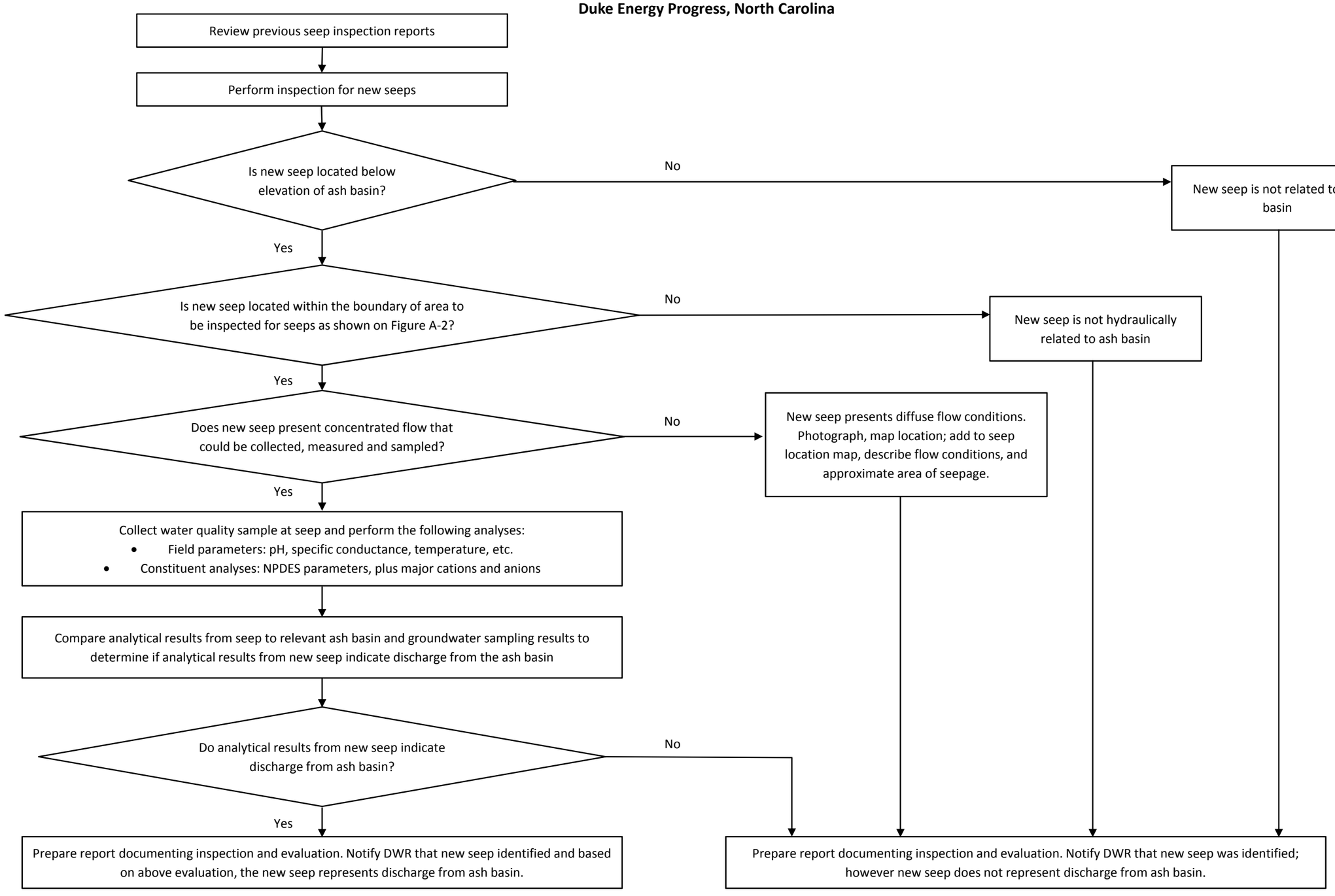
10. Decision Flow Chart

The decision flow chart developed to determine whether a new seep discharges from the ash basin is found in **Figure A-1**.

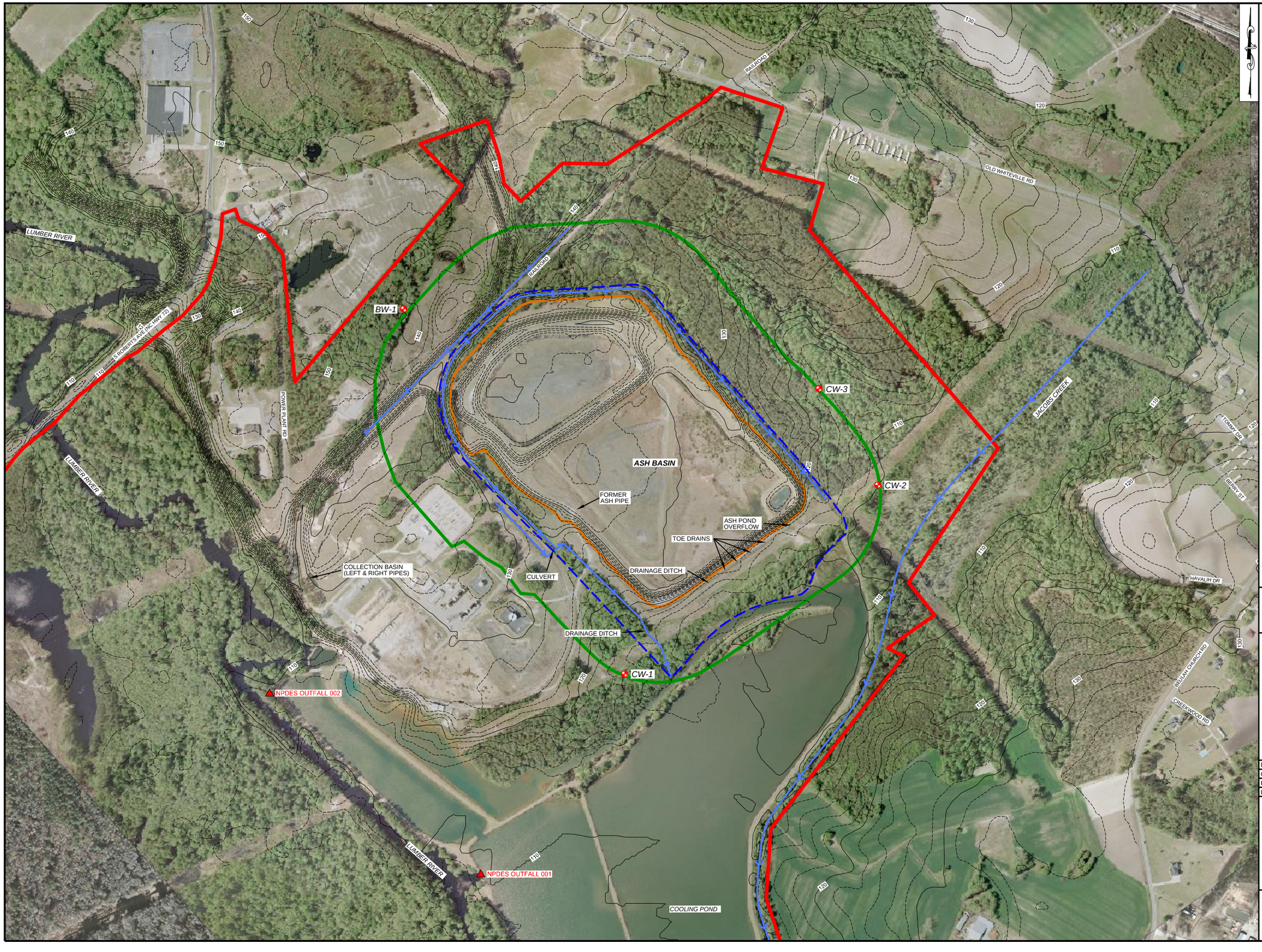
11. Procedure for Notifying NCDENR DWR If New Discharge Is Confirmed

If it is determined that a newly identified seep is present, Duke Energy will notify the DWR regional office by mail within 14 days after the determination.

Figure A-1 Decision Flow Chart for Determining If New Seep Represents Discharge From the Ash Basin Locations
Duke Energy Progress, North Carolina



Notes:
1. If no new seeps are identified, inspection will be documented however no notification to NCDENR DWR is required.
2. If new seeps are identified that do not represent discharge from the ash basin during the same inspection that identifies new seeps that do represent a discharge from the ash basin, a single report will be submitted to NCDENR DWR.



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LAYOUT NAME:	FIG A-2 (SEEP INSPECTION AREA)		

DUKE ENERGY PROGRESS

WEATHERSPOON POWER PLANT
491 POWER PLANT RD
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FIGURE A-2
AREAS TO BE INSPECTED FOR SEEPS