NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Mooresville Regional Office
County: Gaston
NC Facility ID: 3600039
Inspector's Name: Karyn Kurek
Date of Last Inspection: 03/24/2021
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Duke Energy Carolinas, LLC - Allen Steam Station

Facility Address:
Duke Energy Carolinas, LLC - Allen Steam Station
253 Plant Allen Road
Belmont, NC 28012

SIC: 4911 / Electric Services
NAICS: 221112 / Fossil Fuel Electric Power Generation

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02Q .0501(b)(2)
NSPS: NA
NESHAP: NA
PSD: NA
PSD Avoidance: NA
NC Toxics: Arsenic, Beryllium, Cadmium, Nickel, Manganese, Chromium VI, Mercury
112(r): NA
Other: NA

Contact Data

Facility Contact	Authorized Contact	Technical Contact
M. Randy Gantt Lead EHS Professional (704) 829-2587 253 Plant Allen Road Belmont, NC 28012	Rick Roper General Manager III (828) 478-7600 253 Plant Allen Road Belmont, NC 28012	Daniel Markley Lead Environmental Specialist (704) 382-0696 526 South Church Street - EC13K Charlotte, NC 28202

Application Data

Application Number: 3600039.21B
Date Received: 04/28/2021
Application Type: Modification
Application Schedule: TV-Sign-501(b)(2) Part I

Existing Permit Data
Existing Permit Number: 03757/T47
Existing Permit Issue Date: 09/01/2020
Existing Permit Expiration Date: 02/28/2023

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2019	147.87	1347.63	13.40	414.92	71.51	8.81	5.73 [Hydrogen chloride (hydrochlori]
2018	246.01	1440.96	12.43	380.10	64.89	7.93	5.16 [Hydrogen chloride (hydrochlori]
2017	354.02	1610.22	14.47	454.95	65.21	9.38	6.07 [Hydrogen chloride (hydrochlori]
2016	676.03	2168.28	21.59	718.46	88.05	13.59	8.79 [Hydrogen chloride (hydrochlori]
2015	1127.94	2682.31	21.27	353.68	178.19	20.96	17.92 [Hydrogen chloride (hydrochlori]

Review Engineer: Ed Martin

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 03757/T48
Permit Issue Date:
Permit Expiration Date:

Chronology

April 28, 2021	Application received and considered complete on this date.
May 24, 2021	Sent email to Dan Markley with questions on which permitted sources correspond to the sources modeled in the application and why certain sources were not modeled.
June 4, 2021	Received email from DEC's consultant (Jeff Connors with AECOM) responding to the above request explaining why it was not necessary to include certain sources in the toxics modeling.
June 14, 2021	Toxics memo received from Nancy Jones showing compliance with the Acceptable Ambient Levels (AALs).
June 17, 2021	The draft permit and review were sent to Dan Markley at DEC, Karyn Kurek at the Mooresville Regional Office and Samir Parekh with SSCB for review.

I. Purpose of Application

In order to comply with the North Carolina Coal Ash Management Act of 2014, as amended (CAMA), the federal Disposal of Coal Combustion Residuals from Electric Utilities rule (CCR Rule) and the North Carolina Department of Environmental Quality (NC DEQ) April 1, 2019 Closure Determination, Duke Energy Carolinas (DEC) is proposing a program to excavate the coal ash (also referred to as coal combustion residuals or CCR) and relocate it from the Active Ash Basin (AAB) to a new lined ash landfill to be constructed on site. All of the CCR in the unlined ash basins will be excavated and deposited in the new landfill over the course of approximately a fifteen-year project duration, starting in 2022 and extending through 2037 with an annual average transfer rate of approximately 1.1 million cubic yards per year. Excavation and transport of this material is expected to result in particulate matter and hazardous air pollutant emissions, which will be principally fugitives associated with CCR handling and truck traffic.

The project will result in increased emissions of particulate matter (PM), PM less than 10 micrometers and PM less than 2.5 micrometers in diameter (PM_{10} and $PM_{2.5}$, respectively), NOx, SO_2, CO, VOCs, lead, carbon dioxide as CO_2e, and air toxics.

Because the new lined landfill is proposed to be located within the boundary of the existing AAB, the project will consist of a series of stages. The following changes, are proposed:

- Construction of two new starter lined landfills (NSLF and SSLF), each approximately 21 acres in area, to be temporary storage locations for CCR excavated from the AAB and other legacy ash disposal sites at the Allen facility.
- Excavation of CCR from the AAB and other legacy disposal sites with temporary storage of this material in the starter landfills.
- Construction of a new 74-acre permanent lined landfill within the boundary of the existing AAB.
- Relocation of material temporarily stored in the starter landfills to the new lined landfill and closure of the starter landfills and other legacy ash disposal sites.
- The addition of three diesel-engine driven emergency generators to supply electric power to operate ash basin dewatering pumps throughout the life of the project in the event of electric power loss to the ash basins. These emergency generators qualify as insignificant activities.

This is the first step of a significant permit modification pursuant to rule 15A NCAC 02Q .0501(b)(2). Public notice of the draft permit for Title V purposes is not required at this time. The Permittee must file a

Title V Air Quality Permit Application pursuant to 15A NCAC 02Q .0504 for these changes within 12 months after the first excavation of ash from the AAB in accordance with General Condition NN.1 of the permit, at which time the changes will go through the second step of the 15A NCAC 02Q .0501(b)(2) Title V permitting process. The permit shield described in General Condition R does not apply to these changes. The only public notice at this time is a notice of public hearing pursuant to the construction and operating permit under rule 15A NCAC 02Q .0300 and the CAMA.

The site arrangement is shown in Figure 1 below including the North Starter Landfill (NSLF), South Starter Landfill (SSLF) and Active Ash Basin (AAB).

Figure 1 – Allen Site Arrangement

II. DEQ Coal Combustion Residuals Surface Impoundment Closure Determination

The following is taken from the Executive Summary of the Allen Steam Station "DEQ Coal Combustion Residuals Surface Impoundment Closure Determination" of April 1, 2019.

The Coal Ash Management Act (CAMA) establishes criteria for the closure of coal combustion residuals (CCR) surface impoundments. The CCR surface impoundments located at Duke Energy Carolinas, LLC's (Duke Energy) Allen Steam Station (Allen) in Gaston County, NC have received a low-risk classification. Therefore, according to N.C. Gen. Stat. § 130A-309.214(a)(3), the closure option for CCR surface impoundments is at the election of the North Carolina Department of Environmental Quality (DEQ). CAMA provides three principal closure pathways: (a) closure in a manner allowed for a high-risk site, such as excavation and disposal in a lined landfill [CAMA Option A]; (b) closure with a cap-in-place system similar to the requirements for a municipal solid waste landfill [CAMA Option B]; or (c) closure in accordance with the federal CCR rule adopted by EPA [CAMA Option C].

In preparing to make its election, DEQ requested information from Duke Energy related to closure options. By November 15, 2018, Duke Energy provided the following options for consideration: closure in place, full excavation, and a hybrid option that included some excavation with an engineered cap on a smaller footprint of the existing CCR surface impoundments. DEQ held a public information session on January 29, 2019 in Belmont, NC where the community near Allen had the opportunity to learn about options for closing coal ash CCR surface impoundments and to express their views about proposed criteria to guide DEQ's coal ash closure decision making process. To evaluate the closure options, the Department considered environmental data gathered as part of the site investigation, permit requirements, ambient monitoring, groundwater modeling provided by Duke Energy and other data relevant to the CAMA requirements.

DEQ elects the provisions of CAMA Option A that require movement of coal ash to an existing or new CCR, industrial or municipal solid waste landfill located on-site or off-site for closure of the CCR surface impoundments at the Allen facility in accord with N.C. Gen. Stat. § 130A-309-214(a)(3). In addition, DEQ is open to considering beneficiation projects where coal ash is used as an ingredient in an industrial process to make a product as an approvable closure option under CAMA Option A.

DEQ elects CAMA Option A because removing the coal ash from unlined CCR surface impoundments at Allen is more protective than leaving the material in place. DEQ determines that CAMA Option A is the most appropriate closure method because removing the primary source of groundwater contamination will reduce uncertainty and allow for flexibility in the deployment of future remedial measures.

Duke Energy will be required to submit a final Closure Plan for the CCR surface impoundments at Allen by August 1, 2019. The Closure Plan must conform to this election by DEQ.

III. Permit Changes

The following changes were made to the Duke Energy Carolinas, LLC – Allen Steam Station Air Permit No. 03757T47:

Page No.	Section	Description of Change(s)
Cover	--	Amended permit numbers and dates.
--	Insignificant Activities list	Added I-83 through I-89. Removed I-10 and I-39. Modified I-9 and I-32.
8-9	1, table of permitted emission sources	Added LF, AD, AE, AAB and HAULRD. Added footnote 7.
21	2.1 A.7.a	Removed footnote ***. The %EE and %MD in this footnote when the operating hours are less than 2200 hours during the quarter are addressed when DAQ reviews the quarterly EERs on a case-by-case basis.
24	2.1 A.9	Removed the sentence that references operating less than 2,200 hours during any calendar quarter in section B of the table. This is addressed when DAQ reviews the quarterly EERs on a case-by-case basis.
25	2.1 A.9.g	Corrected typo to reference Section 2.1 A.9 (not Section 2.1 A.10).
57-59	2.2 B.1.a	Added project toxic emission limits.
59	2.2 B.1.b	Added condition for the approved AQAB review memo.
60	2.2 C	Added 02Q .0504 condition for obtaining the Part II permit.

IV. Facility Description

DEC's Allen Steam Station is an electric utility that generates electrical power. The Allen Steam Station is permitted for five coal/No. 2 fuel oil-fired electric utility boilers (ID Nos. ES-1 (U1 Boiler), ES-2 (U2 Boiler), ES-3 (U3 Boiler), ES-4 (U4 Boiler), and ES-5 (U5 Boiler)), one No. 2 fuel oil-fired auxiliary boiler (ID No. ES-6 (AuxB)), and other supporting ancillary sources.

V. Emissions

Emissions increases were calculated for purposes of evaluating whether the modifications trigger Prevention of Significant Deterioration (PSD) and to determine whether air toxics modeling is required. Detailed emission calculations are presented in Appendix B of the application.

The project will have no impact on existing operations; for those operations the Projected Actual Emissions (PAE) after the project has commenced will be the same as their Baseline Actual Emissions (BAE). Accordingly, PSD applicability is assessed by evaluating the emission increases associated with the new emission sources. With the exception of emissions from the emergency generator units, emissions will consist exclusively of fugitive particulate matter (total PM, PM10, and PM2.5) and lead emissions from the following activities:

- CCR excavation and handling within the ash basins at the facility
- Truck hauling of CCR over unpaved roads within the facility
- Handling and deposition of CCR within the landfill areas
- Wind erosion from the active and inactive areas of the ash basins and landfill

For these activities and emission units, emission increases were calculated as the Potential to Emit (PTE) based on the worst-case emissions.

A combination of mitigation measures will be used to minimize fugitive particulate matter emissions generated by truck traffic. Emissions from CCR excavation and handling activities will be comparatively low given the high moisture content of excavated CCR, the inherent slow speed operation of heavy equipment used to excavate and/or deposit CCR (e.g., excavators, bulldozers, etc.) as well as wet dust suppression measures that will be utilized to control fugitive dust emissions.

The annual rate of CCR excavation and deposition is expected to remain relatively constant across the life of the project (at approximately 1.1 million cubic yards per year). CCR excavation will occur over a series of stages to accommodate construction of the new ash landfill within the boundary of the existing AAB. In this regard, ash hauling distances will vary across the life of the project based on where the CCR material is being excavated from and where it is being deposited at any given point in the project. Since fugitive emissions associated with haul road truck traffic are directly proportional to the truck travel distance, the emissions profile of the project will change over time. PSD applicability for the project is based on the worst-case emissions profile configuration (i.e., longest haul road distance) where excavating CCR from the North Starter Landfill is deposited in the new lined landfill constructed within current boundary of the Active Ash Basin. Stages of the project where ash is being excavated from and deposited to other locations (e.g., when ash is excavated from the South Starter Landfill and deposited to the Active Ash Basin) will have lower annual emission rates than this worst-case scenario because the distance the haul trucks must travel during these stages will be less than with this worst-case configuration. Calculations for the following are provided in Appendix B in the application.

Haul Roads

DEC calculated fugitive PTE emissions for PM, PM10 and PM2.5 from truck traffic using standard emissions calculation methodologies prescribed in EPA's AP-42, Fifth Edition Compilation of Air Pollutant Emissions Factors, Volume 1: Stationary Point and Area Sources, Section 13.2.2 - Unpaved Roads (US EPA 2006a). This methodology utilizes equation inputs that include vehicle weights, vehicle miles travelled and road silt content. The length of the longest expected haul distance is used as the worst-case scenario.

In addition to natural dust mitigation associated with rainfall occurring on site, a combination of dust mitigation measures will be used to reduce emissions from the CCR haul roads. First, unpaved areas will be regularly watered (at least twice per day) to achieve a 90% dust control efficiency. Second, vehicle speeds will be limited to 15 miles per hour or less, which will achieve an additional 57% control efficiency. Finally, gravel will be added to each unpaved surface to reduce the surface silt content, which will further reduce dust emissions by 85%. The overall combined efficiency of these three measures is 99.3%.

Material Handling

DEC calculated fugitive PTE for PM, PM10, PM2.5, lead, and air toxics emissions from excavating CCR from the ash basin, loading the excavated material into haul trucks, and unloading and deposition of the material at the landfill. Within the ash basin, emissions associated with establishing interim storage piles of material are also accounted for to accommodate periods of time when loading of excavated CCR directly into haul trucks is not feasible.

Emissions from CCR handling activities were estimated using AP-42's aggregate handling and storage methodology from Section 13.2.4 (US EPA 2006b). Calculation inputs for this methodology include material moisture content, site wind speed, and the number of material drop points. Average wind speed for the site was determined using the latest 5 years of meteorological information collected by the National Weather Service at the Charlotte-Douglas International Airport. A total of four material drop points within the ash basin and a single drop point within the landfill are assumed.

Wind Erosion

DEC calculated fugitive PTE emissions for PM, PM10, PM2.5, lead, and air toxics as a result of wind erosion at the ash stockpiles and exposed areas within the basin where CCR material is being excavated as well as the landfill where the material is being deposited. The emissions estimating methodology presented in the EPA document EPA-450/1-89-003 (EPA 1989) and referenced in Section 9.3 of the Western Regional Air Partnership Fugitive Dust Handbook (WRAP 2006) was used for this project. With this methodology, annual emissions per acre are a function of the silt content of the material, the number of days of the year when precipitation at the site exceeds 0.01 inches, and the percentage of time the wind speed at the site exceeds 12 miles per hour.

For the active areas of the ash basin and landfill, a fugitive dust control efficiency of 80% associated with routine application of water was utilized. For inactive areas, an overall dust control efficiency of 99.4% was utilized, consisting of the combination of 75% control associated with the inactive or undisturbed area, 75% control associated with the reduced erosion potential associated with natural crusting, and 90% control associated with routine application of chemical binding agents.

Emergency Generators

Three emergency electric generators will be utilized for the project to provide backup electrical power. Two units sized to provide 80 kW of power to the water pumping stations in the North and South Starter Landfills, and a single 150 kW unit for the leachate basin serving the Active Ash Basin.

Annual emissions for each emergency generator were estimated based on an annual operating schedule of 500 hours per unit per year[1]. NOx, CO, PM, and VOC emissions were estimated for each of these generators using the emission limits specified in the applicable New Source Performance Standard (NSPS) for the diesel engine serving each generator (i.e., 40 CFR 60, Subpart lilt). S02 emissions were estimated based on the use of ultra-low sulfur diesel fuel and prospective generator vendor data on fuel consumption rates for each engine. Greenhouse gas (GHG) emission rates were estimated using fuel consumption rates for each generator emission factors from 40 CFR Part 98, Subpart C. These qualify for and will be placed on the insignificant activities list.

VI. Regulatory Evaluation -- PSD Applicability

The Allen Steam Electric Plant is an existing Prevention of Significant Deterioration (PSD) "major stationary source" of criteria air pollutants as defined under PSD, per 40 CFR 51.166(b)(1)(i)(a), and is classified as one of the 28 named source categories under the category of "fossil fuel-fired steam electric plants of more than 250 million Btu per hour heat input," which emits or has a potential to emit 100 tons per year of any regulated pollutant.

Because the existing facility is a major stationary source, any physical change or a change in the method of operation as calculated pursuant to 40 CFR 51.166(a)(7)(iv) which results in a *net emissions increase* for regulated pollutants in the amounts equal or greater than the significance levels, is subject to PSD review and must meet certain review requirements. Thus, the net emission increase as a result of this modification must be compared to the "significance levels" as listed in 40 CFR 51.166(b)(23)(i) to determine which pollutants must undergo PSD review.

The Permittee has performed a PSD applicability analysis for the project to determine whether the project results in an emission increase of any regulated NSR pollutant above the applicable significance thresholds listed in 40 CFR 51.166(b)(23)(i). The PSD applicability analysis evaluated all PSD-regulated air

[1] Per EPA guidance in "Calculation of Potential to Emit (PTE) for Emergency Generators, " Seitz, J. S., EPA OAQPS, September 6, 1995.

pollutants to be emitted, including PM (filterable), PM_{10}, $PM_{2.5}$, NOx, SO_2, CO, VOCs, carbon dioxide as CO_2e, and lead. The following describes the methodology used to determine the increases for the project for the new sources. No existing sources are affected by this project. As shown in Table 1, the calculations demonstrate that the PSD requirements are not triggered because project increases are below the PSD significant emissions rates.

Since the project involves only new emission sources, a significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the emissions increases for all sources equals or exceeds the significant amount for that pollutant, as defined in paragraph 40 CFR 51.166(b)(23), using the "actual-to-potential test" in accordance with 40 CFR 51.166(a)(7)(iv)(*d*).

Emissions under the "actual-to-potential test" are calculated as the difference between the PTE (post-project) as defined by 40 CFR 51.166(b)(4), and the baseline actual emissions (BAE) (pre-project) as defined by 40 CFR 51.166(b)(47)(iii). Potential to emit means the maximum capacity to emit under its physical and operational design. For new emissions sources, BAEs are zero.

DEC calculated PTE emissions from the sources and activities discussed above. Table 1 shows a summary of the net emissions increases for the project.

Table 1
Project PTE Emissions and PSD Applicability Analysis Summary (tpy)

Source	PM	PM_{10}	$PM_{2.5}$	SO_2	NOx	CO	VOC	CO_2e	Lead
Haul Roads - Loaded Trucks	1.23	0.32	0.03	--	--	--	--	--	--
Haul Roads - Unloaded Trucks	0.86	0.22	0.02	--	--	--	--	--	--
Excavation of Ash Basin	1.04	1.04	1.04	--	--	--	--	--	7.01E-05
Unloading of Excavated Ash at the Landfill	0.26	0.26	0.26	--	--	--	--	--	1.75E-05
Fugitive PM Emissions from Ash Basin (wind erosion)	4.09	2.05	0.31	--	--	--	--	--	7.97E-04
Fugitive PM Emissions from Landfill (wind erosion)	8.49	4.24	0.64	--	--	--	--	--	1.77E-03
Emergency Diesel Engines	0.04	0.04	0.04	0.0014	0.85	0.74	0.33	141.12	7.76E-06
Total Project Emissions Increase (PTE)	16.01	8.17	2.34	0.0014	0.85	0.74	0.33	141.12	2.66E-03
PSD Significant Emissions Rate	25	15	10	40	40	100	40	75,000	0.6
Is pollutant subject to PSD review?	No	No	No	No	No	No	No	No	No

Since the increase in emissions of regulated NSR pollutants from the project are below the PSD significant emissions rates as defined at 40 CFR 40 CFR 51.166(b)(23)(i), a PSD review is not required for this project.

VII. Facility-wide Toxics Demonstration

15A NCAC 02D .1100 CONTROL OF TOXIC AIR POLLUTANTS
As a result of this modification to excavate the CCR and relocate it from the AAB to a new lined ash landfill, which results in an increase in emissions in several toxic air pollutants, a facility-wide toxics modeling demonstration is triggered.

In accordance with 15A NCAC 02Q .0709(a), the owner or operator of a source who is applying for a permit or permit modification to emit toxic air pollutants shall:

i. demonstrate to the satisfaction of the Director through dispersion modeling that the emissions of toxic air pollutants from the facility will not cause any acceptable ambient level listed in 15A NCAC 02D .1104 to be exceeded beyond the premises (adjacent property boundary); or
ii. demonstrate to the satisfaction of the Commission or its delegate that the ambient concentration beyond the premises (adjacent property boundary) for the subject toxic air pollutants shall not adversely

affect human health (e.g., a risk assessment specific to the facility) though the concentration is higher than the acceptable ambient level in 15A NCAC 02D .1104.

As required by NCAC 02Q .0706(b), the owner or operator of the facility shall submit a permit application to comply with 15A NCAC 02D .1100 if the modification results in:

i. a net increase in emissions or ambient concentration of any toxic air pollutant that the facility was emitting before the modification; or
ii. emissions of any toxic air pollutant that the facility was not emitting before the modification if such emissions exceed the levels contained in 15A NCAC 02Q .0711.

As required by NCAC 02Q .0706(c), the permit application shall include an evaluation for all toxic air pollutants (TAPs) covered under 15A NCAC 02D .1104 for which there is:

i. a net increase in emissions of any toxic air pollutant that the facility was emitting before the modification; and
ii. emission of any toxic air pollutant that the facility was not emitting before the modification if such emissions exceed the levels contained in 15A NCAC 02Q .0711.

All sources at the facility, excluding sources exempt from evaluation in 15A NCAC 02Q .0702, emitting these toxic air pollutants shall be included in the evaluation.

State-Only Requirement

DEC performed a facility-wide air toxics analysis, for all permitted existing sources, including the Maximum Achievable Control Technology (MACT) sources. Air toxics emissions for the sources in this permit subject to a Part 63 MACT are exempt from air permitting, pursuant to 02Q .0702(a)(27)(B) and the Permittee is not required to model exempt MACT sources. Nevertheless, the Permittee has volunteered to include emissions for all such exempt sources in the modeling analysis.

In an email responding to questions sent on May 24, 2021 to Dan Markley regarding why certain permitted sources were not included in the modeling, an email was received June 4, 2021 from DEC's consultant (Jeff Connors with AECOM who performed the toxics modeling), explaining their rationale. For example, the emission rates are consistent with DEC's reported annual emissions inventory, the sources only include those with common triggered pollutants, and the analysis only includes one 80 kW emergency generator (at the NSLF) in operation since this is the worst-case scenario and it is not anticipated that both pumps would operate concurrently.

The proposed project will result in an increase in the maximum daily and annual emissions rates of several TAPs. In addition, certain TAP emissions from the facility exceed the 15A NCAC 02Q .0711 Toxic Pollutant Emission Rates (TPERs) requiring a permit. Therefore, a facility-wide air toxics analysis was performed for these TAPs and the TPER analysis indicates the following TPER rates were exceeded:

- Arsenic and Inorganic Arsenic Compounds – Annual (Carcinogens)
- Beryllium (7440-41-7) – Annual (Carcinogens)
- Cadmium (7440-43-9) – Annual (Carcinogens)
- Soluble Chromate Compounds, as Chromium (VI) Equivalents – Daily (Chronic Toxicants)
- Manganese and Compounds – Daily (Chronic Toxicants)
- Mercury, Vapor (7439-97-6) – Daily (Chronic Toxicants)
- Nickel (7440-02-0) – Daily (Chronic Toxicants)

Toxics Modeling Analysis

The first step in the toxics analysis, as stated above, is to determine if the modification results in a net increase in emissions or ambient concentration of any toxic air pollutant that the facility was emitting before the modification, or if the modification results in emissions of any toxic air pollutant that the facility was not emitting before the modification if such emissions exceed the levels contained in 15A NCAC 02Q .0711. Table 2 shows the potential emissions for the short-term and annual pollutants for the TAPs for which the modification results in a net increase in emissions that the facility was emitting before the

modification. There are no new TAPs being emitted for which the facility was not emitting before the modification.

TEPR Analysis

Once it was determined which TAP emissions were being increased due to the modification, the next step of the modeling analysis is to perform a TPER analysis using total facility-wide potential emissions from the proposed modification (Table 2) to determine if the TPERs in rule 02Q .0711 are exceeded for each TAP emission being increased.

Table 2
Toxic Pollutant Emission Rate (TPER) Analysis

Compound	Facility-wide Potential Emission Rates			TPER			TPER Exceeded?		
	lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr
Arsenic			158.69			0.053			yes
Beryllium			14.82			0.28			yes
Cadmium			20.99			0.37			yes
Chromium VI		0.15			0.013			yes	
Manganese		1.78			0.630			yes	
Mercury		0.29			0.013			yes	
Nickel		1.27			0.13			yes	

Air Toxics AAL Analysis

After the toxics exceeding their TPERs were identified (Table 2), a facility-wide air dispersion modeling analysis was completed using potential emissions to determine the resulting modeled ambient concentrations for comparison to the Acceptable Ambient Levels (AALs) in 15A NCAC 02D .1104.

To maximize operational flexibility and to possibly reduce the need for future TAP modeling analyses for these sources at the facility, DEC requested permit limits based on "optimized" emission rates. That is, based on the resulting concentrations from the potential model run, the potential emission rates for each source were increased to optimized rates which result in ambient concentrations that are a greater percent (approximately 98%) of the AALs than for the potential model run while still staying below 100% the AALs. Results of the baseline and optimized modeling analyses are shown in Table 3 and Table 4 respectively, with the resulting impacts and associated averaging period as a percent of the applicable AAL for each toxic.

Table 3
Results of Baseline Modeled Toxics Impacts

Pollutant	Max Year	Averaging Period	Maximum Impact (µg/m³)	AAL (µg/m3)	Percent of AAL (%)
Arsenic	2015	Annual	1.12E-03	2.1E-03	53
Beryllium	2015	Annual	1.84E-04	4.1E-03	4
Cadmium	2014	Annual	1.23E-04	5.5E-03	2
Chromium VI	2014	24-hour	3.27E-02	6.20E-01	5
Manganese	2014	24-hour	5 39E-01	3.1E+01	2
Mercury	2018	24-hour	7.80E-04	6.00E-01	0.1
Nickel	2014	24-hour	2.00E-01	6.00E+00	3

Table 4
Results of Optimized Modeled Toxics Impacts

Pollutant	Year	Averaging Period	Maximum Impact (µg/m³)	AAL (µg/m3)	Percent of AAL (%)
Arsenic	2015	Annual	2.06E-03	2.1E-03	98
Beryllium	2015	Annual	4.02E-03	4.1E-03	98
Cadmium	2014	Annual	5.38E-03	5.5E-03	98
Chromium VI	2014	24-hour	6.07E-01	6.20E-01	98
Manganese	2014	24-hour	3.04E+01	3.1E+01	98
Mercury	2018	24-hour	5.89E-01	6.00E-01	98
Nickel	2014	24-hour	5.88E+00	6.00E+00	98

DEC's toxics dispersion modeling analysis was approved by Nancy Jones, AQAB, (see memo to Ed Martin dated June 14, 2021). The modeling adequately demonstrates compliance, on a source-by-source basis, for all toxics modeled.

No toxics monitoring, recordkeeping, or reporting is required since the resulting impacts and percent of the AAL for all toxics for the potential (baseline) modeling are significantly below those for the optimized modeling.

Detailed source-by-source toxic emission rates (baseline and optimized) for each source are shown in DEC's application, Appendix D. The permit toxic limits for all sources modeled, except for the MACT sources, which are exempt from toxics permitting, are shown below in Table 5 and in permit condition 2.2.B.1.a.

Table 5
Permit Toxic Emission Limits

Emission Source	Toxic Air Pollutant	Emissions Limit	
		(lb/yr)	(lb/day)
CDRULBF (ES-8-1, ES-8-2A, ES-8-2B, ES-8-3)	arsenic and inorganic arsenic compounds beryllium (7440-41-7) cadmium (7440-43-9) manganese and compounds mercury, vapor (7439-97-6) nickel metal (7440-02-0)	1.39E-01 1.77E-01 6.86E-01	 6.68E-01 9.49E-04 1.48E-02
EPLSBF (ES-13, ES-14, ES-15)	arsenic and inorganic arsenic compounds beryllium (7440-41-7) cadmium (7440-43-9) manganese and compounds mercury, vapor (7439-97-6) nickel metal (7440-02-0)	4.32E-02 5.49E-02 2.13E-01	 2.07E-01 2.95E-04 4.61E-03
FILTSEP (ES-FS1/2, ES-FS1/2b, ES-FS3, ES-FS3b, ES-FS4, ES-FS4b, ES-FS5, ES-FS5b)	arsenic and inorganic arsenic compounds beryllium (7440-41-7) cadmium (7440-43-9) chromium VI (soluble chromate compounds) manganese and compounds mercury, vapor (7439-97-6) nickel metal (7440-02-0)	1.53E+00 2.68E+00 6.73E-01	 9.06E-03 3.67E-01 1.59E-03 8.36E-02
BINVENT1 (ES-AS1)	arsenic and inorganic arsenic compounds beryllium (7440-41-7) cadmium (7440-43-9) chromium VI (soluble chromate compounds) manganese and compounds	7.58E-01 1.32E+00 3.32E-01	 4.48E-03 1.81E-01

Emission Source	Toxic Air Pollutant	Emissions Limit	
		(lb/yr)	(lb/day)
	mercury, vapor (7439-97-6)		7.84E-04
	nickel metal (7440-02-0)		4.13E-02
BINVENT2	arsenic and inorganic arsenic compounds	7.58E-01	
(ES-AS2)	beryllium (7440-41-7)	1.32E+00	
	cadmium (7440-43-9)	3.32E-01	
	chromium VI (soluble chromate compounds)		4.48E-03
	manganese and compounds		1.81E-01
	mercury, vapor (7439-97-6)		7.84E-04
	nickel metal (7440-02-0)		4.13E-02
NSLF_AL	arsenic and inorganic arsenic compounds	2.29E-01	
Ash Loading at NSLF	beryllium (7440-41-7)	4.43E-01	
	cadmium (7440-43-9)	1.09E-01	
	chromium VI (soluble chromate compounds)		2.21E-03
	manganese and compounds		1.11E-01
	mercury, vapor (7439-97-6)		4.81E-04
	nickel metal (7440-02-0)		2.14E-02
AAB_AUL	arsenic and inorganic arsenic compounds	5.72E-02	
Ash Unloading at Active Ash Basin	beryllium (7440-41-7)	1.11E-01	
	cadmium (7440-43-9)	2.72E-02	
	chromium VI (soluble chromate compounds)		5.52E-04
	manganese and compounds		2.76E-02
	mercury, vapor (7439-97-6)		1.20E-04
	nickel metal (7440-02-0)		5.35E-03
LANDFILL	arsenic and inorganic arsenic compounds	7.38E-02	
(Fugitive 2, Fugitive 3, I-3)	beryllium (7440-41-7)	1.43E-01	
	cadmium (7440-43-9)	3.51E-02	
	chromium VI (soluble chromate compounds)		5.07E-04
	manganese and compounds		2.54E-02
	mercury, vapor (7439-97-6)		1.11E-04
	nickel metal (7440-02-0)		4.92E-03
FLS	arsenic and inorganic arsenic compounds	5.23E-02	
(F-LS, ES-10, ES-11A, ES-11B, ES-12)	beryllium (7440-41-7)	6.65E-02	
	cadmium (7440-43-9)	2.58E-01	
	manganese and compounds		2.97E+00
	mercury, vapor (7439-97-6)		4.23E-03
	nickel metal (7440-02-0)		6.61E-02
GYPSPILE	arsenic and inorganic arsenic compounds	3.86E-02	
(I-63, I-64, I-65, I-66, I-67)	cadmium (7440-43-9)	2.29E-01	
	manganese and compounds		3.86E+00
	mercury, vapor (7439-97-6)		4.30E-02
	nickel metal (7440-02-0)		3.36E-02
COALP	arsenic and inorganic arsenic compounds	3.46E-01	
(I-1)	beryllium (7440-41-7)	1.06E+00	
	cadmium (7440-43-9)	2.39E-01	
	chromium VI (soluble chromate compounds)		3.19E-02
	manganese and compounds		9.89E-01
	mercury, vapor (7439-97-6)		6.62E-02
	nickel metal (7440-02-0)		4.02E-01
NSLF_WA	arsenic and inorganic arsenic compounds	2.35E+00	
NSLF Wind Erosion - Active Area	beryllium (7440-41-7)	4.55E+00	
	cadmium (7440-43-9)	1.12E+00	
	chromium VI (soluble chromate compounds)		2.52E-01
	manganese and compounds		1.26E+01
	mercury, vapor (7439-97-6)		5.50E-02
	nickel metal (7440-02-0)		2.44E+00
NSLF_WIA	arsenic and inorganic arsenic compounds	2.53E-01	
NSLF Wind Erosion - Inactive Area	beryllium (7440-41-7)	4.91E-01	
	cadmium (7440-43-9)	1.21E-01	
	chromium VI (soluble chromate compounds)		2.72E-02

Emission Source	Toxic Air Pollutant	Emissions Limit	
		(lb/yr)	(lb/day)
	manganese and compounds		1.36E+00
	mercury, vapor (7439-97-6)		5.94E-03
	nickel metal (7440-02-0)		2.64E-01
AAB_WA	arsenic and inorganic arsenic compounds	4.69E+00	
Active Ash Basin Wind	beryllium (7440-41-7)	9.09E+00	
Erosion - Active Area	cadmium (7440-43-9)	2.24E+00	
	chromium VI (soluble chromate compounds)		5.04E-01
	manganese and compounds		2.53E+01
	mercury, vapor (7439-97-6)		1.10E-01
	nickel metal (7440-02-0)		4.89E+00
AAB_WIA	arsenic and inorganic arsenic compounds	1.08E+00	
Active Ash Basin Wind	beryllium (7440-41-7)	2.09E+00	
Erosion - Inactive Area	cadmium (7440-43-9)	5.13E-01	
	chromium VI (soluble chromate compounds)		1.16E-01
	manganese and compounds		5.80E+00
	mercury, vapor (7439-97-6)		2.53E-02
	nickel metal (7440-02-0)		1.12E+00

VIII. Public Hearing on the Draft Permit

In accordance with the CAMA (HOUSE BILL 630) §130A-309.203, the Department shall hold a public hearing and accept written comment on the draft permit decision for a period of not less than 30 or more than 60 days after the Department issues a draft permit decision.

The public notice requirement is for a construction and operating permit under the 15A NCAC 02Q .0300 procedures. EPA does not review the draft permit for the first step of a two-step 15A NCAC 02Q .0501(b)(2) Title V process. The second step of the 15A NCAC 02Q .0501(b)(2) Title V process will occur on or before 12 months after commencing operation.

IX. Other Requirements

PE Seal
A PE seal is not required since there are no air pollution capture or control systems being added in accordance with 02Q .0112.

Zoning
The Zoning Consistency Determination form was signed by Laura Hamilton, Land Use Coordinator, Gaston County Department of Building and Development Services, stating that the application had been received and that the proposed ash basin closure project operation is consistent with applicable zoning ordinances.

Fee Classification
The facility fee classification before and after this modification will remain as "Title V".

Increment Tracking
Gaston County has triggered increment tracking under PSD for PM-10, SO_2 and NOx. This modification will result in an increase of 1.86 pounds per hour of PM-10, an increase of and 0.0003 pounds per hour of SO_2., and an increase of 0.19 pounds per hour of NOx based on the following.

The emissions increase of PM_{10} is 8.98 tpy, the increase of SO_2 is 0.0014 tpy, and the increase of NOx is 0.85 tpy as shown in Table 1 above; therefore, the hourly increases are:

For PM-10: (8.17 tons/yr x 2000 lb/ton)/8760 hr/yr = 1.86 lb/hr

For SO_2: (0.0014 tons/yr x 2000 lb/ton)/8760 hr/yr = 0.0003 lb/hr

For NOx: (0.85 tons/yr x 2000 lb/ton)/8760 hr/yr = 0.19 lb/hr

X. Comments on Draft Permit

The draft permit and review were sent to Dan Markley at DEC, Karyn Kurek at the Mooresville Regional Office, and Samir Parekh with SSCB on June 17, 2021 for review.

DEC Comments
The following comments were received from Dan Markley on June 24, 2021 (there were no comments on the permit itself):

1. In the review document and also in the application the statement about the NSLF and SSLF is incorrect. It reads:

   Construction of two new starter lined landfills (NSLF and SSLF), totaling approximately 22-25 acres in area, to be temporary storage locations for CCR excavated from the AAB and other legacy ash disposal sites at the Allen facility.

   It should state that they are each approximately 21 acres. Worse case emissions were based on wind erosion and ash movement to the 20.8 acre NSLF (SSLF is 21.4 acres). Proposed language:

   Construction of two new starter lined landfills (NSLF and SSLF), each approximately 21 acres in area, to be temporary storage locations for CCR excavated from the AAB and other legacy ash disposal sites at the Allen facility.

2. We would also like to revise the insignificant activities list.

   Items to be removed:
   I-10 has been removed from service.
   I-39 this storage area has been decommissioned and the paint products that were in the building were processed through waste disposal channels.

   Items to be modified:
   I-9 has been removed from service and replaced with a 500-gallon gasoline tank (still above ground).
   I-32 the bulk sulfuric acid tank (5,000 gallons) was decommissioned and replaced with a 1,500 gallon tank.

   Items to be added:
   1000-gallon above ground diesel fuel tank (replaces the I-10 kerosene tank in that same location).
   200-gallon sulfuric acid tank at the Secondary Retention Pond chemical treatment building.
   330-gallon hydrochloric acid tank at the Ultra Filtration building.
   330-gallon sodium hypochlorite tank at the Ultra Filtration building.

SSCB Comments
The following comment was received from Samir Parekh on June 22, 2021:

1. To be consistent with other permits, the look back period of 2,200 hours indicated in the CAM plan on page 24, Section B of the table of the permit may be deleted (shown below).

   If a unit operates less than 2,200 hours during any calendar quarter, the facility may evaluate three-hour opacity values using operating data from the current and preceding quarters until 2,200 hours of data are obtained.

MRO Comments
No comments were received.

XI. Recommendations

Later