Permit / Application Information Sheet

Division of Environmental Protection

West Virginia Office of Air Quality

Company:	Nucor Steel West Virginia LLC	**Facility:**	NucorSteel
Region:	**Plant ID:** 053-00085	**Application #:**	14-0039
Engineer:	Kessler, Joe	**Category:**	
Physical Address:	N/A Apple Grove WV	**SIC:** [3312] PRIMARY METAL INDUSTRIES - BLAST FURNACES AND STEEL MILLS **NAICS:** [331110] Iron and Steel Mills and Ferroalloy Manufacturing	
County:	Mason		
Other Parties:	ENV_MGR - Alteri, Sean 980-244-9459		

Information Needed for Database and AIRS

1. Need valid physical West Virginia address with zip
2. Air Program
3. Inspection result
4. Pollutant and class

Regulated Pollutants

PM2.5	**Particulate Matter < 2.5 um**	**570.100 TPY**
PM10	**Particulate Matter < 10 um**	**617.540 TPY**
PT	**Total Particulate Matter**	**690.890 TPY**
SO2	**Sulfur Dioxide**	**361.480 TPY**
CO	**Carbon Monoxide**	**3262.610 TPY**
NOX	**Nitrogen Oxides (including NO, NO2, NO3, N2O3, N2O4, and N2O5)**	**701.590 TPY**
VOC	**Volatile Organic Compounds (Reactive organic gases)**	**178.360 TPY**
HAPOT	**[deprecated] Hazardous Air Pollutants Other**	**7.480 TPY**
CO2E	**Carbon Dioxide Equivalents**	**673848.000 TPY**
FL	**Fluorides**	**5.250 TPY**
PBC	**Lead Compounds**	**0.680 TPY**

Summary from this Permit 14-0039

Air Programs	**Applicable Regulations**
NSPS	
PSD	
TITLE V	
Title V/Major	

Fee Program	**Fee**	**Application Type**
1A	**$14,500.00**	**CONSTRUCTION**

Activity Dates

APPLICATION RECIEVED	01/21/2022	
ASSIGNED DATE	01/24/2022	
APPLICATION FEE PAID	01/24/2022	via cc
APPLICANT PUBLISHED LEGAL AD	01/27/2022	
APPLICATION INCOMPLETE	02/18/2022	
ADDITIONAL INFO RECEIVED	03/23/2022	
APPLICATION DEEMED COMPLETE	03/23/2022	
ADDITIONAL INFO RECEIVED	03/29/2022	
OAQ PUBLISHED LEGAL AD	03/30/2022	
PERMIT APPROVED	05/05/2022	

Notes from Database

Permit Note: Construction of a 3,000,000 tons per year sheet steel mill.

Permit Note: Application deemed incomplete for lack of air dispersion modeling results.

Permit Note: Revised application w/ modeling report and updated emissions units, emissions calculations, regulatory applicability section, etc. submitted on 3/23/22.

Permit Note: Public Meeting held 4/7/22.

NON-CONFIDENTIAL

Please note, this information sheet is not a substitute for file research and is limited to data entered into the AIRTRAX database.

Company ID: 053-00085
Company: Nucor Steel West Virginia LLC
Printed: 05/05/2022
Engineer: Kessler, Joe

Mink, Stephanie R <stephanie.r.mink@wv.gov>

West Virginia Air Quality Permit Issued

1 message

Mink, Stephanie R <stephanie.r.mink@wv.gov> Thu, May 5, 2022 at 3:02 PM
To: john.farris@nucor.com, sean.alteri@nucor.com, BBruscino@trinityconsultants.com
Cc: Joseph R Kessler <joseph.r.kessler@wv.gov>, Laura M Crowder <Laura.M.Crowder@wv.gov>, Beverly D McKeone <beverly.d.mckeone@wv.gov>

Permit Issued
Nucor Steel West Virginia LLC; West Virginia Steel Mill
Permit Application No. R14-0039
Plant ID No. 053-00085

Mr. Farris:

Your application for a permit as required by Section 5 of 45CSR13 - "Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permit Registrations, and Procedures for Evaluation" **has been approved**.

The attached R14-0039 is hereby issued pursuant to both 5.7 of 45CSR13 and 7.5 of 45CSR14 and required under Section 7 of 45CSR14. Please be aware of the notification requirements in the permit which pertain to commencement of construction, modification, or relocation activities; startup of operations; and suspension of operations.

A copy of the signed permit can be sent via USPS upon request, by contacting Stephanie Mink at (304)926-0499 ext. 41281.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §§22-5-14.

Should you have any questions, please contact Joe Kessler at (304) 926-0499 ext. 41271.

--

Stephanie Mink

Environmental Resources Associate

West Virginia Department of Environmental Protection

Division of Air Quality, Title V Permitting

601 57th Street SE

Charleston, WV 25304

Phone: 304-926-0499 x41281

053-00085_PERM_14-0039 Final Permit (w Appendix A).pdf
1021K

Mink, Stephanie R <stephanie.r.mink@wv.gov>

R14-0039 Final Determination Notification

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Thu, May 5, 2022 at 1:11 PM
To: Joseph R Kessler <joseph.r.kessler@wv.gov>
Bcc: stephanie.r.mink@wv.gov

This e-mail is being sent to interested parties to provide notification that a final determination has been made concerning the following permitting action:

Nucor Steel West Virginia LLC
West Virginia Steel Mill
Permit Application: R14-0039
Plant ID No.: 053-00085

The DAQ, pursuant to 45CSR13 and 45CSR14, has made a final determination to issue Permit R14-0039. Documents related to this permitting action, including the Final Determination, Final Permit, and substantive other documents/correspondence (under the label "IPR Files"), shall be made available at the following location within 24 hours (both on the page linked below under the “Popular Searches” tab and on the Application Xtender database):

https://dep.wv.gov/daq/permitting/Pages/NSR-Permit-Applications.aspx

Please note that any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §§22-5-14.

Thank You,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

IPR FILE INDEX

Applicant : **Nucor Steel West Virginia LLC** **Plant ID No.: 053-00085**
Facility : **West Virginia Steel Mill** **R14-0039**

Chronological Order - Add Index Pages As Necessary

Date	To	From	Subject
1/13/22	DAQ	Nucor	Modeling Protocol
1/13/22	Nucor	DAQ	Modeling Protocol Approval Letter
1/24/22	Nucor	DAQ	48-Hour E-mail
1/24/22	EPA	DAQ	EPA PSD Notification E-mail
1/24/22	FLMs	DAQ	FLMs PSD Notification E-mail
2/04/22	DAQ	Forest Service	FS Response E-mail
2/04/22	DAQ	National Park Service	NPS Response E-mail
2/11/22	DAQ	Nucor	Nucor Business Certificate
2/11/22	Nucor	DAQ	Forwarding FLM Response E-mails
2/15/22	Joe Kessler	Nucor	Nucor Affidavit of Publication
2/18/22	Nucor	DAQ	Incompleteness Status E-mail (Modeling Results Not Submitted)
2/23/22	Nucor	DAQ	Pre-Draft Permit
3/23/22	DAQ	Nucor	E-mails submitted w/ revised permit application (w/ final modeling report). Application is not included the IPR - it is independently in the AX database.
3/24/22	DAQ	Nucor	Nucor Business Certificate
3/24/22	DAQ	Nucor	E-mail w/ link to TCEQ Emission Factors
3/24/22	Nucor	DAQ	Completeness Status E-mail
3/25/22	Nucor	DAQ	Revised Pre-Draft Permit
3/27/22	DAQ	Nucor	Response to Comment Document from KY Permitting
3/28/22	DAQ	Nucor	TCEQ Rock Crushing Document
3/29/22	DAQ	Nucor	Additional Information E-mail
3/29/22	DAQ	Nucor	A corrected permit application (revision) was submitted to replace the revised version submitted on 3/23. Application is not included the IPR - it is independently in the AX database.
3/29/22	File	Joe Kessler	R14-0039 Draft Permit, Preliminary Determination, and Public Notice
3/30/22	Mason County	DAQ	Notification Fax w/ Public Notice
3/30/22	Ohio EPA	DAQ	Notification E-mail w/ Public Notice
3/30/22	Various	Stephanie Mink	Public Notification E-mail
4/07/22	File	Joe Kessler	DAQ Affidavit of Publication
4/10/22	Joe Kessler	Patricia Wears	Public Comment

Date	To	From	Subject
4/12/22	File	Joe Kessler	Public Meeting Documents
4/22/22	File	Joe Kessler	EPA Question/DAQ Response E-mail String
4/29/22	Joe Kessler	EPA	Comments on the Draft Permit & Preliminary Determination
5/4/22	DAQ	Nucor	Additional Information relating to EPA Comments
5/4/22	DAQ	Nucor	Additional Information relating to EPA Comments
5/4/22	EPA	Joe Kessler	Response to EPA Comments
5/5/22	Various	Joe Kessler	Final Determination Notification E-mail: FLMs and EPA.
5/5/22	Patricia Wears	Joe Kessler	Wears comment acknowledgment and final determination notification e-mail.

JRK
5/05/22

Kessler, Joseph R <joseph.r.kessler@wv.gov>

Re: Nucor Steel Comments

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Thu, May 5, 2022 at 1:06 PM
To: Patricia Wears <pwears1948@gmail.com>
Cc: Joseph R Kessler <joseph.r.kessler@wv.gov>

Ms. Wears, this e-mail acknowledges receipt of your comment concerning Nucor's proposed steel mill located near Apple Grove during the public comment period that ended on April 29, 2022. After consideration of all comments received, including yours, all available information indicates that Nucor Steel West Virginia LLC's proposed construction of a new sheet steel mill near Apple Grove, Mason County, WV, will meet the emission limitations and conditions set forth in the permit and will comply with all currently applicable state and federal air quality management rules and standards. Therefore, as you provided a comment on this permitting action, you are being notified that the WV Division of Air Quality has made a final determination to issue Permit Number R14-0039 to Nucor for the construction and operation of the WV Steel Mill. The final documents related to this permitting action may be accessed within 24 hours at the following location (both on the page linked below under the "Popular Searches" tab and on the Application Xtender database):

https://dep.wv.gov/daq/permitting/Pages/NSR-Permit-Applications.aspx

Please note that any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §§22-5-14.

Thank you,

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

On Sun, Apr 10, 2022 at 3:06 PM Patricia Wears <pwears1948@gmail.com> wrote:

> Sir, I think it is a darn shame that Mason County and the WV Goverment has gotten the Greed so bad . No one is thinking of the people of Apple Grove even the people. They are just seeing dollar signs. I just read the article in the Herald Dispatch. I Pray the whole mess just goes away. AEP an Nucor. What will this community be like after they get here. They will get no one to work and the illegals Will be brought in. You cannot look at their other states' violations. That is a line of bull. The way this world is now I pray God does step in and save us all. Greed has stepped in, power hungary people.

Kessler, Joseph R <joseph.r.kessler@wv.gov>

R14-0039 Final Determination Notification

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Thu, May 5, 2022 at 1:11 PM
To: Joseph R Kessler <joseph.r.kessler@wv.gov>
Bcc: "Supplee, Gwendolyn" <supplee.gwendolyn@epa.gov>, "Prosperi, Alexia - FS, MILWAUKEE, WI" <Alexia.Prosperi@usda.gov>, Andrea Stacy <andrea_stacy@nps.gov>, Jon D McClung <jon.d.mcclung@wv.gov>, Edward S Andrews <edward.s.andrews@wv.gov>, Rex E Compston <rex.e.compston@wv.gov>, Steven R Pursley <steven.r.pursley@wv.gov>, Stephanie E Hammonds <stephanie.e.hammonds@wv.gov>, Stephanie R Mink <stephanie.r.mink@wv.gov>

This e-mail is being sent to interested parties to provide notification that a final determination has been made concerning the following permitting action:

Nucor Steel West Virginia LLC
West Virginia Steel Mill
Permit Application: R14-0039
Plant ID No.: 053-00085

The DAQ, pursuant to 45CSR13 and 45CSR14, has made a final determination to issue Permit R14-0039. Documents related to this permitting action, including the Final Determination, Final Permit, and substantive other documents/correspondence (under the label "IPR Files"), shall be made available at the following location within 24 hours (both on the page linked below under the “Popular Searches” tab and on the Application Xtender database):

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Thank You,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

Kessler, Joseph R <joseph.r.kessler@wv.gov>

Re: EPA Comments on Nucor Steel West Virginia LLC Proposed Permit

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Wed, May 4, 2022 at 4:02 PM
To: "Supplee, Gwendolyn" <Supplee.Gwendolyn@epa.gov>, "Leary, Justin" <Leary.Justin@epa.gov>, "Wejrowski, Mark" <Wejrowski.Mark@epa.gov>, "Opila, MaryCate" <Opila.MaryCate@epa.gov>, "Leon-Guerrero, Tim" <Leon-Guerrero.Tim@epa.gov>
Cc: "McKeone, Beverly D" <beverly.d.mckeone@wv.gov>, Laura M Crowder <laura.m.crowder@wv.gov>, Jon D McClung <jon.d.mcclung@wv.gov>
Bcc: Bill Bruscino <bbruscino@trinityconsultants.com>, "Alteri, Sean [Corp]" <sean.alteri@nucor.com>

Please see the attached response to your comments concerning the following permitting action:

Nucor Steel West Virginia LLC
West Virginia Steel Mill
Permit Application: R14-0039
Plant ID No.: 053-00085

Thank You,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

On Fri, Apr 29, 2022 at 1:59 PM Supplee, Gwendolyn <Supplee.Gwendolyn@epa.gov> wrote:

> Hi Joe –
>
> Attached are EPA's comments on the Nucor Steel West Virginia LLC on the proposed Prevention of Significant Deterioration (PSD) Permit for Nucor Steel West Virginia LLC (Nucor). If you would like to discuss any of EPA's comments, please let me know, and I can set a meeting up.
>
> Many thanks, Gwen

Gwendolyn K. Supplee

Life Scientist

U.S. Environmental Protection Agency, Region 3

Air and Radiation Division

Permits Branch (3AD10)

Supplee.Gwendolyn@epa.gov

215-814-2763

EPA Comment Response (14-0039).pdf
1351K

Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475

Harold D. Ward, Cabinet Secretary
dep.wv.gov

May 4, 2022

Mary Cate Opila, P.E., Ph.D.
Chief, Permits Branch
U.S. EPA, Region III,
Air & Radiation Division

RE: **Response to Comments**
Nucor Steel West Virginia LLC
West Virginia Steel Mill
Permit No. R14-0039
Plant ID No. 053-00085

Dear Ms. Opila:

On April 29, 2022, the West Virginia Division of Air Quality (DAQ) received a letter from you with comments concerning Nucor Steel West Virginia LLC's (Nucor's) Preliminary Determination/Fact Sheet (PD/FS) and Draft Permit (R14-0039). The DAQ would like to thank you on the timely submission of the comments and take this opportunity to respond to each below. While your comments are summarized below, the provided responses are based on the full comments included in your letter.

I. COMMENTS ON PERMIT/ENGINEERING ANALYSIS

Comment A: Use of Slag on Facility Unpaved Haulroads
USEPA provided comments concerning the use of slag as a surface material on the unpaved roads and mobile work areas of the proposed facility. USEPA was concerned that the use of EAF slag as a surface material would possibly create unaccounted for sources of lead and other particulate matter hazardous air pollutants (PM-HAPs).

DAQ Response: Upon request, Nucor provided information on metals testing done on slag formed during steel making at their Decatur, Alabama facility. Nucor's Decatur facility is a sheet steel mill similar to the one proposed in West Virginia that also produces a slag comparable to the slag that will be produced from the proposed West Virginia mill. Data from Toxicity Characteristic Leaching

Procedure (TCLP) testing at the Decatur facility has shown "non-detect" (ND) levels of lead from three (3) different tests on the slag (and either ND or only trace amounts of other metals). Additionally, the DAQ believes it is not clear that, even if present in substantive amounts, lead or other metals encapsulated within the slag would have the same acute or chronic effects as emissions of these pollutants in elemental form. Therefore, based on the above, the DAQ does not believe it is necessary to quantify any additional sources of lead or PM-HAPs based on the use of slag on the facility's roadways or as a result of the slag processing operations at the facility. Please note that the lead emission rate from the slag cutting operations (SLAG-CUT) is based only on the AP-42, Table 1.4-2 emission factor for the trace amounts of lead emissions resulting from the combustion of natural gas in the slag torch (0.0005 lb/10^6 scf). Nucor did not calculate any lead emissions from material handling of the slag.

However, to further address your concern, the DAQ will add the following slag testing requirement in Permit Number R14-0039 to confirm the concentration levels of lead and other metals in the slag produced in the proposed West Virginia mill (requirement 4.3.6): "*Within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit, and at a minimum of once per rolling twelve (12) month period thereafter, the permittee shall perform a test on a representative sample of EAF and LMF slag (that was produced on-site) to determine the concentration of lead and other metals defined as HAPs in the slag. This testing shall be performed in accordance with a protocol submitted pursuant to 3.3.1(c).*"

Comment B(1): LMF VOC BACT

USEPA commented that the chosen BACT VOC emission limit for the LMF (0.005 lbs/ton) was higher than a different source in the RBLC (0.004 lbs/ton) and requested additional justification for this BACT selection.

DAQ Response: It is noted that the aggregate BACT emission limit was applied to the multiple emission sources of the EAF and LMF and that this combined BACT was 0.098 lb-VOC/ton-steel. This BACT is contrast to the much higher BACT applied to the Nucor Steel Mill permitted in Jewett, TX that was issued with an emission limit of 0.431 lb-VOC/ton-steel (which included therein an LMF emission rate of 0.004 lbs/ton). While the DAQ acknowledges that the BACT emission limit was based on an LMF contribution of 0.005 lb-VOC/ton-steel, we believe it is more appropriate to compare and review the "true" BACT limit given for the combination of the EAF/LMF. And using that metric, the proposed VOC BACT emission rate for the EAF/LMF is appropriate and far lower than the Jewett VOC BACT emission limit. Additionally, Nucor has noted that "*the resulting emission limit and compliance demonstration for* [the Jewett, TX facility] *was established as a combined EAF/LMF/Caster VOC emission limit. Hence, the individual 0.004 lb/ton VOC LMF limit has not been proven in practice.*"

Comment B(2): BACT Lime Fluxing

USEPA requested that lime fluxing - identified as a BACT control technology - should be required at all times.

DAQ Response: Pursuant to your comment, the word "or" was removed from footnote (8) of Table 4.1.4(a) of Permit R14-0039. However, the DAQ notes that Nucor has indicated that scenarios exist where grades of steel may be made that do not require lime fluxing or where lime fluxing is not appropriate. Additionally, Nucor has proposed installing SO_2 CEMS to provide a continuous compliance demonstration with the SO_2 BACT emission limit on the EAF/LMF stacks. To both

protect the BACT determination and not effectively redefine the source, the footnote will be revised to the following: "*The permittee shall limit the sulfur content of the EAF feedstock materials utilizing scrap management and shall add lime fluxing to the charge so as to meet the SO_2 emission limit given in this Table except and only at times where specific process requirements preclude the use of lime fluxing. At all times the SO_2 emission limits given in this table remain in effect.*"

Comment B(3): LMF SO_2 BACT

USEPA commented that no justification was provided for the LMF SO_2 BACT selection of 0.04 lb-SO_2/ton-steel.

DAQ Response: Nucor provided the following additional justification for the selection of an LMF BACT emission rate of 0.04 lb-SO_2/ton-steel:

> Nucor used EPA's recommended top-down, 5-step approach and RBLC database to establish separate EAF and LMF BACT emission limits for each process unit. There are limited individual entries for LMF SO_2 BACT in the RBLC database. In fact, most entries in the database present a combined emission limit representing the EAF/LMF, the melt shop, or other groupings of equipment. Nucor addressed the combined EAF/LMF BACT analysis in Section 4.4.2 of the application narrative. Through the top-down BACT analysis, Nucor identified the Scrap Management Plan as the most effective SO_2 control option and established a BACT emission limit consistent with the recently issued permit for Steel Dynamics Texas Mill (2020). The Steel Dynamics Texas permit contained a combined SO_2 BACT emission limit of 0.24 lb/ton on a rolling 30-day average with separate limits of 0.20 lb/ton for the EAF and 0.04 lb/ton for the LMF. The Nucor WV draft R14 permit contains the same EAF, LMF, and combined EAF/LMF SO_2 BACT emission limits as this recent BACT determination.

The DAQ would concur that the 0.24 lb-SO_2/ton-steel combined BACT limit on the EAFs/LMFs (again, the "true" enforceable BACT limit as given in the permit) is an appropriate selection of BACT based on Nucor's selection process and the data available.

Comment C: HCl Performance Testing/PKL1-SCR Monitoring

USEPA requested that, due to the importance of the pickling line scrubber in helping the facility stay under the major source threshold for HAPs, the permit should include compliance testing for this source to establish scrubber operating parameters, and include parametric monitoring for the scrubber operations after compliance testing is performed, to ensure that the scrubber meets the HCl emission limit and also ensures that the limit is enforceable.

DAQ Response: Pursuant to your comment, a performance test for HCl from the Pickling Line (PKL-1) was added to Table 4.3.2. of Permit R14-0039. It is noted that liquid flow rate monitoring is already required for the Pickling Line Scrubber (PKL1-SCR) and that under 4.1.10(d)(3), this flow rate is to be determined by "*manufacturer's recommendation or site-specific testing so as achieve compliance with the associated emission limit.*" The DAQ believes that liquid flow rate monitoring for PKL1-SCR within ranges established during the now required performance test is reasonable and appropriate for determining continuing compliance with the HCL emission limit from PKL-1.

Comment D: EPA Mailing Address
USEPA requested that their mailing address for correspondence be changed to that as given.

DAQ Response: Pursuant to your comment, the address was changed under Requirement 3.5.3. of Permit Number R14-0039.

Comment E: Melt Shop Collection System
USEPA requested that a periodic inspection be added to Requirement 4.1.10(c) relating to the requirements to maintain the Melt Shop particulate matter collection systems.

DAQ Response: Pursuant to your comment, Requirement 4.1.10(c) was rewritten to include a requirement for a periodic inspection. Requirement 4.1.10(c) now reads "*At a minimum of once per rolling twelve (12) month period, the permittee shall thoroughly inspect the melt shop particulate matter collection systems to determine if the hooding and duct systems are effective in capturing emissions from the intended equipment and in preventing excess fugitive emissions from the building. All holes, cracks, and other conditions that would substantially reduce the collection efficiency of the emission capture system shall be fixed upon discovery at any time including the annual inspection. The results of the inspection and any corrective action taken shall be recorded pursuant to section 4.4.1. Any inspection performed pursuant to 40 CFR §60.274a (d) shall count toward compliance with 4.1.10(c).*"

Comment F: GHG BACT Implementation Plan
USEPA requested that the requirement to submit a GHG Implementation Plan (4.1.11(e)) include language that WVDEP review and approve the plan.

DAQ Response: Pursuant to your comment, "for review and approval" was added to requirement 4.1.11(e) of Permit Number R14-0039. Requirement 4.1.11(e) now reads "*The permittee shall, within 60 days of plant startup, submit for review and approval to the Director a GHG BACT Implementation Plan that describes the method of implementation of the requirements given under (a) through (d) above. The plan will include specifics on actions taken to meet the requirements including training methods, use of specific energy efficient devices, O&M procedures, etc. This plan will thereafter be maintained on-site and updated as needed.*"

II. COMMENTS ON AIR QUALITY ANALYSIS REPORT

The responses to your comments concerning the Air Quality Analysis Report were prepared by Mr. Jon McClung (Modeling Supervisor) and are attached to this document.

Thank you for your timely comments concerning R14-0039. We will provide notification when a final determination is made regarding this permitting action and provide links to all final documents. Should you have any questions, please contact me at (304) 926-0499 ext. 41271 or Mr. Jon McClung at ext. 41277.

Sincerely,

Joseph Kessler

Digitally signed by: Joseph Kessler
DN: CN = Joseph Kessler email = joseph.r.kessler@wv.gov C = US O = WV Department of Environmental Protection OU = Division of Air Quality
Date: 2022.05.04 15:13:26 -04'00'

Joseph R. Kessler, PE
Engineer

MEMO

Jonathan D. McClung

Digitally signed by: Jonathan D. McClung
DN: CN = Jonathan D. McClung email = JON.D.MCCLUNG@WV.GOV C = AD O = Department of Environmental Protection OU = Division of Air Quality
Date: 2022.05.04 10:44:17 -04'00'

To: Joe Kessler
From: Jon McClung
CC: David Fewell, Bev McKeone, Ed Andrews, Steve Pursley, Rex Compston
Date: May 4, 2022
Re: Responses to EPA Region 3 Comments on Nucor's Air Quality Impact Analysis
Nucor Steel West Virginia LLC
West Virginia Steel Mill
PSD Permit Application: R14-0039
Plant ID: 053-00085

I have completed my review of EPA Region 3 comments on Nucor's air quality impact analysis submitted by Nucor Steel West Virginia LLC (Nucor) in support of the PSD permit application (R14-0039) for the proposed construction of a steel making plant in Apple Grove, West Virginia, within Mason County. This dispersion modeling analysis is required pursuant to §45-14-9 (Requirements Relating to the Source's Impact on Air Quality). I have prepared responses to EPA's comments and both the set of EPA's comments and my responses are attached.

Nucor has demonstrated that the proposed project will not cause or contribute to any violations of applicable NAAQS or increment standards.

West Virginia Department of Environmental Protection
Division of Air Quality
Response to comments on:

Nucor Steel Mill, Apple Grove, WV
PSD Air Permit Application Modeling Comments
Prepared by EPA Region 3, April 2022

3. Modeled Emission Sources

Comment 1: Electric arc furnace (EAF) slag contains a relatively high percentage of lead (as well as other heavy metals). The slag cutting and processing operation is the only slag-related lead source included in Nucor's lead modeling analysis. There are no lead emissions associated with any of the other slag handling, processing or stockpiling operations.

Nucor's modeling analysis contains PM emissions from all 4 slag handling, processing and stockpiling operations. These include slag cutting and processing (volume), slag processing (volume), slag stockpiling (volume) and slag cutting (point). EPA believes all of these slag sources should have been included in the lead modeling analysis unless they can be shown to be insignificant sources of lead emissions.

WVDAQ Response: Nucor has analyzed the slag from other Nucor facilities and these analyses result in non-detects for lead. The lead emissions from the slag cutting and processing operation only arise because of the lead emission factor relating to the combustion of natural gas. Since lead is not present in the slag, modeling for lead is not necessary in the other slag operations EPA notes in Comment 1.

Comment 2: Section 4.1.3. Material Handling & Storage Operations of Nucor's draft permit, item g (2) reads:

> *All unpaved roads and mobile work areas shall be graded with gravel, **slag, or a mixture of the two** so as to provide a suitable surface for the use of trucks and other heavy equipment. Unpaved roads and mobile work areas shall be provided with additional **slag** or gravel as needed to maintain the road surface;*

Given this condition, EPA feels that all road surfaces may be potential sources of lead since slag material (a potential lead source) can be used on Nucor road surfaces. Additionally, Nucor's permit application mentions the use of vacuum sweepers for additional dust control. The operation of these devices could also be another potential source of lead emissions.

EPA is concerned that Nucor's slag handling will contribute to possibly unaccounted sources of lead and other hazardous air pollutants or HAPs (mainly heavy metals) if the material is used on its haul roads. It would be prudent, in EPA's opinion, to provide some type of formal material analysis of the slag to gauge its potential to generate lead and HAPs air emissions.

WVDAQ Response: Please see response to Comment 1.

Comment 3: It appears that estimated slag particulate emissions assumed the EAF slag was at ambient temperature. Slag from tapped pots is extremely warm and can create vertical updrafts as it cools. The initial vertical release dimension (2.835 m) of the volume source associated with the slag stockpile source is relatively low. For comparison, the initial vertical release dimensions for the melt-shop fugitives, a very warm source (400 K) were 21.243 meters.

If slag in the stockpile areas has not cooled to temperatures near ambient levels, vertical updrafts from the cooling slag may loft (particulate) emissions much higher than the modeled initial vertical dimension. Additionally, very warm slag material in any outside uncontrolled areas may be significant sources of (additional) condensible particulate emissions. Poorly controlled emissions from exposed cooling slag have the potential to create off-site dusting issues.

WVDAQ Response: The AERMOD User's Guide (User's Guide for the AMS/EPA Regulatory Model (AERMOD) (EPA-454/B-21-001) contains guidelines on designating initial vertical and lateral dimensions for volume sources. These dimensions are determined solely based on physical dimensions without consideration for temperature influences.

From Table 3-2. (Summary of Suggested Procedures for Estimating Initial Lateral Dimensions σyo and Initial Vertical Dimensions σzo for Volume and Line Sources), the Initial Vertical Dimension (σzo) for an Elevated Source (he > 0) on or Adjacent to a Building is equal to the building height divided by 2.15. Table A-3. (Summary of Volume Source Parameters) from Nucor's electronic spreadsheet lists the melt shop fugitives building height as 42.67 m and the corresponding initial vertical dimension as 21.24 m ((42.67 m + 3m[roof vent height])/2.15m). This calculation does not account for thermal effects, which is consistent with EPA's User's Guide.

Accordingly, Nucor based the initial vertical dimension of the slag stockpile on the physical dimensions of the stockpile. EPA's comment is suggesting that Nucor effectively perform some type of dispersion analysis based on thermal effects to inform the calculation of the initial vertical dimension of a volume source when no rule or guidance exists.

Further, AERMOD is limited for volume sources in that even once initial vertical and lateral dimensions are specified thermal effects are not accounted for by AERMOD. WVDAQ suggests that EPA refine AERMOD to take account for thermal effects on volume and area sources in AERMOD. WVDAQ has determined that Nucor appropriately performed the dispersion modeling analysis.

Comment 4: There is a discrepancy in modeled stack base elevations for several sources in Nucor's modeling analysis. The (off-site) sources are listed as OH_1_1, OH_1_4 and OH_1_6 in the AERMOD LOCATION input file lines. Stack base elevations for these 3 sources are listed as 175.73 meters, 175.76 meters and 175.76 meters in the PM-2.5 NAAQS model input file and 178.6 meters (for all 3 sources) in the PM-10 NAAQS input file. OH_1_1 and OH_1_4 are also included in the 1-hour NO_2 NAAQS run. Both sources have stack base elevations of

178.6 meters, which match the values in the PM-10 NAAQS input file. This discrepancy in modeled stack base elevations should be properly addressed.

WVDAQ Response: Sources OH_1_1, OH_1_4, and OH_1_6 correspond to sources at the Kyger Creek Power Plant in Ohio and is 29.5 km from the proposed Nucor site. The modeled stack height for OH_1_1 and OH_1_4 is 253 meters. WVDAQ has modeled OH_1_1 and OH_1_4 at a stack height of 65 meters and the maximum modeled impact was virtually identical to the modeled impact at a stack height of 253 meters. WVDAQ believes that the very small differences in stack base elevations will result in insignificant differences in design concentrations and will not change the conclusions of the analysis. WVDAQ believes Nucor's modeling analysis is appropriate and acceptable.

Comment 5: Stack parameters for Nucor's emergency generator (EMGEN6) CO simulations appear to be slightly different than their values for the other pollutant model simulations. The CO (SIL) AERMOD input file lists the emergency generators stack height (in meters), stack temperature (in Kelvin), stack velocity (in meters per second) and stack diameter (in meters) as 2.44, 791.48, 4.51 and 0.4 respectively. Corresponding values for the emergency generator in the other pollutant model simulations are 2.438, 791.483, 4.505 and 0.396.

These differences appear to be due to rounding and probably do not impact final model concentrations significantly.

WVDAQ Response: WVDAQ believes that these differences are insignificant and will not affect the results of Nucor's air quality impact analysis.

Comment 6: Local elevations nearly match the stack base elevations across the different sources in the Nucor modeling analysis. This suggests little to no site regrading. Will there be any efforts to enhancing building base elevations during the Nucor steel mill construction phase that would change any of the modeled stack base elevations?

WVDAQ Response: Section 2.5.1 of the Final Permit states:

"The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Application R14-0039 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;

[45CSR§§13-5.10 and 13-10.3]"

WVDAQ has relied upon the plans and specifications in in Permit Application R14-0039 and reviewed the modeling analysis in accordance with these plans. The language included in Section 2.5.1 of the Final Permit requires Nucor to construct and operate in accordance with the application. Any changes would need to be addressed by Nucor in an appropriate permit modification.

3.5.3 Increment Consuming Regional Sources

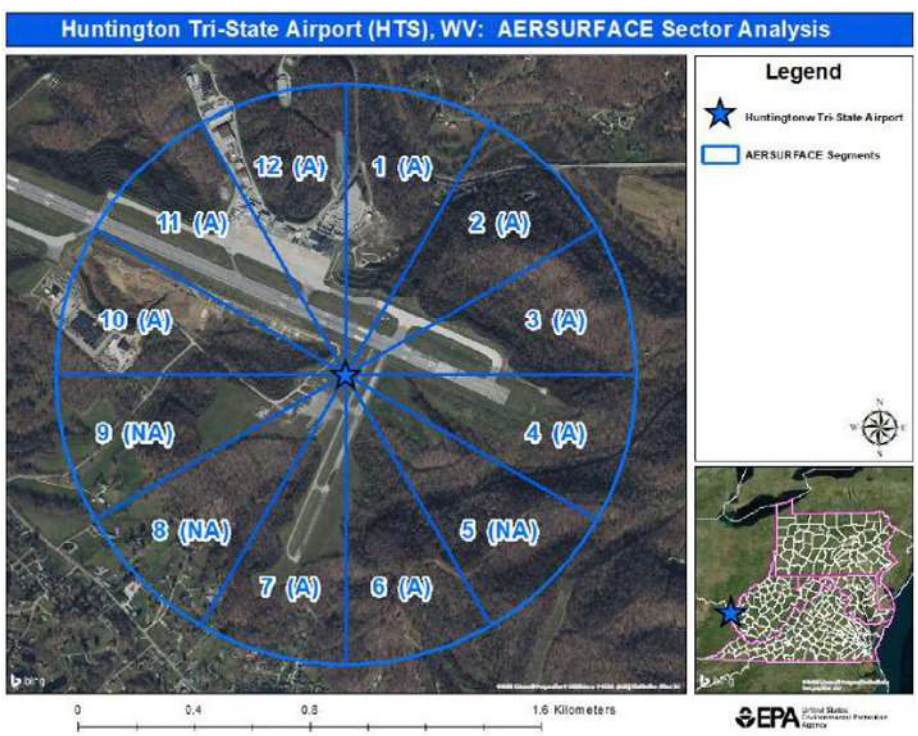
Comment 7: The list of sources shown in Table 3-1 almost certainly have had significant emission reductions since they were commissioned. A negative emission rate could be applicable in regards to NOx or SO_2 (if needed) for the increment analysis. Excluding the sources in the model increment analysis is probably conservative for these pollutants.

WVDAQ Response: WVDAQ agrees with EPA that the increment analysis is conservative and that Nucor's analysis is appropriate and acceptable.

4.6 Meteorological Data

Comment 8: It appears that the final AERMET processed input files used average, no-snow conditions in AERSURFACE. Surface roughness values were determined for 12 equal 30-degree sectors out to 1-km. The AERSURFACE input file indicates Nucor defined 9 sectors as "Airport" and 3 sectors as "Non-Airport". EPA Figure 1 shows the 12 sectors surrounding the HTS ASOS tower location, which was verified, and the AERSURFACE sector definitions (A = airport, NA = non-airport). Visually, most of the sector definitions appear to be assessed. Additional discussion on how to determine sector definitions (airport versus nonairport) can be found in EPA's AERSURFACE users guide sections 2.3.2, 2.4.1.3 and 3.2.10.

Figure 1. AERSURFACE Sectors for Huntington Tri-State Airport



WVDAQ Response: WVDAQ agrees that Nucor properly assessed the airport/non-airport designations in the AERSURFACE analysis. Nucor appropriately designated the project site as not having continuous snow cover ("no snow") and used average precipitation conditions for 2016, 2017, and 2020 and used wet precipitations for 2018 and 2019.

Comment 9: It doesn't appear that an analysis of local snow cover near the proposed Nucor steel mill was completed. Nor does it appear that an analysis was made to determine possible variability in soil moisture over the 5-year meteorological period used in the modeling analysis. An analysis of 30-year precipitation data is mentioned in this section but it doesn't appear to have actually been completed. Instead, it appears average (soil moisture) conditions were set for the entire 5-year simulation period. Snow-cover and soil moisture have impacts on the final albedo and Bowen ratios that are part of the AERMET stage 3 processing step.

Please confirm EPA's findings. This comment was made in order to enhance the meteorological documentation summary for the 5-year modeling analysis.

WVDAQ Response: WVDAQ evaluated the number of days with greater than 0.1 inches of snow at HTS (from https://w2.weather.gov/climate/index.php?wfo=rlx) and there was no month in the included 5 year (2016 – 2020) period that had more than 8 days of snow cover. Therefore, Nucor appropriately selected "no continuous snow cover" in the analysis.

Nucor included with the electronic modeling information the file "Precipitation Classification.csv" documenting the analysis of the 30-yr precipitation data. This analysis determined the 30th percentile and 70th percentile total annual precipitation amounts and then used these values to compare to the annual precipitation amounts for 2016 – 2020, which match the years of meteorological data used by Nucor in the dispersion modeling analysis. Precipitation below the 30th percentile is dry, between the 30th and 70th percentile is average, and over the 70th percentile is wet. The average, wet, and dry designations determine which set of albedo and Bowen ratio values are selected by AERSURFACE. This precipitation analysis by Nucor showed that 2016, 2017, and 2020 had average precipitation and 2018 and 2019 had wet precipitation conditions. Nucor used these annual designations in AERSURFACE which is appropriate.

WVDAQ also notes that several presentations at EPA's R/S/L Modelers' Workshops over the years have documented that AERMOD is relatively insensitive to differences in albedo and Bowen ratio.

Comment 10: The AERMINUTE input file lists the Huntington Tri-State Airport's (HTS) ice-free wind installation date as 4/19/2007. The actual date for HTS according to National Weather Service records appears to be 1/26/2007. EPA does not believe this error has any impact on the AERMINUTE processing.

WVDAQ Response: The WVDAQ agrees with EPA that this discrepancy does not have any impact on the AERMINUTE processing.

Comment 11: Nucor's modeling analysis only processed HTS's 1-minute data in AERMINUTE. AERMINUTE is capable of processing both 1-minute and 5-minute data. There is 5-minute data available for HTS. Utilizing the 5-minute data in tandem with the 1-minute data would allow for additional filling of missing hours in the final AERMET produces meteorological files if both the hourly and 1-minute values are missing.

WVDAQ Response: A potential concern related to the use of NWS meteorological data for dispersion modeling is the often high incidence of calms and variable wind conditions reported for the Automated Surface Observing Stations (ASOS) in use at most NWS stations since the mid-1990's. The purpose of AERMINUTE is to reduce the number of calms and missing winds in the surface data by using archived 1-minute winds for the ASOS stations to calculate hourly average wind speed and directions, which are used to supplement the standard archive of hourly observed winds processed in AERMET.

EPA notes in the AERMINUTE User's Guide (EPA-454/B-15-006) that "The impetus for including the 5-minute data files is due to 253 stations across the U.S. missing 1-minute data files for June through December of 2013. These stations did have 5-minute data files however that could be used to supplement the missing data." Nucor used NWS data from HTS for 2016 to 2020.

Nucor's AERMOD output files indicate that 43,848 hours of meteorological data were used in the modeling analysis, with 2375 calm hours identified, resulting in a calm hour percentage of 5.4%, which is a relatively low percentage of calms. WVDAQ acknowledges that 5-minute data can be used to supplement 1-minute data when 1-minute data is missing. WVDAQ further believes that Nucor's use of 1-minute data is appropriate and resulted in a relatively low level of calm winds and that the modeling analysis is reasonable and appropriate.

Comment 12: Huntington's 1-minute and 5-minute data appear to be missing from September of 2019 through March of 2020. Please confirm this for documentation purposes.

WVDAQ Response: Huntington's 1-minute data appear to be missing from September of 2019 through mid-April of 2020. AERMINUTE uses the 1-minute data to fill in data that are missing from the standard hourly ASOS data, and does not use the 1-minute data if the hourly data are present. As noted above, Nucor's AERMOD output files indicate that 43,848 hours of meteorological data were used in the modeling analysis, with 2375 calm hours identified, resulting in a calm hour percentage of 5.4%, which is a relatively low percentage of calms.

Comment 13: EPA reviewed the AERMET processing files provided by West Virginia. We have noted an issue with the Pittsburgh, PA upper air soundings for another application in Pennsylvania over the same 5-year simulation period Nucor processed. In some instances, Pittsburgh's upper air file does not contain a surface measurement line (labelled line 9 in the upper air file). Line 9 represents the surface measurement at the time the balloon is released Failure to collect surface measurements (line 9) prevents AERMET from processing the morning sounding data collected after the balloon is released. A warning flag is generated and posted to the

AERMET stage 1 report file. EPA identified this warning line in the AERMET Stage 1 files included in the Nucor modeling files. The line in the Stage 1 report (for 2017) reads:

20160606 UPPERAIR W36 GETFSL : SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG # 321

EPA has reviewed the AERMET sfc (surface) files used in Nucor's modeling analysis using R[1], a language and environment for statistical computing, and identified all days where AERMET produced no convective mixing heights over the 5-year simulation period. There were a total of 32 days in the modeling analysis that had no convective mixing heights in the AERMET ".sfc" file. AERMOD will not calculate model concentrations for hours that have positive heat flux but no morning sounding information. The lack of (daytime) convective mixing heights on 32 days out of 1,827 modeled days leads to a significant number of hours where model concentrations are basically missing from Nucor's modeling simulation. For the short-term 1-hr NO2 and SO2 NAAQS, this means there is a possibility that daily highs that could be occuring during daylight hours are not simulated in AERMOD on any day the morning sounding is not processed (a missing line 9 occurrence for example).

EPA surveyed Nucor's AERMET stage 1 report files and the Pittsburgh FSL file to come up with a more complete picture of potential factors that contributed to the unprocessed hours over the 5-year model simulation. The table on the next page summarizes all of the days with missing convective mixing heights. Of the 32 total days, 10 days were identified as having no morning sounding from Pittsburgh, 20 days were flagged as having a (morning) sounding without a surface measurement (line 9) and 2 days (highlighted in yellow) appear to have some other reason that no convective mixing heights were calculated by AERMET. The lines in highlighted in pink identify soundings with missing surface measurement for evening or afternoon hours. AERMET only processes "morning" soundings, which are used to construct the daytime convective mixing heights used by AERMOD. EPA suggests a more complete accounting of the "missing" morning soundings be constructed as well as some type of assessment if the days without convective mixing heights would have any impact on the final model concentrations. EPA will provide a "corrected" upper air file with an additional 20 days of upper air morning soundings. A substituted 12z surface measurement using the Pittsburgh ASOS site was inserted into the file to ensure the remainder of the sounding was processed by AERMET.

WVDAQ Response: EPA's *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA-454/R-99-005) provides guidance for the collection and processing of meteorological data for general use in air quality modeling applications. Guidance is provided for the in situ monitoring of primary meteorological variables (wind direction, wind speed, temperature, humidity, pressure, and radiation) for remote sensing of winds, temperature, and humidity, and for processing of derived meteorological variables such as stability, mixing height, and turbulence.

Although this document is guidance for the collection of data via site-specific monitors, it can also be applied to the evaluation of other types of data, including NWS airport data, which was used by Nucor. Page 5-4 of this document states that **"**the meteorological data base must be 90 percent complete (before substitution) in order to be acceptable for use in regulatory dispersion modeling." The AERMOD output files for the Nucor dispersion modeling analysis indicate

that 43,848 hours of meteorological data were processed with a total of 919 missing hours identified (2.10 Percent). This is a very high meteorological data completeness rate of 97.9%.

EPA notes in the analysis above that "The lack of (daytime) convective mixing heights on 32 days out of 1,827 modeled days leads to a significant number of hours where model concentrations are basically missing from Nucor's modeling simulation." This results in a data completeness rate of 98.2%.

Both the AERMOD output file completeness rate of 97.9% and EPA's convective mixing height completeness rate of 98.2% are very high and exceed EPA's completeness threshold identified in EPA's guidance (EPA-454/R-99-005). WVDAQ has determined that Nucor's meteorological data used in the dispersion modeling analysis is appropriate and acceptable and exceeds EPA's completeness requirements.

Nucor, WV: Summary of AERMET Days with Missing Convective Mixing Heights 2016-20

Date	PIT Morning Sounding	Convective Mixing Heights (Zic)	Stage 1 Report, W36	Hour Sounding Missing Line 9
2016-06-06		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-06-19		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-08-26		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-09-04		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-10-06			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2016-10-24			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2016-11-12		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-12-27		No Convective Mixing Heights		
2017-01-11		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-04-04			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-04.21			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-05-07			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-07-24			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-07-27		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-09-07		No Convective Mixing Heights		
2017-09-18			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	8
2017-10-27		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-11-03		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-11-09		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2018-01-04		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2018-03-15			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2018-05-16			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2018-08-19	No 12z Sounding	No Convective Mixing Heights		
2018-12-21	No 12z Sounding	No Convective Mixing Heights		
2018-12-29		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-01-16			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2019-02-13			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2019-03-24		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-04-01	No 12z Sounding	No Convective Mixing Heights		
2019-04-02	No 12z Sounding	No Convective Mixing Heights		
2019-04-20	No 12z Sounding	No Convective Mixing Heights		
2019-04-21	No 12z Sounding	No Convective Mixing Heights		
2019-04-22	No 12z Sounding	No Convective Mixing Heights		
2019-04-23	No 12z Sounding	No Convective Mixing Heights		
2019-04-28		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-05-05		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-05-20		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-06-28		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-07-22			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2019-09-02			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	8
2019-10-29		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-11-06		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-12-16		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2020-11-26	No 12z Sounding	No Convective Mixing Heights		
2020-11-27	No 12z Sounding	No Convective Mixing Heights		

4.8 Receptor Grids

Comment 14: EPA disagrees that the rail line that traverses through the western portion of Nucor's proposed facility does not constitute ambient air. The rail line appears to terminate at the M&G Polymers facility on the north side of the proposed Nucor steel plant. It's EPA's opinion that the rail line is not under control of Nucor. Furthermore, the personnel operating the locomotives that travel along this section of rail are not employed by Nucor. EPA would therefore counter that the area along the rail line constitutes ambient air and should be assessed for compliance with the NAAQS and PSD increments.

WVDAQ Response: The EPA defines ambient air at 40CFR50.1(e) – "***Ambient air*** means that portion of the atmosphere, external to buildings, to which the general public has access." The key point in this definition is access by the general public. WV DAQ has determined that Nucor will preclude access by the general public to the area along the rail line and disagrees with EPA that this area constitutes ambient air.

Nucor notes that railroad tracks and rights-of-way are private property and access by the general public is considered trespassing per W. Va. Code § 61-3B-3. This rule states, "It is an unlawful trespass for any person to knowingly, and without being authorized, licensed or invited, to enter or remain on any property, other than a structure or conveyance, as to which notice against entering or remaining is either given by actual communication to such person or by posting, fencing or cultivation." Nucor has identified methods that will preclude access by the general public to the rail line that traverses through Nucor's proposed facility. For the proposed facility location, Nucor will restrict general public access via physical fencing, signage at all entry and exit points, remote monitoring (e.g., 24-hour video surveillance), and on-site security staffing. Remote monitoring will provide Nucor constant surveillance of all facility access points and dedicated security staff will respond immediately to any potential trespassing incidents.

Furthermore, Nucor intends to establish routine security patrols to allow passageway to authorized personnel while monitoring and further deterring unauthorized general public access at all entry and exit points. Through these security measures, Nucor will preclude general public access and minimize all transient access to the proposed facility property Therefore, Nucor excluded receptors from the industrial plant roadways and main line railroads that cross the facility property. Finally, any transient access will not be by members of the general public.

Language has been added to the final permit requiring the permittee to restrict public access to all areas as indicated in the PSD Air Permit Application Modeling Report.

Comment 15: EPA is concerned that Nucor's modeled ambient air boundary may be improperly delineated. Nucor's operations will cover an extensive area. The facility's boundary along the Ohio River is approximately 2.2 km and the total perimeter is probably on the order of 7 km for the portion of the plant on the west side of WV Route 2 and 3 km and 4 km for the portions of the plant on the east side of WV Route 2. This is an extensive area to preclude public access via a physical boundary, such as a fence.

To ensure the ambient air boundary is properly controlled (outside of the rail line mentioned in our previous comment), it would be helpful if Nucor could provide additional explanation and documentation regarding some points on Figure 4-3 of Trinity's March 2022 *PSD Air Permit Application Modeling Report*. EPA is specifically concerned about possible public access along the property's frontage with WV Route 2, at the railroad access points (labeled C and D on Figure 4-3), the barge access points (labeled A and B on Figure 4-3) and the extensive fence line along the Ohio River boundary. This barrier, if improperly installed, may be subject to possible flooding damage. EPA notes there is about a 3-6 m increase in elevation from the normal pool elevation of the Ohio River to points inland along the eastern shore of the river. It's unclear if the fence should be within the Ohio River flood plain or if would be more prudent to place a barrier like this along the higher banks along east shore of the river.

WVDAQ Response: On December 2, 2019, EPA issued the memorandum *Revised Policy on Exclusions from Ambient Air*, from Andrew Wheeler to EPA Regional Administrators. This memo establishes the EPA policy that a fence or other physical barrier is not the only type of measure that may be used to establish that the general public does not have access to an area of land, and thereby that area of land would not fall within the definition of ambient air in 40CFR50.1(e) – "***Ambient air*** means that portion of the atmosphere, external to buildings, to which the general public has access."

This EPA revised policy expands methods for precluding access by the general public to include video surveillance, monitoring, clear signage, and routine security patrols. Further, EPA recognizes that future technologies could include drones and more advanced video surveillance technologies will potentially be used to preclude public access. The WVDAQ has determined that Nucor's proposed methods utilize a combination of physical barriers and methods consistent with EPA's revised policy and will preclude access by the general public.

For the proposed facility location, Nucor will restrict general public access via physical fencing, signage at all entry and exit points, remote monitoring (e.g., 24-hour video surveillance), and on-site security staffing. Remote monitoring will provide Nucor constant surveillance of all facility access points and dedicated security staff will respond immediately to any potential trespassing incidents. Furthermore, Nucor intends to establish routine security patrols to allow passageway to authorized personnel while monitoring and further deterring unauthorized general public access at all entry and exit points. Through these security measures, Nucor will preclude general public access and minimize all transient access to the proposed facility property. Finally, any transient access will not be by members of the general public.

As noted in the previous response, language has been added to the final permit requiring the permittee to restrict public access to all areas as indicated in the PSD Air Permit Application Modeling Report.

6.2 Class II NAAQS Analysis

Comment 16: Nucor's 1-hour SO_2 NAAQS modeling analysis does not appear to include several large coal-fired power plants in Gallia County, OH. These include the General J M Gavin

(Gavin) and Kyger Creek coal-fired power plants in Gallia County, OH. These power plants are significant SO_2 sources. Nucor selected a background monitor that was not impacted by these sources, *"[G]iven that the Gavin Power Plant is included in the regional inventory ..."* Instead, Nucor selected a more "regional" background site to avoid "double-counting"; explicitly modeling a source that is already accounted for in the background monitor concentration.

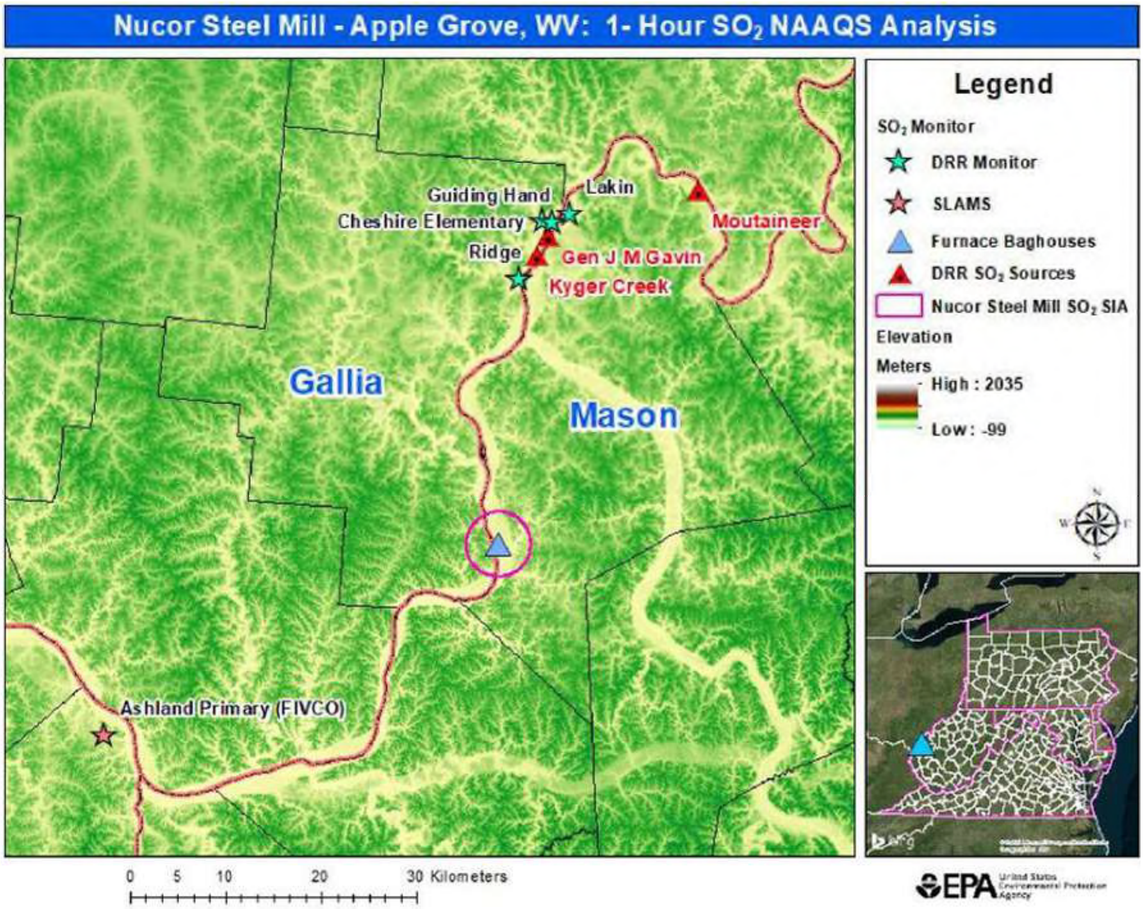
Nucor's 1-hr SO_2 NAAQS model input file does not include Gavin, Kyger Creek or Mountaineer, another coal-fired power plant in northern Mason County, WV. Nucor's 1-hr NO_2 analysis, however, does include the Gallia County, OH sources (and John Amos in Putnam County, WV). Annual 2021 SO_2 emissions reported to EPA's Clean Air Market Division (CAMD) were 25,792.6, 3,813.1 and 3,117.6 tons for Gavin, Kyger Creek and Mountaineer respectively. Figure 2 shows the location of Nucor's largest SO_2 sources, the Furnace Baghouses, Nucor's modeled 1-hr SO_2 significant impact area (SIA), the large Data Requirement Rule (DRR) sources in Gallia and Mason counties, the DRR SO_2 monitoring sites near Gavin and Kyger Creek and the SLAMS background monitor used for the 1-hr SO_2 NAAQS modeling analysis (Ashland Primary FIVCO).

Nucor's 1-hr SO_2 modeling analysis did not include the potential impacts of these large SO_2 DRR sources within the Nucor Steel Mill's modeled significant impact area (SIA). The DRR sources are neither explicitly modeled nor included in the model background concentration. In EPA's opinion, the potential impact of these sources is not properly accounted for in the 1-hr SO_2 NAAQS analysis and the analysis is therefore deficient.

To gauge the impact of the large DRR sources north of the Nucor steel mill in Gallia and Mason counties, EPA reran Nucor's 1-hr SO_2 NAAQS analysis using a 1-hr season by hour of day background concentration for the Lakin, WV (54-053-0001) DRR monitor. This monitor should provide a very conservative background concentration since it is located much closer to the Gavin and Kyger Creek DRR sources than the Nucor steel mill is. Table 1 shows the EPA constructed season by hour of day background SO_2 concentrations for the Lakin, WV monitor. Hour 1 values are probably missing due to that hour being used for daily calibration and maintenance activities. Modeled background concentrations for this hour were interpolated based on the hour 24 and hour 2 values.

Background concentrations are higher during the daytime hours and the spring, summer and fall seasons. Gavin and Kyger Creek's primary stacks are very high, over 200 meters based on the model input files, so vertical mixing must take place to bring stack emissions to ground level where the monitor is located. This accounts for daytime and the seasonal trends in the background concentrations. Vertical mixing is generally greatest during the daytime hours and outside of the cooler winter months when morning inversions are stronger and can limit daytime mixing depths.

Figure 2. Nucor 1-Hour SO_2 Modeling Analysis Overview



EPA used Nucor's receptor grid, which is limited to portions of the plant's SIA (where its emissions could exceed the 1-hr SO_2 significant impact levels) and extends roughly 3.4 km from the steel mill. Additionally, EPA reprocessed the AERMET input files to use the filled in Pittsburgh, PA upper air soundings as described in Comment 13. This reduced the number of "missing" hours summarized in the AERMOD output file from 919 hours to 766 hours.

Table 2 summarizes EPA's final revised modeling results using the Lakin, WV monitor background concentration along with the reprocessed meteorological data. Revised modeling showed modeled 1-hour SO_2 concentrations within the Nucor steel mill's SIA were below the NAAQS.

Table 1. EPA Constructed Season by Hour of Day SO_2 Background Concentrations

Lakin, WV (54-053-0001): 2018-20 Background SO2 Concentrations (ppb) by Season/Hour of Day												
	Winter			Spring			Summer			Fall		
Hour	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours
1		271	271		276	276		276	276		273	273
2	1.7	10	271	1.2	3	276	0.5	0	276	0.8	2	273
3	1.0	11	271	0.8	3	276	0.2	0	276	0.9	2	273
4	1.8	14	271	1.1	3	276	0.2	0	276	0.7	2	273
5	1.3	15	271	1.1	4	276	0.2	0	276	0.6	2	273
6	1.0	15	271	1.0	3	276	0.2	0	276	0.7	2	273
7	1.1	15	271	1.0	4	276	0.8	1	276	0.3	2	273
8	1.1	16	271	1.3	5	276	1.6	1	276	0.8	2	273
9	1.2	15	271	2.6	5	276	5.0	1	276	1.6	3	273
10	3.3	11	271	15.5	6	276	8.1	3	276	6.5	3	273
11	5.8	9	271	18.4	10	276	23.6	8	276	13.5	4	273
12	8.1	13	271	20.3	16	276	30.8	10	276	28.3	10	273
13	8.8	18	271	26.4	14	276	44.1	7	276	30.2	12	273
14	9.5	12	271	22.4	6	276	35.4	3	276	35.2	6	273
15	16.2	7	271	27.1	4	276	35.0	3	276	24.9	7	273
16	7.1	7	271	21.4	3	276	22.6	3	276	25.4	5	273
17	5.9	8	271	21.7	3	276	11.3	3	276	17.0	3	273
18	2.8	7	271	9.5	3	276	6.6	4	276	9.1	3	273
19	1.6	9	271	5.2	3	276	3.9	1	276	3.0	3	273
20	1.3	9	271	3.3	3	276	1.7	1	276	1.9	2	273
21	1.1	11	271	2.2	3	276	1.1	0	276	1.5	2	273
22	1.8	12	271	1.4	3	276	0.2	0	276	1.7	2	273
23	2.5	12	271	1.0	3	276	0.2	0	276	1.2	2	273
24	2.5	11	271	0.8	3	276	0.2	0	276	1.2	2	273

The peak model concentration for EPA's revised analysis is 46.5 ppb; this value was determined using EPA's accepted conversion factor of 196.4 $\mu g/m^3$ equaling 75 ppb. The summary table is based on results from the AERMOD MAXDCON file, which breaks down source group contributions to the final peak model concentration. Nucor's total contribution is about 5% of the peak model concentration with the background being the largest contributor to the peak model concentration. The background is conservative since it represents ambient concentrations near the Gallia County, OH DRR sources. Impacts from these sources should be much lower near the Nucor steel mill since it is located nearly 30 km from the Lakin, WV monitor.

Table 2. EPA's Revised 1-hr SO_2 NAAQS Analysis with Lankin, WV Background

Revised 1-hr SO2 Model Concentrations using Lakin, WV Background Concentration in Part per Billion (ppb)								
UTM Easting (m)	UTM Northing (m)	Elevation (m)	Furnace Baghouses (ppb)	Met Shop Fugitives (ppb)	Other Nucor (ppb)	Off-Site (ppb)	Background (ppb)	Peak Model (ppb)
398802.4	4278308.6	178.95	0.843	1.642	0.011	< 0.001	44.051	46.546

WVDAQ Response: WVDAQ has determined that Nucor adequately and appropriately considered the impacts from the Gavin and Kyger Creek Power Plants in Ohio and from the Mountaineer Power Plant in WV in the 1-hr SO_2 air quality analysis. The approved protocol states that "For SO_2 consideration, the nearest monitors to the proposed site are located in Cheshire, OH and Point Pleasant, WV, approximately 33 km north of the site and within the vicinity of the Gavin Power Plant. Considering the Gavin Power Plant is ***expected*** to be included in the regional inventory for the site, using the Cheshire or Point Pleasant monitors would result in "double-counting" of nearby source impacts." (emphasis added).

The approved protocol states that Nucor will use the 20D screening method and that "any sources beyond the SIA but within this ROI will be screened using the "20D" procedure. Under this Q/d-based screening procedure, sources outside the SIA will be excluded from the inventories for short-term averaging periods if the entire facility's emissions (tpy) are less than 20 times the distance (km) from the facility to Nucor, and sources outside the SIA will be excluded from the inventories for annual averaging periods if the entire facility's emissions (tpy) are less than 20 times the distance (km) from the facility to the nearest edge of the SIA." The radius of impact (ROI) is identified in the approved Nucor protocol as "…the radius of impact (ROI) [i.e., the significant impact area (SIA) plus 50 km (or 10 km for 1-hour NO_2 and SO_2…" Sources outside of the ROI would be excluded from the regional source inventory for the dispersion modeling analysis.

Table C-3. (Full Screening Analysis) of Trinity's modeling report contains the results of the regional source inventory screening analysis. For 1-hr SO_2, The Amos and Mountaineer Power Plants in WV and the Gavin and Kyger Creek Power Plants in Ohio are all excluded because they are beyond the radius of impact (ROI). From Table C-1. (Significant Impact Area) of Trinity's modeling report, the significant impact area for 1-hr SO_2 is 3.38 km. This means that at all receptor locations beyond 3.38 km Nucor's air quality impacts are below the significant impact level, and thus could not cause or contribute to a potential modeled violation of the 1-hr SO_2 NAAQS. The radius of impact (ROI) is defined for this 1-hr SO_2 analysis as the significant impact area (SIA) plus 10km. The ROI for 1-hr SO_2 is therefore 13.38 km (10 km plus 3.38 km).

From Table C-3 in Trinity's report, the distances from Nucor to the facilities in EPA's comment are: Mountaineer Power Plant in WV (41.4 km), Gavin Power Plant in OH (33.6 km), and Kyger Creek Power Plant in OH (29.5 km). The facilities identified by EPA's comment were included in the air quality impacts analysis by considering their emissions and distances from the proposed Nucor site and comparing to appropriate an appropriate screening level. All of the

distances for the facilities identified in EPA's comment are beyond the ROI of 13.38 km and were appropriately screened out of the dispersion modeling analysis.

In section 8.3.3.b.iii of 40CFR51(Appendix W), EPA states that "The number of nearby sources to be explicitly modeled in the air quality analysis is expected to be few except in unusual situations. In most cases, the few nearby sources will be located within the first 10 to 20 km from the source(s) under consideration." Nucor's screening analysis that excluded three facilities from the dispersion modeling analysis, which are significantly farther than 20 km from the proposed Nucor site, is consistent with Appendix W.

Finally, EPA's own analysis confirms that the analysis by Nucor is appropriate and demonstrates that the Nucor facility will not cause or contribute to any violation of the 1-hr SO_2 NAAQS.

Comment 17: Model background concentrations from the Ashland, KY monitor were included in Nucor's 1-hr NO_2 NAAQS analysis. The final modeling report did not contain a breakdown of the season by hour of day background concentrations included in the modeling analysis.

EPA downloaded the 2018 through 2020 1-hour NOx concentrations for the Ashland, KY monitor (21-019-0017) and calculated the season by hour of day NOx concentrations in accordance with EPA's March 1, 2011 clarification memorandum[2]; we used the average of the 3rd highest hourly values by hour of day and season for each year (2018 through 2020). Table 3 shows the EPA calculated background NOx concentrations that could be used in the AERMOD 1-hr NO_2 NAAQS analysis. Our values do not appear to match the values in the BACKGRND source section lines in the provided AERMOD input file. We ask that the AERMOD background concentrations be reexamined to ensure the correct values were modeled.

EPA notes that Nucor's 1-hr NO_2 modeling analysis is probably conservative given the background site appears to be significantly impacted by mobile source emissions. The model background monitor is located in a much more urban setting than the proposed Nucor steel mill. Given this setting, background (NO_2) values would probably be significantly lower than the actual modeled values if a more similar rural monitoring site, which would more closely resemble conditions near the Nucor steel mill, was used. Regardless, Nucor's modeling analysis shows modeled 1-hr NO_2 concentrations are below the NAAQS.

Table 3. EPA Constructed Season by Hour of Day NOx Background Concentrations

Askland Primary (FIVCO), KY (21-019-0017): 2018-20 Background NOx Concentrations (ppb) by Season/Hour of Day												
	Winter			Spring			Summer			Fall		
Hour	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours
1	57.3	0	270	28.0	0	276	14.0	1	276	33.3	0	273
2	54.0	211	270	29.0	184	276	8.0	184	276	9.0	256	273
3	60.0	148	270	26.0	184	276	13.0	184	276	37.0	135	273
4	60.0	0	270	34.0	1	276	15.3	0	276	35.0	0	273
5	64.0	0	270	38.7	0	276	15.3	1	276	37.0	0	273
6	68.7	18	270	43.3	21	276	15.3	20	276	38.3	20	273
7	72.0	18	270	51.3	22	276	17.0	19	276	39.0	21	273
8	72.3	0	270	61.0	8	276	18.7	5	276	47.3	4	273
9	76.0	5	270	46.3	8	276	16.7	7	276	59.3	5	273
10	76.3	6	270	28.7	11	276	11.7	10	276	44.0	5	273
11	52.0	5	271	12.7	11	276	8.0	9	276	35.0	6	273
12	41.3	4	271	8.0	12	276	5.3	11	276	20.0	6	273
13	17.3	5	271	7.0	14	276	3.7	11	276	12.3	5	273
14	17.0	6	271	6.0	9	276	3.0	9	276	10.7	2	273
15	14.7	7	271	5.3	6	276	2.0	8	276	8.7	0	273
16	16.3	5	271	6.3	4	276	2.7	5	276	9.3	1	273
17	22.3	5	270	6.0	3	276	3.3	4	276	11.3	1	273
18	29.7	2	270	6.7	2	276	3.0	3	276	16.0	0	273
19	45.3	0	270	8.7	0	276	4.3	0	276	22.0	0	273
20	44.7	0	270	13.3	0	276	5.0	1	276	28.7	1	273
21	44.0	0	270	19.3	0	276	6.3	1	276	29.7	0	273
22	45.7	0	270	21.0	0	276	8.0	1	276	29.7	0	273
23	43.7	0	270	21.0	0	276	9.7	1	276	29.7	0	273
24	49.0	0	270	25.0	0	276	13.7	1	276	33.0	0	273

WVDAQ Response: WVDAQ has determined that Nucor appropriately derived 1-hr NO_2 background values by season-and-hour-of-day. WVDAQ independently obtained the raw hourly NO_2 monitored values and developed the season-and-hour-of-day values consistent with EPA guidance. WVDAQ values match the values used by Nucor found in the model input file, with limited exceptions for values that required substitution because of missing values during calibration of monitoring equipment. WVDAQ agrees with EPA that the NO_2 background values used are likely to be much higher than the actual background values of NO_2 at the project site. As EPA notes, Nucor's modeling analysis shows modeled 1-hr NO_2 concentrations are below the NAAQS.

Kessler, Joseph R <joseph.r.kessler@wv.gov>

Re: EPA Comments on Nucor Steel West Virginia LLC Proposed Permit

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Wed, May 4, 2022 at 4:02 PM
To: "Supplee, Gwendolyn" <Supplee.Gwendolyn@epa.gov>, "Leary, Justin" <Leary.Justin@epa.gov>, "Wejrowski, Mark" <Wejrowski.Mark@epa.gov>, "Opila, MaryCate" <Opila.MaryCate@epa.gov>, "Leon-Guerrero, Tim" <Leon-Guerrero.Tim@epa.gov>
Cc: "McKeone, Beverly D" <beverly.d.mckeone@wv.gov>, Laura M Crowder <laura.m.crowder@wv.gov>, Jon D McClung <jon.d.mcclung@wv.gov>
Bcc: Bill Bruscino <bbruscino@trinityconsultants.com>, "Alteri, Sean [Corp]" <sean.alteri@nucor.com>

Please see the attached response to your comments concerning the following permitting action:

Nucor Steel West Virginia LLC
West Virginia Steel Mill
Permit Application: R14-0039
Plant ID No.: 053-00085

Thank You,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

On Fri, Apr 29, 2022 at 1:59 PM Supplee, Gwendolyn <Supplee.Gwendolyn@epa.gov> wrote:

> Hi Joe –
>
> Attached are EPA's comments on the Nucor Steel West Virginia LLC on the proposed Prevention of Significant Deterioration (PSD) Permit for Nucor Steel West Virginia LLC (Nucor). If you would like to discuss any of EPA's comments, please let me know, and I can set a meeting up.
>
> Many thanks, Gwen
>
> **Gwendolyn K. Supplee**
>
> Life Scientist
>
> U.S. Environmental Protection Agency, Region 3
>
> Air and Radiation Division
>
> Permits Branch (3AD10)
>
> Supplee.Gwendolyn@epa.gov
>
> 215-814-2763

EPA Comment Response (14-0039).pdf
1351K

Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475

Harold D. Ward, Cabinet Secretary
dep.wv.gov

May 4, 2022

Mary Cate Opila, P.E., Ph.D.
Chief, Permits Branch
U.S. EPA, Region III,
Air & Radiation Division

RE: **Response to Comments**
Nucor Steel West Virginia LLC
West Virginia Steel Mill
Permit No. R14-0039
Plant ID No. 053-00085

Dear Ms. Opila:

On April 29, 2022, the West Virginia Division of Air Quality (DAQ) received a letter from you with comments concerning Nucor Steel West Virginia LLC's (Nucor's) Preliminary Determination/Fact Sheet (PD/FS) and Draft Permit (R14-0039). The DAQ would like to thank you on the timely submission of the comments and take this opportunity to respond to each below. While your comments are summarized below, the provided responses are based on the full comments included in your letter.

I. COMMENTS ON PERMIT/ENGINEERING ANALYSIS

Comment A: Use of Slag on Facility Unpaved Haulroads
USEPA provided comments concerning the use of slag as a surface material on the unpaved roads and mobile work areas of the proposed facility. USEPA was concerned that the use of EAF slag as a surface material would possibly create unaccounted for sources of lead and other particulate matter hazardous air pollutants (PM-HAPs).

DAQ Response: Upon request, Nucor provided information on metals testing done on slag formed during steel making at their Decatur, Alabama facility. Nucor's Decatur facility is a sheet steel mill similar to the one proposed in West Virginia that also produces a slag comparable to the slag that will be produced from the proposed West Virginia mill. Data from Toxicity Characteristic Leaching

Procedure (TCLP) testing at the Decatur facility has shown "non-detect" (ND) levels of lead from three (3) different tests on the slag (and either ND or only trace amounts of other metals). Additionally, the DAQ believes it is not clear that, even if present in substantive amounts, lead or other metals encapsulated within the slag would have the same acute or chronic effects as emissions of these pollutants in elemental form. Therefore, based on the above, the DAQ does not believe it is necessary to quantify any additional sources of lead or PM-HAPs based on the use of slag on the facility's roadways or as a result of the slag processing operations at the facility. Please note that the lead emission rate from the slag cutting operations (SLAG-CUT) is based only on the AP-42, Table 1.4-2 emission factor for the trace amounts of lead emissions resulting from the combustion of natural gas in the slag torch (0.0005 lb/10^6 scf). Nucor did not calculate any lead emissions from material handling of the slag.

However, to further address your concern, the DAQ will add the following slag testing requirement in Permit Number R14-0039 to confirm the concentration levels of lead and other metals in the slag produced in the proposed West Virginia mill (requirement 4.3.6): "*Within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit, and at a minimum of once per rolling twelve (12) month period thereafter, the permittee shall perform a test on a representative sample of EAF and LMF slag (that was produced on-site) to determine the concentration of lead and other metals defined as HAPs in the slag. This testing shall be performed in accordance with a protocol submitted pursuant to 3.3.1(c).*"

Comment B(1): LMF VOC BACT

USEPA commented that the chosen BACT VOC emission limit for the LMF (0.005 lbs/ton) was higher than a different source in the RBLC (0.004 lbs/ton) and requested additional justification for this BACT selection.

DAQ Response: It is noted that the aggregate BACT emission limit was applied to the multiple emission sources of the EAF and LMF and that this combined BACT was 0.098 lb-VOC/ton-steel. This BACT is contrast to the much higher BACT applied to the Nucor Steel Mill permitted in Jewett, TX that was issued with an emission limit of 0.431 lb-VOC/ton-steel (which included therein an LMF emission rate of 0.004 lbs/ton). While the DAQ acknowledges that the BACT emission limit was based on an LMF contribution of 0.005 lb-VOC/ton-steel, we believe it is more appropriate to compare and review the "true" BACT limit given for the combination of the EAF/LMF. And using that metric, the proposed VOC BACT emission rate for the EAF/LMF is appropriate and far lower than the Jewett VOC BACT emission limit. Additionally, Nucor has noted that "*the resulting emission limit and compliance demonstration for* [the Jewett, TX facility] *was established as a combined EAF/LMF/Caster VOC emission limit. Hence, the individual 0.004 lb/ton VOC LMF limit has not been proven in practice.*"

Comment B(2): BACT Lime Fluxing

USEPA requested that lime fluxing - identified as a BACT control technology - should be required at all times.

DAQ Response: Pursuant to your comment, the word "or" was removed from footnote (8) of Table 4.1.4(a) of Permit R14-0039. However, the DAQ notes that Nucor has indicated that scenarios exist where grades of steel may be made that do not require lime fluxing or where lime fluxing is not appropriate. Additionally, Nucor has proposed installing SO_2 CEMS to provide a continuous compliance demonstration with the SO_2 BACT emission limit on the EAF/LMF stacks. To both

protect the BACT determination and not effectively redefine the source, the footnote will be revised to the following: "*The permittee shall limit the sulfur content of the EAF feedstock materials utilizing scrap management and shall add lime fluxing to the charge so as to meet the SO_2 emission limit given in this Table except and only at times where specific process requirements preclude the use of lime fluxing. At all times the SO_2 emission limits given in this table remain in effect.*"

Comment B(3): LMF SO_2 BACT
USEPA commented that no justification was provided for the LMF SO_2 BACT selection of 0.04 lb-SO_2/ton-steel.

DAQ Response: Nucor provided the following additional justification for the selection of an LMF BACT emission rate of 0.04 lb-SO_2/ton-steel:

> Nucor used EPA's recommended top-down, 5-step approach and RBLC database to establish separate EAF and LMF BACT emission limits for each process unit. There are limited individual entries for LMF SO_2 BACT in the RBLC database. In fact, most entries in the database present a combined emission limit representing the EAF/LMF, the melt shop, or other groupings of equipment. Nucor addressed the combined EAF/LMF BACT analysis in Section 4.4.2 of the application narrative. Through the top-down BACT analysis, Nucor identified the Scrap Management Plan as the most effective SO_2 control option and established a BACT emission limit consistent with the recently issued permit for Steel Dynamics Texas Mill (2020). The Steel Dynamics Texas permit contained a combined SO_2 BACT emission limit of 0.24 lb/ton on a rolling 30-day average with separate limits of 0.20 lb/ton for the EAF and 0.04 lb/ton for the LMF. The Nucor WV draft R14 permit contains the same EAF, LMF, and combined EAF/LMF SO_2 BACT emission limits as this recent BACT determination.

The DAQ would concur that the 0.24 lb-SO_2/ton-steel combined BACT limit on the EAFs/LMFs (again, the "true" enforceable BACT limit as given in the permit) is an appropriate selection of BACT based on Nucor's selection process and the data available.

Comment C: HCl Performance Testing/PKL1-SCR Monitoring
USEPA requested that, due to the importance of the pickling line scrubber in helping the facility stay under the major source threshold for HAPs, the permit should include compliance testing for this source to establish scrubber operating parameters, and include parametric monitoring for the scrubber operations after compliance testing is performed, to ensure that the scrubber meets the HCl emission limit and also ensures that the limit is enforceable.

DAQ Response: Pursuant to your comment, a performance test for HCl from the Pickling Line (PKL-1) was added to Table 4.3.2. of Permit R14-0039. It is noted that liquid flow rate monitoring is already required for the Pickling Line Scrubber (PKL1-SCR) and that under 4.1.10(d)(3), this flow rate is to be determined by "*manufacturer's recommendation or site-specific testing so as achieve compliance with the associated emission limit.*" The DAQ believes that liquid flow rate monitoring for PKL1-SCR within ranges established during the now required performance test is reasonable and appropriate for determining continuing compliance with the HCL emission limit from PKL-1.

Comment D: EPA Mailing Address
USEPA requested that their mailing address for correspondence be changed to that as given.

DAQ Response: Pursuant to your comment, the address was changed under Requirement 3.5.3. of Permit Number R14-0039.

Comment E: Melt Shop Collection System
USEPA requested that a periodic inspection be added to Requirement 4.1.10(c) relating to the requirements to maintain the Melt Shop particulate matter collection systems.

DAQ Response: Pursuant to your comment, Requirement 4.1.10(c) was rewritten to include a requirement for a periodic inspection. Requirement 4.1.10(c) now reads "*At a minimum of once per rolling twelve (12) month period, the permittee shall thoroughly inspect the melt shop particulate matter collection systems to determine if the hooding and duct systems are effective in capturing emissions from the intended equipment and in preventing excess fugitive emissions from the building. All holes, cracks, and other conditions that would substantially reduce the collection efficiency of the emission capture system shall be fixed upon discovery at any time including the annual inspection. The results of the inspection and any corrective action taken shall be recorded pursuant to section 4.4.1. Any inspection performed pursuant to 40 CFR §60.274a (d) shall count toward compliance with 4.1.10(c).*"

Comment F: GHG BACT Implementation Plan
USEPA requested that the requirement to submit a GHG Implementation Plan (4.1.11(e)) include language that WVDEP review and approve the plan.

DAQ Response: Pursuant to your comment, "for review and approval" was added to requirement 4.1.11(e) of Permit Number R14-0039. Requirement 4.1.11(e) now reads "*The permittee shall, within 60 days of plant startup, submit for review and approval to the Director a GHG BACT Implementation Plan that describes the method of implementation of the requirements given under (a) through (d) above. The plan will include specifics on actions taken to meet the requirements including training methods, use of specific energy efficient devices, O&M procedures, etc. This plan will thereafter be maintained on-site and updated as needed.*"

II. COMMENTS ON AIR QUALITY ANALYSIS REPORT

The responses to your comments concerning the Air Quality Analysis Report were prepared by Mr. Jon McClung (Modeling Supervisor) and are attached to this document.

Thank you for your timely comments concerning R14-0039. We will provide notification when a final determination is made regarding this permitting action and provide links to all final documents. Should you have any questions, please contact me at (304) 926-0499 ext. 41271 or Mr. Jon McClung at ext. 41277.

Sincerely,

Joseph Kessler

Digitally signed by: Joseph Kessler
DN: CN = Joseph Kessler email = joseph.r.kessler@wv.gov C = US O = WV Department of Environmental Protection OU = Division of Air Quality
Date: 2022.05.04 15:13:26 -04'00'

Joseph R. Kessler, PE
Engineer

MEMO

Jonathan D. McClung

Digitally signed by: Jonathan D. McClung
DN: CN = Jonathan D. McClung email = JON.D.MCCLUNG@WV.GOV C = AD O = Department of Environmental Protection OU = Division of Air Quality
Date: 2022.05.04 10:44:17 -04'00'

To: Joe Kessler
From: Jon McClung
CC: David Fewell, Bev McKeone, Ed Andrews, Steve Pursley, Rex Compston
Date: May 4, 2022
Re: Responses to EPA Region 3 Comments on Nucor's Air Quality Impact Analysis
Nucor Steel West Virginia LLC
West Virginia Steel Mill
PSD Permit Application: R14-0039
Plant ID: 053-00085

I have completed my review of EPA Region 3 comments on Nucor's air quality impact analysis submitted by Nucor Steel West Virginia LLC (Nucor) in support of the PSD permit application (R14-0039) for the proposed construction of a steel making plant in Apple Grove, West Virginia, within Mason County. This dispersion modeling analysis is required pursuant to §45-14-9 (Requirements Relating to the Source's Impact on Air Quality). I have prepared responses to EPA's comments and both the set of EPA's comments and my responses are attached.

Nucor has demonstrated that the proposed project will not cause or contribute to any violations of applicable NAAQS or increment standards.

West Virginia Department of Environmental Protection
Division of Air Quality
Response to comments on:

Nucor Steel Mill, Apple Grove, WV
PSD Air Permit Application Modeling Comments
Prepared by EPA Region 3, April 2022

3. Modeled Emission Sources

Comment 1: Electric arc furnace (EAF) slag contains a relatively high percentage of lead (as well as other heavy metals). The slag cutting and processing operation is the only slag-related lead source included in Nucor's lead modeling analysis. There are no lead emissions associated with any of the other slag handling, processing or stockpiling operations.

Nucor's modeling analysis contains PM emissions from all 4 slag handling, processing and stockpiling operations. These include slag cutting and processing (volume), slag processing (volume), slag stockpiling (volume) and slag cutting (point). EPA believes all of these slag sources should have been included in the lead modeling analysis unless they can be shown to be insignificant sources of lead emissions.

WVDAQ Response: Nucor has analyzed the slag from other Nucor facilities and these analyses result in non-detects for lead. The lead emissions from the slag cutting and processing operation only arise because of the lead emission factor relating to the combustion of natural gas. Since lead is not present in the slag, modeling for lead is not necessary in the other slag operations EPA notes in Comment 1.

Comment 2: Section 4.1.3. Material Handling & Storage Operations of Nucor's draft permit, item g (2) reads:

> *All unpaved roads and mobile work areas shall be graded with gravel, **slag, or a mixture of the two** so as to provide a suitable surface for the use of trucks and other heavy equipment. Unpaved roads and mobile work areas shall be provided with additional **slag** or gravel as needed to maintain the road surface;*

Given this condition, EPA feels that all road surfaces may be potential sources of lead since slag material (a potential lead source) can be used on Nucor road surfaces. Additionally, Nucor's permit application mentions the use of vacuum sweepers for additional dust control. The operation of these devices could also be another potential source of lead emissions.

EPA is concerned that Nucor's slag handling will contribute to possibly unaccounted sources of lead and other hazardous air pollutants or HAPs (mainly heavy metals) if the material is used on its haul roads. It would be prudent, in EPA's opinion, to provide some type of formal material analysis of the slag to gauge its potential to generate lead and HAPs air emissions.

WVDAQ Response: Please see response to Comment 1.

Comment 3: It appears that estimated slag particulate emissions assumed the EAF slag was at ambient temperature. Slag from tapped pots is extremely warm and can create vertical updrafts as it cools. The initial vertical release dimension (2.835 m) of the volume source associated with the slag stockpile source is relatively low. For comparison, the initial vertical release dimensions for the melt-shop fugitives, a very warm source (400 K) were 21.243 meters.

If slag in the stockpile areas has not cooled to temperatures near ambient levels, vertical updrafts from the cooling slag may loft (particulate) emissions much higher than the modeled initial vertical dimension. Additionally, very warm slag material in any outside uncontrolled areas may be significant sources of (additional) condensible particulate emissions. Poorly controlled emissions from exposed cooling slag have the potential to create off-site dusting issues.

WVDAQ Response: The AERMOD User's Guide (User's Guide for the AMS/EPA Regulatory Model (AERMOD) (EPA-454/B-21-001) contains guidelines on designating initial vertical and lateral dimensions for volume sources. These dimensions are determined solely based on physical dimensions without consideration for temperature influences.

From Table 3-2. (Summary of Suggested Procedures for Estimating Initial Lateral Dimensions σyo and Initial Vertical Dimensions σzo for Volume and Line Sources), the Initial Vertical Dimension (σzo) for an Elevated Source (he > 0) on or Adjacent to a Building is equal to the building height divided by 2.15. Table A-3. (Summary of Volume Source Parameters) from Nucor's electronic spreadsheet lists the melt shop fugitives building height as 42.67 m and the corresponding initial vertical dimension as 21.24 m ((42.67 m + 3m[roof vent height])/2.15m). This calculation does not account for thermal effects, which is consistent with EPA's User's Guide.

Accordingly, Nucor based the initial vertical dimension of the slag stockpile on the physical dimensions of the stockpile. EPA's comment is suggesting that Nucor effectively perform some type of dispersion analysis based on thermal effects to inform the calculation of the initial vertical dimension of a volume source when no rule or guidance exists.

Further, AERMOD is limited for volume sources in that even once initial vertical and lateral dimensions are specified thermal effects are not accounted for by AERMOD. WVDAQ suggests that EPA refine AERMOD to take account for thermal effects on volume and area sources in AERMOD. WVDAQ has determined that Nucor appropriately performed the dispersion modeling analysis.

Comment 4: There is a discrepancy in modeled stack base elevations for several sources in Nucor's modeling analysis. The (off-site) sources are listed as OH_1_1, OH_1_4 and OH_1_6 in the AERMOD LOCATION input file lines. Stack base elevations for these 3 sources are listed as 175.73 meters, 175.76 meters and 175.76 meters in the PM-2.5 NAAQS model input file and 178.6 meters (for all 3 sources) in the PM-10 NAAQS input file. OH_1_1 and OH_1_4 are also included in the 1-hour NO_2 NAAQS run. Both sources have stack base elevations of

178.6 meters, which match the values in the PM-10 NAAQS input file. This discrepancy in modeled stack base elevations should be properly addressed.

WVDAQ Response: Sources OH_1_1, OH_1_4, and OH_1_6 correspond to sources at the Kyger Creek Power Plant in Ohio and is 29.5 km from the proposed Nucor site. The modeled stack height for OH_1_1 and OH_1_4 is 253 meters. WVDAQ has modeled OH_1_1 and OH_1_4 at a stack height of 65 meters and the maximum modeled impact was virtually identical to the modeled impact at a stack height of 253 meters. WVDAQ believes that the very small differences in stack base elevations will result in insignificant differences in design concentrations and will not change the conclusions of the analysis. WVDAQ believes Nucor's modeling analysis is appropriate and acceptable.

Comment 5: Stack parameters for Nucor's emergency generator (EMGEN6) CO simulations appear to be slightly different than their values for the other pollutant model simulations. The CO (SIL) AERMOD input file lists the emergency generators stack height (in meters), stack temperature (in Kelvin), stack velocity (in meters per second) and stack diameter (in meters) as 2.44, 791.48, 4.51 and 0.4 respectively. Corresponding values for the emergency generator in the other pollutant model simulations are 2.438, 791.483, 4.505 and 0.396.

These differences appear to be due to rounding and probably do not impact final model concentrations significantly.

WVDAQ Response: WVDAQ believes that these differences are insignificant and will not affect the results of Nucor's air quality impact analysis.

Comment 6: Local elevations nearly match the stack base elevations across the different sources in the Nucor modeling analysis. This suggests little to no site regrading. Will there be any efforts to enhancing building base elevations during the Nucor steel mill construction phase that would change any of the modeled stack base elevations?

WVDAQ Response: Section 2.5.1 of the Final Permit states:

"The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Application R14-0039 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;

[45CSR§§13-5.10 and 13-10.3]"

WVDAQ has relied upon the plans and specifications in in Permit Application R14-0039 and reviewed the modeling analysis in accordance with these plans. The language included in Section 2.5.1 of the Final Permit requires Nucor to construct and operate in accordance with the application. Any changes would need to be addressed by Nucor in an appropriate permit modification.

3.5.3 Increment Consuming Regional Sources

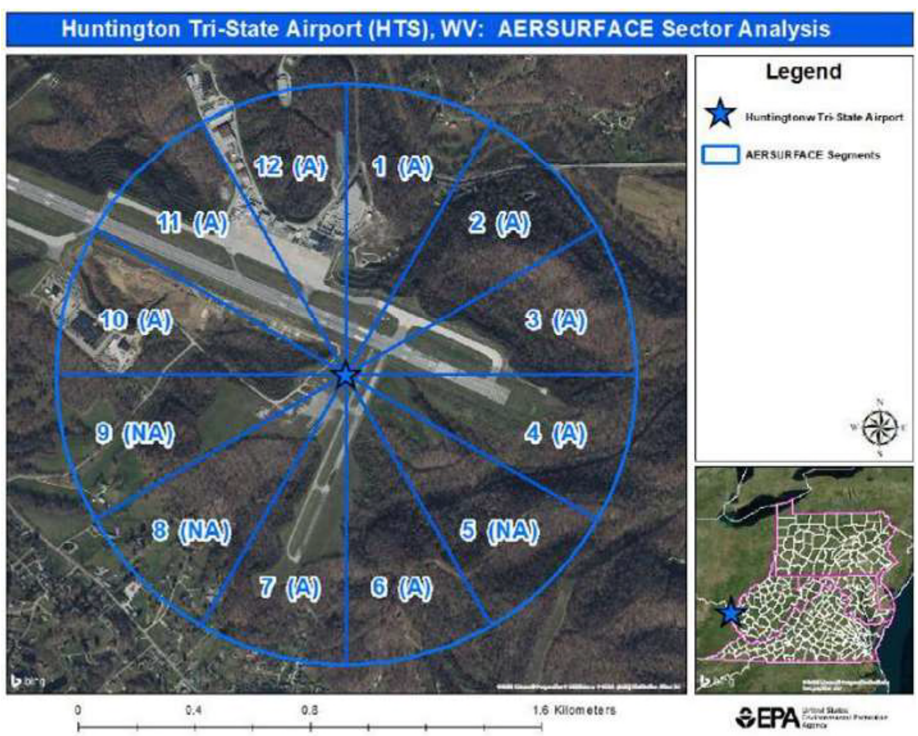
Comment 7: The list of sources shown in Table 3-1 almost certainly have had significant emission reductions since they were commissioned. A negative emission rate could be applicable in regards to NOx or SO_2 (if needed) for the increment analysis. Excluding the sources in the model increment analysis is probably conservative for these pollutants.

WVDAQ Response: WVDAQ agrees with EPA that the increment analysis is conservative and that Nucor's analysis is appropriate and acceptable.

4.6 Meteorological Data

Comment 8: It appears that the final AERMET processed input files used average, no-snow conditions in AERSURFACE. Surface roughness values were determined for 12 equal 30-degree sectors out to 1-km. The AERSURFACE input file indicates Nucor defined 9 sectors as "Airport" and 3 sectors as "Non-Airport". EPA Figure 1 shows the 12 sectors surrounding the HTS ASOS tower location, which was verified, and the AERSURFACE sector definitions (A = airport, NA = non-airport). Visually, most of the sector definitions appear to be assessed. Additional discussion on how to determine sector definitions (airport versus nonairport) can be found in EPA's AERSURFACE users guide sections 2.3.2, 2.4.1.3 and 3.2.10.

Figure 1. AERSURFACE Sectors for Huntington Tri-State Airport



WVDAQ Response: WVDAQ agrees that Nucor properly assessed the airport/non-airport designations in the AERSURFACE analysis. Nucor appropriately designated the project site as not having continuous snow cover ("no snow") and used average precipitation conditions for 2016, 2017, and 2020 and used wet precipitations for 2018 and 2019.

Comment 9: It doesn't appear that an analysis of local snow cover near the proposed Nucor steel mill was completed. Nor does it appear that an analysis was made to determine possible variability in soil moisture over the 5-year meteorological period used in the modeling analysis. An analysis of 30-year precipitation data is mentioned in this section but it doesn't appear to have actually been completed. Instead, it appears average (soil moisture) conditions were set for the entire 5-year simulation period. Snow-cover and soil moisture have impacts on the final albedo and Bowen ratios that are part of the AERMET stage 3 processing step.

Please confirm EPA's findings. This comment was made in order to enhance the meteorological documentation summary for the 5-year modeling analysis.

WVDAQ Response: WVDAQ evaluated the number of days with greater than 0.1 inches of snow at HTS (from https://w2.weather.gov/climate/index.php?wfo=rlx) and there was no month in the included 5 year (2016 – 2020) period that had more than 8 days of snow cover. Therefore, Nucor appropriately selected "no continuous snow cover" in the analysis.

Nucor included with the electronic modeling information the file "Precipitation Classification.csv" documenting the analysis of the 30-yr precipitation data. This analysis determined the 30th percentile and 70th percentile total annual precipitation amounts and then used these values to compare to the annual precipitation amounts for 2016 – 2020, which match the years of meteorological data used by Nucor in the dispersion modeling analysis. Precipitation below the 30th percentile is dry, between the 30th and 70th percentile is average, and over the 70th percentile is wet. The average, wet, and dry designations determine which set of albedo and Bowen ratio values are selected by AERSURFACE. This precipitation analysis by Nucor showed that 2016, 2017, and 2020 had average precipitation and 2018 and 2019 had wet precipitation conditions. Nucor used these annual designations in AERSURFACE which is appropriate.

WVDAQ also notes that several presentations at EPA's R/S/L Modelers' Workshops over the years have documented that AERMOD is relatively insensitive to differences in albedo and Bowen ratio.

Comment 10: The AERMINUTE input file lists the Huntington Tri-State Airport's (HTS) ice-free wind installation date as 4/19/2007. The actual date for HTS according to National Weather Service records appears to be 1/26/2007. EPA does not believe this error has any impact on the AERMINUTE processing.

WVDAQ Response: The WVDAQ agrees with EPA that this discrepancy does not have any impact on the AERMINUTE processing.

Comment 11: Nucor's modeling analysis only processed HTS's 1-minute data in AERMINUTE. AERMINUTE is capable of processing both 1-minute and 5-minute data. There is 5-minute data available for HTS. Utilizing the 5-minute data in tandem with the 1-minute data would allow for additional filling of missing hours in the final AERMET produces meteorological files if both the hourly and 1-minute values are missing.

WVDAQ Response: A potential concern related to the use of NWS meteorological data for dispersion modeling is the often high incidence of calms and variable wind conditions reported for the Automated Surface Observing Stations (ASOS) in use at most NWS stations since the mid-1990's. The purpose of AERMINUTE is to reduce the number of calms and missing winds in the surface data by using archived 1-minute winds for the ASOS stations to calculate hourly average wind speed and directions, which are used to supplement the standard archive of hourly observed winds processed in AERMET.

EPA notes in the AERMINUTE User's Guide (EPA-454/B-15-006) that "The impetus for including the 5-minute data files is due to 253 stations across the U.S. missing 1-minute data files for June through December of 2013. These stations did have 5-minute data files however that could be used to supplement the missing data." Nucor used NWS data from HTS for 2016 to 2020.

Nucor's AERMOD output files indicate that 43,848 hours of meteorological data were used in the modeling analysis, with 2375 calm hours identified, resulting in a calm hour percentage of 5.4%, which is a relatively low percentage of calms. WVDAQ acknowledges that 5-minute data can be used to supplement 1-minute data when 1-minute data is missing. WVDAQ further believes that Nucor's use of 1-minute data is appropriate and resulted in a relatively low level of calm winds and that the modeling analysis is reasonable and appropriate.

Comment 12: Huntington's 1-minute and 5-minute data appear to be missing from September of 2019 through March of 2020. Please confirm this for documentation purposes.

WVDAQ Response: Huntington's 1-minute data appear to be missing from September of 2019 through mid-April of 2020. AERMINUTE uses the 1-minute data to fill in data that are missing from the standard hourly ASOS data, and does not use the 1-minute data if the hourly data are present. As noted above, Nucor's AERMOD output files indicate that 43,848 hours of meteorological data were used in the modeling analysis, with 2375 calm hours identified, resulting in a calm hour percentage of 5.4%, which is a relatively low percentage of calms.

Comment 13: EPA reviewed the AERMET processing files provided by West Virginia. We have noted an issue with the Pittsburgh, PA upper air soundings for another application in Pennsylvania over the same 5-year simulation period Nucor processed. In some instances, Pittsburgh's upper air file does not contain a surface measurement line (labelled line 9 in the upper air file). Line 9 represents the surface measurement at the time the balloon is released Failure to collect surface measurements (line 9) prevents AERMET from processing the morning sounding data collected after the balloon is released. A warning flag is generated and posted to the

AERMET stage 1 report file. EPA identified this warning line in the AERMET Stage 1 files included in the Nucor modeling files. The line in the Stage 1 report (for 2017) reads:

20160606 UPPERAIR W36 GETFSL : SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG # 321

EPA has reviewed the AERMET sfc (surface) files used in Nucor's modeling analysis using R[1], a language and environment for statistical computing, and identified all days where AERMET produced no convective mixing heights over the 5-year simulation period. There were a total of 32 days in the modeling analysis that had no convective mixing heights in the AERMET ".sfc" file. AERMOD will not calculate model concentrations for hours that have positive heat flux but no morning sounding information. The lack of (daytime) convective mixing heights on 32 days out of 1,827 modeled days leads to a significant number of hours where model concentrations are basically missing from Nucor's modeling simulation. For the short-term 1-hr NO2 and SO2 NAAQS, this means there is a possibility that daily highs that could be occuring during daylight hours are not simulated in AERMOD on any day the morning sounding is not processed (a missing line 9 occurrence for example).

EPA surveyed Nucor's AERMET stage 1 report files and the Pittsburgh FSL file to come up with a more complete picture of potential factors that contributed to the unprocessed hours over the 5-year model simulation. The table on the next page summarizes all of the days with missing convective mixing heights. Of the 32 total days, 10 days were identified as having no morning sounding from Pittsburgh, 20 days were flagged as having a (morning) sounding without a surface measurement (line 9) and 2 days (highlighted in yellow) appear to have some other reason that no convective mixing heights were calculated by AERMET. The lines in highlighted in pink identify soundings with missing surface measurement for evening or afternoon hours. AERMET only processes "morning" soundings, which are used to construct the daytime convective mixing heights used by AERMOD. EPA suggests a more complete accounting of the "missing" morning soundings be constructed as well as some type of assessment if the days without convective mixing heights would have any impact on the final model concentrations. EPA will provide a "corrected" upper air file with an additional 20 days of upper air morning soundings. A substituted 12z surface measurement using the Pittsburgh ASOS site was inserted into the file to ensure the remainder of the sounding was processed by AERMET.

WVDAQ Response: EPA's *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA-454/R-99-005) provides guidance for the collection and processing of meteorological data for general use in air quality modeling applications. Guidance is provided for the in situ monitoring of primary meteorological variables (wind direction, wind speed, temperature, humidity, pressure, and radiation) for remote sensing of winds, temperature, and humidity, and for processing of derived meteorological variables such as stability, mixing height, and turbulence.

Although this document is guidance for the collection of data via site-specific monitors, it can also be applied to the evaluation of other types of data, including NWS airport data, which was used by Nucor. Page 5-4 of this document states that **"**the meteorological data base must be 90 percent complete (before substitution) in order to be acceptable for use in regulatory dispersion modeling." The AERMOD output files for the Nucor dispersion modeling analysis indicate

that 43,848 hours of meteorological data were processed with a total of 919 missing hours identified (2.10 Percent). This is a very high meteorological data completeness rate of 97.9%.

EPA notes in the analysis above that "The lack of (daytime) convective mixing heights on 32 days out of 1,827 modeled days leads to a significant number of hours where model concentrations are basically missing from Nucor's modeling simulation." This results in a data completeness rate of 98.2%.

Both the AERMOD output file completeness rate of 97.9% and EPA's convective mixing height completeness rate of 98.2% are very high and exceed EPA's completeness threshold identified in EPA's guidance (EPA-454/R-99-005). WVDAQ has determined that Nucor's meteorological data used in the dispersion modeling analysis is appropriate and acceptable and exceeds EPA's completeness requirements.

Nucor, WV: Summary of AERMET Days with Missing Convective Mixing Heights 2016-20

Date	PIT Morning Sounding	Convective Mixing Heights (Zic)	Stage 1 Report, W36	Hour Sounding Missing Line 9
2016-06-06		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-06-19		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-08-26		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-09-04		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-10-06			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2016-10-24			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2016-11-12		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-12-27		No Convective Mixing Heights		
2017-01-11		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-04-04			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-04.21			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-05-07			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-07-24			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-07-27		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-09-07		No Convective Mixing Heights		
2017-09-18			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	8
2017-10-27		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-11-03		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-11-09		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2018-01-04		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2018-03-15			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2018-05-16			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2018-08-19	No 12z Sounding	No Convective Mixing Heights		
2018-12-21	No 12z Sounding	No Convective Mixing Heights		
2018-12-29		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-01-16			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2019-02-13			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2019-03-24		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-04-01	No 12z Sounding	No Convective Mixing Heights		
2019-04-02	No 12z Sounding	No Convective Mixing Heights		
2019-04-20	No 12z Sounding	No Convective Mixing Heights		
2019-04-21	No 12z Sounding	No Convective Mixing Heights		
2019-04-22	No 12z Sounding	No Convective Mixing Heights		
2019-04-23	No 12z Sounding	No Convective Mixing Heights		
2019-04-28		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-05-05		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-05-20		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-06-28		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-07-22			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2019-09-02			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	8
2019-10-29		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-11-06		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-12-16		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2020-11-26	No 12z Sounding	No Convective Mixing Heights		
2020-11-27	No 12z Sounding	No Convective Mixing Heights		

4.8 Receptor Grids

Comment 14: EPA disagrees that the rail line that traverses through the western portion of Nucor's proposed facility does not constitute ambient air. The rail line appears to terminate at the M&G Polymers facility on the north side of the proposed Nucor steel plant. It's EPA's opinion that the rail line is not under control of Nucor. Furthermore, the personnel operating the locomotives that travel along this section of rail are not employed by Nucor. EPA would therefore counter that the area along the rail line constitutes ambient air and should be assessed for compliance with the NAAQS and PSD increments.

WVDAQ Response: The EPA defines ambient air at 40CFR50.1(e) – "***Ambient air*** means that portion of the atmosphere, external to buildings, to which the general public has access." The key point in this definition is access by the general public. WV DAQ has determined that Nucor will preclude access by the general public to the area along the rail line and disagrees with EPA that this area constitutes ambient air.

Nucor notes that railroad tracks and rights-of-way are private property and access by the general public is considered trespassing per W. Va. Code § 61-3B-3. This rule states, "It is an unlawful trespass for any person to knowingly, and without being authorized, licensed or invited, to enter or remain on any property, other than a structure or conveyance, as to which notice against entering or remaining is either given by actual communication to such person or by posting, fencing or cultivation." Nucor has identified methods that will preclude access by the general public to the rail line that traverses through Nucor's proposed facility. For the proposed facility location, Nucor will restrict general public access via physical fencing, signage at all entry and exit points, remote monitoring (e.g., 24-hour video surveillance), and on-site security staffing. Remote monitoring will provide Nucor constant surveillance of all facility access points and dedicated security staff will respond immediately to any potential trespassing incidents.

Furthermore, Nucor intends to establish routine security patrols to allow passageway to authorized personnel while monitoring and further deterring unauthorized general public access at all entry and exit points. Through these security measures, Nucor will preclude general public access and minimize all transient access to the proposed facility property Therefore, Nucor excluded receptors from the industrial plant roadways and main line railroads that cross the facility property. Finally, any transient access will not be by members of the general public.

Language has been added to the final permit requiring the permittee to restrict public access to all areas as indicated in the PSD Air Permit Application Modeling Report.

Comment 15: EPA is concerned that Nucor's modeled ambient air boundary may be improperly delineated. Nucor's operations will cover an extensive area. The facility's boundary along the Ohio River is approximately 2.2 km and the total perimeter is probably on the order of 7 km for the portion of the plant on the west side of WV Route 2 and 3 km and 4 km for the portions of the plant on the east side of WV Route 2. This is an extensive area to preclude public access via a physical boundary, such as a fence.

To ensure the ambient air boundary is properly controlled (outside of the rail line mentioned in our previous comment), it would be helpful if Nucor could provide additional explanation and documentation regarding some points on Figure 4-3 of Trinity's March 2022 *PSD Air Permit Application Modeling Report*. EPA is specifically concerned about possible public access along the property's frontage with WV Route 2, at the railroad access points (labeled C and D on Figure 4-3), the barge access points (labeled A and B on Figure 4-3) and the extensive fence line along the Ohio River boundary. This barrier, if improperly installed, may be subject to possible flooding damage. EPA notes there is about a 3-6 m increase in elevation from the normal pool elevation of the Ohio River to points inland along the eastern shore of the river. It's unclear if the fence should be within the Ohio River flood plain or if would be more prudent to place a barrier like this along the higher banks along east shore of the river.

WVDAQ Response: On December 2, 2019, EPA issued the memorandum *Revised Policy on Exclusions from Ambient Air*, from Andrew Wheeler to EPA Regional Administrators. This memo establishes the EPA policy that a fence or other physical barrier is not the only type of measure that may be used to establish that the general public does not have access to an area of land, and thereby that area of land would not fall within the definition of ambient air in 40CFR50.1(e) – "***Ambient air*** means that portion of the atmosphere, external to buildings, to which the general public has access."

This EPA revised policy expands methods for precluding access by the general public to include video surveillance, monitoring, clear signage, and routine security patrols. Further, EPA recognizes that future technologies could include drones and more advanced video surveillance technologies will potentially be used to preclude public access. The WVDAQ has determined that Nucor's proposed methods utilize a combination of physical barriers and methods consistent with EPA's revised policy and will preclude access by the general public.

For the proposed facility location, Nucor will restrict general public access via physical fencing, signage at all entry and exit points, remote monitoring (e.g., 24-hour video surveillance), and on-site security staffing. Remote monitoring will provide Nucor constant surveillance of all facility access points and dedicated security staff will respond immediately to any potential trespassing incidents. Furthermore, Nucor intends to establish routine security patrols to allow passageway to authorized personnel while monitoring and further deterring unauthorized general public access at all entry and exit points. Through these security measures, Nucor will preclude general public access and minimize all transient access to the proposed facility property. Finally, any transient access will not be by members of the general public.

As noted in the previous response, language has been added to the final permit requiring the permittee to restrict public access to all areas as indicated in the PSD Air Permit Application Modeling Report.

6.2 Class II NAAQS Analysis

Comment 16: Nucor's 1-hour SO_2 NAAQS modeling analysis does not appear to include several large coal-fired power plants in Gallia County, OH. These include the General J M Gavin

(Gavin) and Kyger Creek coal-fired power plants in Gallia County, OH. These power plants are significant SO_2 sources. Nucor selected a background monitor that was not impacted by these sources, *"[G]iven that the Gavin Power Plant is included in the regional inventory ..."* Instead, Nucor selected a more "regional" background site to avoid "double-counting"; explicitly modeling a source that is already accounted for in the background monitor concentration.

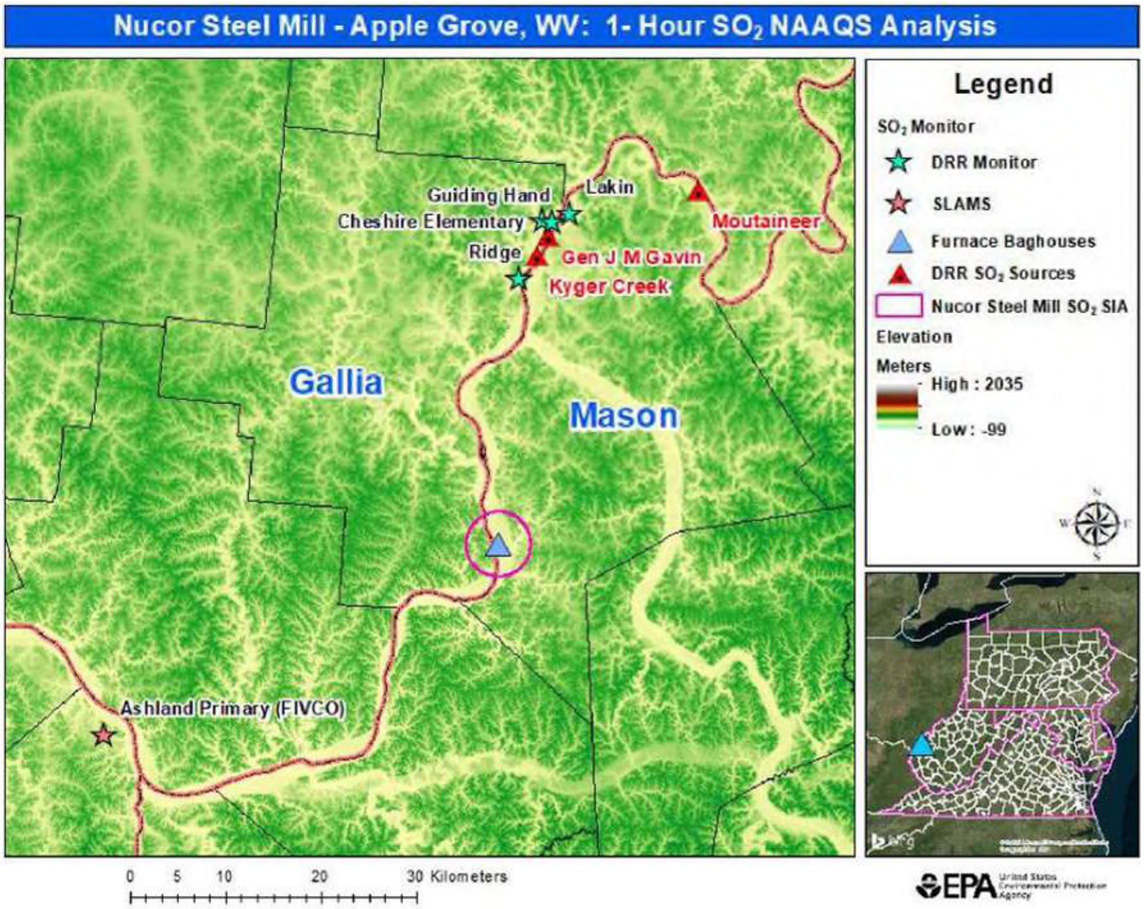
Nucor's 1-hr SO_2 NAAQS model input file does not include Gavin, Kyger Creek or Mountaineer, another coal-fired power plant in northern Mason County, WV. Nucor's 1-hr NO_2 analysis, however, does include the Gallia County, OH sources (and John Amos in Putnam County, WV). Annual 2021 SO_2 emissions reported to EPA's Clean Air Market Division (CAMD) were 25,792.6, 3,813.1 and 3,117.6 tons for Gavin, Kyger Creek and Mountaineer respectively. Figure 2 shows the location of Nucor's largest SO_2 sources, the Furnace Baghouses, Nucor's modeled 1-hr SO_2 significant impact area (SIA), the large Data Requirement Rule (DRR) sources in Gallia and Mason counties, the DRR SO_2 monitoring sites near Gavin and Kyger Creek and the SLAMS background monitor used for the 1-hr SO_2 NAAQS modeling analysis (Ashland Primary FIVCO).

Nucor's 1-hr SO_2 modeling analysis did not include the potential impacts of these large SO_2 DRR sources within the Nucor Steel Mill's modeled significant impact area (SIA). The DRR sources are neither explicitly modeled nor included in the model background concentration. In EPA's opinion, the potential impact of these sources is not properly accounted for in the 1-hr SO_2 NAAQS analysis and the analysis is therefore deficient.

To gauge the impact of the large DRR sources north of the Nucor steel mill in Gallia and Mason counties, EPA reran Nucor's 1-hr SO_2 NAAQS analysis using a 1-hr season by hour of day background concentration for the Lakin, WV (54-053-0001) DRR monitor. This monitor should provide a very conservative background concentration since it is located much closer to the Gavin and Kyger Creek DRR sources than the Nucor steel mill is. Table 1 shows the EPA constructed season by hour of day background SO_2 concentrations for the Lakin, WV monitor. Hour 1 values are probably missing due to that hour being used for daily calibration and maintenance activities. Modeled background concentrations for this hour were interpolated based on the hour 24 and hour 2 values.

Background concentrations are higher during the daytime hours and the spring, summer and fall seasons. Gavin and Kyger Creek's primary stacks are very high, over 200 meters based on the model input files, so vertical mixing must take place to bring stack emissions to ground level where the monitor is located. This accounts for daytime and the seasonal trends in the background concentrations. Vertical mixing is generally greatest during the daytime hours and outside of the cooler winter months when morning inversions are stronger and can limit daytime mixing depths.

Figure 2. Nucor 1-Hour SO_2 Modeling Analysis Overview



EPA used Nucor's receptor grid, which is limited to portions of the plant's SIA (where its emissions could exceed the 1-hr SO_2 significant impact levels) and extends roughly 3.4 km from the steel mill. Additionally, EPA reprocessed the AERMET input files to use the filled in Pittsburgh, PA upper air soundings as described in Comment 13. This reduced the number of "missing" hours summarized in the AERMOD output file from 919 hours to 766 hours.

Table 2 summarizes EPA's final revised modeling results using the Lakin, WV monitor background concentration along with the reprocessed meteorological data. Revised modeling showed modeled 1-hour SO_2 concentrations within the Nucor steel mill's SIA were below the NAAQS.

Table 1. EPA Constructed Season by Hour of Day SO_2 Background Concentrations

Lakin, WV (54-053-0001): 2018-20 Background SO2 Concentrations (ppb) by Season/Hour of Day												
	Winter			Spring			Summer			Fall		
Hour	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours
1		271	271		276	276		276	276		273	273
2	1.7	10	271	1.2	3	276	0.5	0	276	0.8	2	273
3	1.0	11	271	0.8	3	276	0.2	0	276	0.9	2	273
4	1.8	14	271	1.1	3	276	0.2	0	276	0.7	2	273
5	1.3	15	271	1.1	4	276	0.2	0	276	0.6	2	273
6	1.0	15	271	1.0	3	276	0.2	0	276	0.7	2	273
7	1.1	15	271	1.0	4	276	0.8	1	276	0.3	2	273
8	1.1	16	271	1.3	5	276	1.6	1	276	0.8	2	273
9	1.2	15	271	2.6	5	276	5.0	1	276	1.6	3	273
10	3.3	11	271	15.5	6	276	8.1	3	276	6.5	3	273
11	5.8	9	271	18.4	10	276	23.6	8	276	13.5	4	273
12	8.1	13	271	20.3	16	276	30.8	10	276	28.3	10	273
13	8.8	18	271	26.4	14	276	44.1	7	276	30.2	12	273
14	9.5	12	271	22.4	6	276	35.4	3	276	35.2	6	273
15	16.2	7	271	27.1	4	276	35.0	3	276	24.9	7	273
16	7.1	7	271	21.4	3	276	22.6	3	276	25.4	5	273
17	5.9	8	271	21.7	3	276	11.3	3	276	17.0	3	273
18	2.8	7	271	9.5	3	276	6.6	4	276	9.1	3	273
19	1.6	9	271	5.2	3	276	3.9	1	276	3.0	3	273
20	1.3	9	271	3.3	3	276	1.7	1	276	1.9	2	273
21	1.1	11	271	2.2	3	276	1.1	0	276	1.5	2	273
22	1.8	12	271	1.4	3	276	0.2	0	276	1.7	2	273
23	2.5	12	271	1.0	3	276	0.2	0	276	1.2	2	273
24	2.5	11	271	0.8	3	276	0.2	0	276	1.2	2	273

The peak model concentration for EPA's revised analysis is 46.5 ppb; this value was determined using EPA's accepted conversion factor of 196.4 $\mu g/m^3$ equaling 75 ppb. The summary table is based on results from the AERMOD MAXDCON file, which breaks down source group contributions to the final peak model concentration. Nucor's total contribution is about 5% of the peak model concentration with the background being the largest contributor to the peak model concentration. The background is conservative since it represents ambient concentrations near the Gallia County, OH DRR sources. Impacts from these sources should be much lower near the Nucor steel mill since it is located nearly 30 km from the Lakin, WV monitor.

Table 2. EPA's Revised 1-hr SO_2 NAAQS Analysis with Lankin, WV Background

Revised 1-hr SO2 Model Concentrations using Lakin, WV Background Concentration in Part per Billion (ppb)								
UTM Easting (m)	UTM Northing (m)	Elevation (m)	Furnace Baghouses (ppb)	Met Shop Fugitives (ppb)	Other Nucor (ppb)	Off-Site (ppb)	Background (ppb)	Peak Model (ppb)
398802.4	4278308.6	178.95	0.843	1.642	0.011	< 0.001	44.051	46.546

WVDAQ Response: WVDAQ has determined that Nucor adequately and appropriately considered the impacts from the Gavin and Kyger Creek Power Plants in Ohio and from the Mountaineer Power Plant in WV in the 1-hr SO_2 air quality analysis. The approved protocol states that "For SO_2 consideration, the nearest monitors to the proposed site are located in Cheshire, OH and Point Pleasant, WV, approximately 33 km north of the site and within the vicinity of the Gavin Power Plant. Considering the Gavin Power Plant is ***expected*** to be included in the regional inventory for the site, using the Cheshire or Point Pleasant monitors would result in "double-counting" of nearby source impacts." (emphasis added).

The approved protocol states that Nucor will use the 20D screening method and that "any sources beyond the SIA but within this ROI will be screened using the "20D" procedure. Under this Q/d-based screening procedure, sources outside the SIA will be excluded from the inventories for short-term averaging periods if the entire facility's emissions (tpy) are less than 20 times the distance (km) from the facility to Nucor, and sources outside the SIA will be excluded from the inventories for annual averaging periods if the entire facility's emissions (tpy) are less than 20 times the distance (km) from the facility to the nearest edge of the SIA." The radius of impact (ROI) is identified in the approved Nucor protocol as "…the radius of impact (ROI) [i.e., the significant impact area (SIA) plus 50 km (or 10 km for 1-hour NO_2 and SO_2…" Sources outside of the ROI would be excluded from the regional source inventory for the dispersion modeling analysis.

Table C-3. (Full Screening Analysis) of Trinity's modeling report contains the results of the regional source inventory screening analysis. For 1-hr SO_2, The Amos and Mountaineer Power Plants in WV and the Gavin and Kyger Creek Power Plants in Ohio are all excluded because they are beyond the radius of impact (ROI). From Table C-1. (Significant Impact Area) of Trinity's modeling report, the significant impact area for 1-hr SO_2 is 3.38 km. This means that at all receptor locations beyond 3.38 km Nucor's air quality impacts are below the significant impact level, and thus could not cause or contribute to a potential modeled violation of the 1-hr SO_2 NAAQS. The radius of impact (ROI) is defined for this 1-hr SO_2 analysis as the significant impact area (SIA) plus 10km. The ROI for 1-hr SO_2 is therefore 13.38 km (10 km plus 3.38 km).

From Table C-3 in Trinity's report, the distances from Nucor to the facilities in EPA's comment are: Mountaineer Power Plant in WV (41.4 km), Gavin Power Plant in OH (33.6 km), and Kyger Creek Power Plant in OH (29.5 km). The facilities identified by EPA's comment were included in the air quality impacts analysis by considering their emissions and distances from the proposed Nucor site and comparing to appropriate an appropriate screening level. All of the

distances for the facilities identified in EPA's comment are beyond the ROI of 13.38 km and were appropriately screened out of the dispersion modeling analysis.

In section 8.3.3.b.iii of 40CFR51(Appendix W), EPA states that "The number of nearby sources to be explicitly modeled in the air quality analysis is expected to be few except in unusual situations. In most cases, the few nearby sources will be located within the first 10 to 20 km from the source(s) under consideration." Nucor's screening analysis that excluded three facilities from the dispersion modeling analysis, which are significantly farther than 20 km from the proposed Nucor site, is consistent with Appendix W.

Finally, EPA's own analysis confirms that the analysis by Nucor is appropriate and demonstrates that the Nucor facility will not cause or contribute to any violation of the 1-hr SO_2 NAAQS.

Comment 17: Model background concentrations from the Ashland, KY monitor were included in Nucor's 1-hr NO_2 NAAQS analysis. The final modeling report did not contain a breakdown of the season by hour of day background concentrations included in the modeling analysis.

EPA downloaded the 2018 through 2020 1-hour NOx concentrations for the Ashland, KY monitor (21-019-0017) and calculated the season by hour of day NOx concentrations in accordance with EPA's March 1, 2011 clarification memorandum[2]; we used the average of the 3rd highest hourly values by hour of day and season for each year (2018 through 2020). Table 3 shows the EPA calculated background NOx concentrations that could be used in the AERMOD 1-hr NO_2 NAAQS analysis. Our values do not appear to match the values in the BACKGRND source section lines in the provided AERMOD input file. We ask that the AERMOD background concentrations be reexamined to ensure the correct values were modeled.

EPA notes that Nucor's 1-hr NO_2 modeling analysis is probably conservative given the background site appears to be significantly impacted by mobile source emissions. The model background monitor is located in a much more urban setting than the proposed Nucor steel mill. Given this setting, background (NO_2) values would probably be significantly lower than the actual modeled values if a more similar rural monitoring site, which would more closely resemble conditions near the Nucor steel mill, was used. Regardless, Nucor's modeling analysis shows modeled 1-hr NO_2 concentrations are below the NAAQS.

Table 3. EPA Constructed Season by Hour of Day NOx Background Concentrations

Askland Primary (FIVCO), KY (21-019-0017): 2018-20 Background NOx Concentrations (ppb) by Season/Hour of Day												
	Winter			Spring			Summer			Fall		
Hour	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours
1	57.3	0	270	28.0	0	276	14.0	1	276	33.3	0	273
2	54.0	211	270	29.0	184	276	8.0	184	276	9.0	256	273
3	60.0	148	270	26.0	184	276	13.0	184	276	37.0	135	273
4	60.0	0	270	34.0	1	276	15.3	0	276	35.0	0	273
5	64.0	0	270	38.7	0	276	15.3	1	276	37.0	0	273
6	68.7	18	270	43.3	21	276	15.3	20	276	38.3	20	273
7	72.0	18	270	51.3	22	276	17.0	19	276	39.0	21	273
8	72.3	0	270	61.0	8	276	18.7	5	276	47.3	4	273
9	76.0	5	270	46.3	8	276	16.7	7	276	59.3	5	273
10	76.3	6	270	28.7	11	276	11.7	10	276	44.0	5	273
11	52.0	5	271	12.7	11	276	8.0	9	276	35.0	6	273
12	41.3	4	271	8.0	12	276	5.3	11	276	20.0	6	273
13	17.3	5	271	7.0	14	276	3.7	11	276	12.3	5	273
14	17.0	6	271	6.0	9	276	3.0	9	276	10.7	2	273
15	14.7	7	271	5.3	6	276	2.0	8	276	8.7	0	273
16	16.3	5	271	6.3	4	276	2.7	5	276	9.3	1	273
17	22.3	5	270	6.0	3	276	3.3	4	276	11.3	1	273
18	29.7	2	270	6.7	2	276	3.0	3	276	16.0	0	273
19	45.3	0	270	8.7	0	276	4.3	0	276	22.0	0	273
20	44.7	0	270	13.3	0	276	5.0	1	276	28.7	1	273
21	44.0	0	270	19.3	0	276	6.3	1	276	29.7	0	273
22	45.7	0	270	21.0	0	276	8.0	1	276	29.7	0	273
23	43.7	0	270	21.0	0	276	9.7	1	276	29.7	0	273
24	49.0	0	270	25.0	0	276	13.7	1	276	33.0	0	273

WVDAQ Response: WVDAQ has determined that Nucor appropriately derived 1-hr NO_2 background values by season-and-hour-of-day. WVDAQ independently obtained the raw hourly NO_2 monitored values and developed the season-and-hour-of-day values consistent with EPA guidance. WVDAQ values match the values used by Nucor found in the model input file, with limited exceptions for values that required substitution because of missing values during calibration of monitoring equipment. WVDAQ agrees with EPA that the NO_2 background values used are likely to be much higher than the actual background values of NO_2 at the project site. As EPA notes, Nucor's modeling analysis shows modeled 1-hr NO_2 concentrations are below the NAAQS.

FEDERAL OPERATING PERMIT

A FEDERAL OPERATING PERMIT IS HEREBY ISSUED TO
Nucor Corporation

AUTHORIZING THE OPERATION OF
Nucor Steel – Jewett, Texas Division
Nucor Steel - Jewett, TX Division
Iron and Steel Mills and Ferroalloy Manufacturing

LOCATED AT
Leon County, Texas
Latitude 31° 21’ 26”   Longitude 96° 9’ 53”
Regulated Entity Number: RN100211093

This permit is issued in accordance with and subject to the Texas Clean Air Act (TCAA), Chapter 382 of the Texas Health and Safety Code and Title 30 Texas Administrative Code Chapter 122 (30 TAC Chapter 122), Federal Operating Permits. Under 30 TAC Chapter 122, this permit constitutes the permit holder’s authority to operate the site and emission units listed in this permit. Operations of the site and emission units listed in this permit are subject to all additional rules or amended rules and orders of the Commission pursuant to the TCAA.

This permit does not relieve the permit holder from the responsibility of obtaining New Source Review authorization for new, modified, or existing facilities in accordance with 30 TAC Chapter 116, Control of Air Pollution by Permits for New Construction or Modification.

The site and emission units authorized by this permit shall be operated in accordance with 30 TAC Chapter 122, the general terms and conditions, special terms and conditions, and attachments contained herein.

This permit shall expire five years from the date of issuance. The renewal requirements specified in 30 TAC § 122.241 must be satisfied in order to renew the authorization to operate the site and emission units.

Permit No: O1289 Issuance Date: June 17, 2020

For the Commission

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General Terms and Conditions

The permit holder shall comply with all terms and conditions contained in 30 TAC § 122.143 (General Terms and Conditions), 30 TAC § 122.144 (Recordkeeping Terms and Conditions), 30 TAC § 122.145 (Reporting Terms and Conditions), and 30 TAC § 122.146 (Compliance Certification Terms and Conditions).

In accordance with 30 TAC § 122.144(1), records of required monitoring data and support information required by this permit, or any applicable requirement codified in this permit, are required to be maintained for a period of five years from the date of the monitoring report, sample, or application unless a longer data retention period is specified in an applicable requirement. The five year record retention period supersedes any less stringent retention requirement that may be specified in a condition of a permit identified in the New Source Review Authorization attachment.

If the permit holder chooses to demonstrate that this permit is no longer required, a written request to void this permit shall be submitted to the Texas Commission on Environmental Quality (TCEQ) by the Responsible Official in accordance with 30 TAC § 122.161(e). The permit holder shall comply with the permit's requirements, including compliance certification and deviation reporting, until notified by the TCEQ that this permit is voided.

The permit holder shall comply with 30 TAC Chapter 116 by obtaining a New Source Review authorization prior to new construction or modification of emission units located in the area covered by this permit.

All reports required by this permit must include in the submittal a cover letter which identifies the following information: company name, TCEQ regulated entity number, air account number (if assigned), site name, area name (if applicable), and Air Permits Division permit number(s).

Special Terms and Conditions:

Emission Limitations and Standards, Monitoring and Testing, and Recordkeeping and Reporting

1. Permit holder shall comply with the following requirements:

    A. Emission units (including groups and processes) in the Applicable Requirements Summary attachment shall meet the limitations, standards, equipment specifications, monitoring, recordkeeping, reporting, testing, and other requirements listed in the Applicable Requirements Summary attachment to assure compliance with the permit.

    B. The textual description in the column titled "Textual Description" in the Applicable Requirements Summary attachment is not enforceable and is not deemed as a substitute for the actual regulatory language. The Textual Description is provided for information purposes only.

    C. A citation listed on the Applicable Requirements Summary attachment, which has a notation [G] listed before it, shall include the referenced section and subsection for all commission rules, or paragraphs for all federal and state regulations and all subordinate paragraphs, subparagraphs and clauses, subclauses, and items contained within the referenced citation as applicable requirements.

    D. When a grouped citation, notated with a [G] in the Applicable Requirements Summary, contains multiple compliance options, the permit holder must keep records of when each compliance option was used.

    E. Emission units subject to 40 CFR Part 63, Subpart YYYYY and Subpart ZZZZ as identified in the attached Applicable Requirements Summary table are subject to

30 TAC Chapter 113, Subchapter C, § 113.1340 and § 113.1090 which incorporates the 40 CFR Part 63 Subpart by reference.

2. The permit holder shall comply with the following sections of 30 TAC Chapter 101 (General Air Quality Rules):

   A. Title 30 TAC § 101.1 (relating to Definitions), insofar as the terms defined in this section are used to define the terms used in other applicable requirements

   B. Title 30 TAC § 101.3 (relating to Circumvention)

   C. Title 30 TAC § 101.8 (relating to Sampling), if such action has been requested by the TCEQ

   D. Title 30 TAC § 101.9 (relating to Sampling Ports), if such action has been requested by the TCEQ

   E. Title 30 TAC § 101.10 (relating to Emissions Inventory Requirements)

   F. Title 30 TAC § 101.201 (relating to Emission Event Reporting and Recordkeeping Requirements)

   G. Title 30 TAC § 101.211 (relating to Scheduled Maintenance, Start-up, and Shutdown Reporting and Recordkeeping Requirements)

   H. Title 30 TAC § 101.221 (relating to Operational Requirements)

   I. Title 30 TAC § 101.222 (relating to Demonstrations)

   J. Title 30 TAC § 101.223 (relating to Actions to Reduce Excessive Emissions)

3. Permit holder shall comply with the following requirements of 30 TAC Chapter 111:

   A. Visible emissions from stationary vents with a flow rate of less than 100,000 actual cubic feet per minute and constructed after January 31, 1972 that are not listed in the Applicable Requirements Summary attachment for 30 TAC Chapter 111, Subchapter A, Division 1, shall not exceed 20% opacity averaged over a six-minute period. The permit holder shall comply with the following requirements for stationary vents at the site subject to this standard:

      (i) Title 30 TAC § 111.111(a)(1)(B) (relating to Requirements for Specified Sources)

      (ii) Title 30 TAC § 111.111(a)(1)(E)

      (iii) Title 30 TAC § 111.111(a)(1)(F)(i), (ii), (iii), or (iv)

      (iv) For emission units with vent emissions subject to 30 TAC § 111.111(a)(1)(B), complying with 30 TAC § 111.111(a)(1)(F)(ii), (iii), or (iv), and capable of producing visible emissions from, but not limited to, particulate matter, acid gases and NO_x, the permit holder shall also comply with the following periodic monitoring requirements for the purpose of annual compliance certification under 30 TAC § 122.146. These periodic monitoring requirements do not apply to vents that are not capable of producing visible emissions such as vents that emit only colorless VOCs; vents from non-fuming liquids; vents that provide passive ventilation, such as plumbing vents; or vent emissions from any other source that does not obstruct the transmission of light. Vents, as specified in the “Applicable Requirements Summary” attachment, that are subject to the emission limitation of 30 TAC § 111.111(a)(1)(B) are not subject to the following periodic monitoring requirements:

(1) An observation of stationary vents from emission units in operation shall be conducted at least once during each calendar quarter unless the emission unit is not operating for the entire quarter.

(2) For stationary vents from a combustion source, if an alternative to the normally fired fuel is fired for a period greater than or equal to 24 consecutive hours, the permit holder shall conduct an observation of the stationary vent for each such period to determine if visible emissions are present. If such period is greater than 3 months, observations shall be conducted once during each quarter. Supplementing the normally fired fuel with natural gas or fuel gas to increase the net heating value to the minimum required value does not constitute creation of an alternative fuel.

(3) Records of all observations shall be maintained.

(4) Visible emissions observations of emission units operated during daylight hours shall be conducted no earlier than one hour after sunrise and no later than one hour before sunset. Visible emissions observations of emission units operated only at night must be made with additional lighting and the temporary installation of contrasting backgrounds. Visible emissions observations shall be made during times when the activities described in 30 TAC § 111.111(a)(1)(E) are not taking place. Visible emissions shall be determined with each stationary vent in clear view of the observer. The observer shall be at least 15 feet, but not more than 0.25 mile, away from each stationary vent during the observation. For outdoor locations, the observer shall select a position where the sun is not directly in the observer’s eyes. When condensed water vapor is present within the plume, as it emerges from the emissions outlet, observations must be made beyond the point in the plume at which condensed water vapor is no longer visible. When water vapor within the plume condenses and becomes visible at a distance from the emissions outlet, the observation shall be evaluated at the outlet prior to condensation of water vapor. A certified opacity reader is not required for visible emissions observations.

(5) Compliance Certification:

    (a) If visible emissions are not present during the observation, the RO may certify that the source is in compliance with the applicable opacity requirement in 30 TAC § 111.111(a)(1) and (a)(1)(B).

    (b) However, if visible emissions are present during the observation, the permit holder shall either list this occurrence as a deviation on the next deviation report as required under 30 TAC § 122.145(2) or conduct the appropriate opacity test specified in 30 TAC § 111.111(a)(1)(F) as soon as practicable, but no later than 24 hours after observing visible emissions to determine if the source is in compliance with the opacity requirements. If an opacity test is performed and the source is determined to be in compliance, the RO may certify that the source is in compliance with the applicable opacity requirement. However, if an opacity test is performed and the source is determined to be out of compliance, the permit holder shall list this occurrence as a deviation on the next deviation report as required under 30 TAC § 122.145(2). The opacity test must be performed by a certified opacity reader.

(c) Some vents may be subject to multiple visible emission or monitoring requirements. All credible data must be considered when certifying compliance with this requirement even if the observation or monitoring was performed to demonstrate compliance with a different requirement.

B. For visible emissions from a building, enclosed facility, or other structure; the permit holder shall comply with the following requirements:

(i) Title 30 TAC § 111.111(a)(7)(A) (relating to Requirements for Specified Sources)

(ii) Title 30 TAC § 111.111(a)(7)(B)(i) or (ii)

(iii) For a building containing an air emission source, enclosed facility, or other structure containing or associated with an air emission source subject to 30 TAC § 111.111(a)(7)(A), complying with 30 TAC § 111.111(a)(7)(B)(i) or (ii), and capable of producing visible emissions from, but not limited to, particulate matter, acid gases and NO_x, the permit holder shall also comply with the following periodic monitoring requirements for the purpose of annual compliance certification under 30 TAC § 122.146:

(1) An observation of visible emissions from a building containing an air emission source, enclosed facility, or other structure containing or associated with an air emission source which is required to comply with 30 TAC § 111.111(a)(7)(A) shall be conducted at least once during each calendar quarter unless the air emission source or enclosed facility is not operating for the entire quarter.

(2) Records of all observations shall be maintained.

(3) Visible emissions observations of air emission sources or enclosed facilities operated during daylight hours shall be conducted no earlier than one hour after sunrise and no later than one hour before sunset. Visible emissions observations of air emission sources or enclosed facilities operated only at night must be made with additional lighting and the temporary installation of contrasting backgrounds. Visible emissions shall be determined with each emissions outlet in clear view of the observer. The observer shall be at least 15 feet, but not more than 0.25 mile, away from each emissions outlet during the observation. For outdoor locations, the observer shall select a position where the sun is not directly in the observer’s eyes. When condensed water vapor is present within the plume, as it emerges from the emissions outlet, observations must be made beyond the point in the plume at which condensed water vapor is no longer visible. When water vapor within the plume condenses and becomes visible at a distance from the emissions outlet, the observation shall be evaluated at the outlet prior to condensation of water vapor. A certified opacity reader is not required for visible emissions observations.

(4) Compliance Certification:

(a) If visible emissions are not present during the observation, the RO may certify that the source is in compliance with the applicable opacity requirement in 30 TAC § 111.111(a)(7) and (a)(7)(A).

(b) However, if visible emissions are present during the observation, the permit holder shall either list this occurrence as a deviation on the next deviation report as required under 30 TAC § 122.145(2) or conduct the appropriate opacity test specified in 30 TAC § 111.111(a)(7)(B) as soon as practicable, but no later than 24 hours after observing visible emissions to determine if the source is in compliance with the opacity requirements. If an opacity test is performed and the source is determined to be in compliance, the RO may certify that the source is in compliance with the applicable opacity requirement. However, if an opacity test is performed and the source is determined to be out of compliance, the permit holder shall list this occurrence as a deviation on the next deviation report as required under 30 TAC § 122.145(2). The opacity test must be performed by a certified opacity reader.

C. For visible emissions from all other sources not specified in 30 TAC § 111.111(a)(1), (4) or (7); the permit holder shall comply with the following requirements:

(i) Title 30 TAC § 111.111(a)(8)(A) (relating to Requirements for Specified Sources)

(ii) Title 30 TAC § 111.111(a)(8)(B)(i) or (ii)

(iii) For a source subject to 30 TAC § 111.111(a)(8)(A), complying with 30 TAC § 111.111(a)(8)(B)(i) or (ii), and capable of producing visible emissions from, but not limited to, particulate matter, acid gases and NO_x, the permit holder shall also comply with the following periodic monitoring requirements for the purpose of annual compliance certification under 30 TAC § 122.146:

(1) An observation of visible emissions from a source which is required to comply with 30 TAC § 111.111(a)(8)(A) shall be conducted at least once during each calendar quarter unless the source is not operating for the entire quarter.

(2) Records of all observations shall be maintained.

(3) Visible emissions observations of sources operated during daylight hours shall be conducted no earlier than one hour after sunrise and no later than one hour before sunset. Visible emissions observations of sources operated only at night must be made with additional lighting and the temporary installation of contrasting backgrounds. Visible emissions shall be determined with each source in clear view of the observer. The observer shall be at least 15 feet, but not more than 0.25 mile, away from each source during the observation. For outdoor locations, the observer shall select a position where the sun is not directly in the observer's eyes. When condensed water vapor is present within the plume, as it emerges from the emissions outlet, observations must be made beyond the point in the plume at which condensed water vapor is no longer

visible. When water vapor within the plume condenses and becomes visible at a distance from the emissions outlet, the observation shall be evaluated at the outlet prior to condensation of water vapor. A certified opacity reader is not required for visible emissions observations.

(4) Compliance Certification:

(a) If visible emissions are not present during the observation, the RO may certify that the source is in compliance with the applicable opacity requirement in 30 TAC § 111.111(a)(8) and (a)(8)(A)

(b) However, if visible emissions are present during the observation, the permit holder shall either list this occurrence as a deviation on the next deviation report as required under 30 TAC § 122.145(2) or conduct the appropriate opacity test specified in 30 TAC § 111.111(a)(8)(B) as soon as practicable, but no later than 24 hours after observing visible emissions to determine if the source is in compliance with the opacity requirements. If an opacity test is performed and the source is determined to be in compliance, the RO may certify that the source is in compliance with the applicable opacity requirement. However, if an opacity test is performed and the source is determined to be out of compliance, the permit holder shall list this occurrence as a deviation on the next deviation report as required under 30 TAC § 122.145(2). The opacity test must be performed by a certified opacity reader.

D. Emission limits on nonagricultural processes, except for the steam generators specified in 30 TAC § 111.153, shall comply with the following requirements:

(i) Emissions of PM from any source may not exceed the allowable rates as required in 30 TAC § 111.151(a) (relating to Allowable Emissions Limits)

(ii) Sources with an effective stack height (h_e) less than the standard effective stack height (H_e), must reduce the allowable emission level by multiplying it by $[h_e/H_e]^2$ as required in 30 TAC § 111.151(b)

(iii) Effective stack height shall be calculated by the equation specified in 30 TAC § 111.151(c)

E. Outdoor burning, as stated in 30 TAC § 111.201, shall not be authorized unless the following requirements are satisfied:

(i) Title 30 TAC § 111.207 (relating to Exception for Recreation, Ceremony, Cooking, and Warmth)

(ii) Title 30 TAC § 111.219 (relating to General Requirements for Allowable Outdoor Burning)

(iii) Title 30 TAC § 111.221 (relating to Responsibility for Consequences of Outdoor Burning)

4. Permit holder shall comply with the following 30 TAC Chapter 115, Subchapter C requirements:

A. When filling stationary gasoline storage containers with a nominal capacity less than or equal to 1,000 gallons at a Stage I motor vehicle fuel dispensing facility, the permit holder shall comply with the following requirements specified in 30 TAC Chapter 115, Subchapter C:

(i) Title 30 TAC § 115.222(3) (relating to Control Requirements), as it applies to liquid gasoline leaks, visible vapors, or significant odors

(ii) Title 30 TAC § 115.222(6) (relating to Control Requirements)

(iii) Title 30 TAC § 115.224(1) (relating to Inspection Requirements), as it applies to liquid gasoline leaks, visible vapors, or significant odors

5. The permit holder shall comply with the following requirements for units subject to any subpart of 40 CFR Part 60, unless otherwise stated in the applicable subpart:

A. Title 40 CFR § 60.7 (relating to Notification and Recordkeeping)

B. Title 40 CFR § 60.8 (relating to Performance Tests)

C. Title 40 CFR § 60.11 (relating to Compliance with Standards and Maintenance Requirements)

D. Title 40 CFR § 60.12 (relating to Circumvention)

E. Title 40 CFR § 60.13 (relating to Monitoring Requirements)

F. Title 40 CFR § 60.14 (relating to Modification)

G. Title 40 CFR § 60.15 (relating to Reconstruction)

H. Title 40 CFR § 60.19 (relating to General Notification and Reporting Requirements)

6. The permit holder shall comply with the requirements of 30 TAC Chapter 113, Subchapter C, § 113.100 for units subject to any subpart of 40 CFR Part 63, unless otherwise stated in the applicable subpart.

7. For each gasoline dispensing facility, with a throughput of less than 10,000 gallons per month as specified in 40 CFR Part 63, Subpart CCCCCC, the permit holder shall comply with the following requirements (Title 30 TAC, Subchapter C, § 113.1380 incorporated by reference):

A. Title 40 CFR § 63.11111(e), for records of monthly throughput

B. Title 40 CFR § 63.11111(i), for compliance due to increase of throughput

C. Title 40 CFR § 63.11113(c), for compliance due to increase of throughput

D. Title 40 CFR § 63.11115(a), for operation of the source

E. Title 40 CFR § 63.11116(a) and (a)(1) - (4), for work practices

F. Title 40 CFR § 63.11116(b), for records availability

G. Title 40 CFR § 63.11116(d), for portable gasoline containers

8. The permit holder shall comply with certified registrations submitted to the TCEQ for purposes of establishing federally enforceable emission limits. A copy of the certified registration shall be maintained with the permit. Records sufficient to demonstrate compliance with the established limits shall be maintained. The certified registration and records demonstrating compliance shall be provided, on request, to representatives of the appropriate TCEQ regional office and any local air pollution control agency having jurisdiction over the site. The permit holder shall submit updated certified registrations when changes at the site require establishment of new emission limits. If changes result in emissions that do not remain below major source thresholds, the permit holder shall submit a revision application to codify the appropriate requirements in the permit.

Additional Monitoring Requirements

9. Unless otherwise specified, the permit holder shall comply with the compliance assurance monitoring requirements as specified in the attached "CAM Summary" upon issuance of the permit. In addition, the permit holder shall comply with the following:

   A. The permit holder shall comply with the terms and conditions contained in 30 TAC § 122.147 (General Terms and Conditions for Compliance Assurance Monitoring).

   B. The permit holder shall report, consistent with the averaging time identified in the "CAM Summary," deviations as defined by the deviation limit in the "CAM Summary." Any monitoring data below a minimum limit or above a maximum limit, that is collected in accordance with the requirements specified in 40 CFR § 64.7(c), shall be reported as a deviation. Deviations shall be reported according to 30 TAC § 122.145 (Reporting Terms and Conditions).

   C. The permit holder may elect to collect monitoring data on a more frequent basis and average the data, consistent with the averaging time or minimum frequency specified in the "CAM Summary," for purposes of determining whether a deviation has occurred. However, the additional data points must be collected on a regular basis. In no event shall data be collected and used in particular instances in order to avoid reporting deviations. All monitoring data shall be collected in accordance with the requirements specified in 40 CFR § 64.7(c).

   D. The permit holder shall operate the monitoring, identified in the attached "CAM Summary," in accordance with the provisions of 40 CFR § 64.7.

   E. The permit holder shall comply with the requirements of 40 CFR § 70.6(a)(3)(ii)(A) and 30 TAC § 122.144(1)(A)-(F) for documentation of all required inspections.

10. The permit holder shall comply with the periodic monitoring requirements as specified in the attached "Periodic Monitoring Summary" upon issuance of the permit. Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the permit holder shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the pollutant-specific emissions unit is operating. The permit holder may elect to collect monitoring data on a more frequent basis and average the data, consistent with the averaging time or minimum frequency specified in the "Periodic Monitoring Summary," for purposes of determining whether a deviation has occurred. However, the additional data points must be collected on a regular basis. In no event shall data be collected and used in particular instances to avoid reporting deviations. Deviations shall be reported according to 30 TAC § 122.145 (Reporting Terms and Conditions).

New Source Review Authorization Requirements

11. Permit holder shall comply with the requirements of New Source Review authorizations issued or claimed by the permit holder for the permitted area, including permits, permits by rule, standard permits, flexible permits, special permits, permits for existing facilities including Voluntary Emissions Reduction Permits and Electric Generating Facility Permits issued under 30 TAC Chapter 116, Subchapter I, or special exemptions referenced in the New Source Review Authorization References attachment. These requirements:

    A. Are incorporated by reference into this permit as applicable requirements

    B. Shall be located with this operating permit

    C. Are not eligible for a permit shield

12. The permit holder shall comply with the general requirements of 30 TAC Chapter 106, Subchapter A or the general requirements, if any, in effect at the time of the claim of any PBR.

13. The permit holder shall maintain records to demonstrate compliance with any emission limitation or standard that is specified in a permit by rule (PBR) or Standard Permit listed in the New Source Review Authorizations attachment. The records shall yield reliable data from the relevant time period that are representative of the emission unit's compliance with the PBR or Standard Permit. These records may include, but are not limited to, production capacity and throughput, hours of operation, safety data sheets (SDS), chemical composition of raw materials, speciation of air contaminant data, engineering calculations, maintenance records, fugitive data, performance tests, capture/control device efficiencies, direct pollutant monitoring (CEMS, COMS, or PEMS), or control device parametric monitoring. These records shall be made readily accessible and available as required by 30 TAC § 122.144. Any monitoring or recordkeeping data indicating noncompliance with the PBR or Standard Permit shall be considered and reported as a deviation according to 30 TAC § 122.145 (Reporting Terms and Conditions).

Compliance Requirements

14. The permit holder shall certify compliance in accordance with 30 TAC § 122.146. The permit holder shall comply with 30 TAC § 122.146 using at a minimum, but not limited to, the continuous or intermittent compliance method data from monitoring, recordkeeping, reporting, or testing required by the permit and any other credible evidence or information. The certification period may not exceed 12 months and the certification must be submitted within 30 days after the end of the period being certified.

15. Use of Discrete Emission Credits to comply with the applicable requirements:

    A. Unless otherwise prohibited, the permit holder may use discrete emission credits to comply with the following applicable requirements listed elsewhere in this permit:

        (i) Title 30 TAC Chapter 115

        (ii) Title 30 TAC Chapter 117

        (iii) If applicable, offsets for Title 30 TAC Chapter 116

        (iv) Temporarily exceed state NSR permit allowables

    B. The permit holder shall comply with the following requirements in order to use the credit to comply with the applicable requirements:

(i) The permit holder must notify the TCEQ according to 30 TAC § 101.376(d)

(ii) The discrete emission credits to be used must meet all the geographic, timeliness, applicable pollutant type, and availability requirements listed in 30 TAC Chapter 101, Subchapter H, Division 4

(iii) The executive director has approved the use of the discrete emission credits according to 30 TAC § 101.376(d)(1)(A)

(iv) The permit holder keeps records of the use of credits towards compliance with the applicable requirements in accordance with 30 TAC § 101.372(h) and 30 TAC Chapter 122

(v) Title 30 TAC § 101.375 (relating to Emission Reductions Achieved Outside the United States)

Protection of Stratospheric Ozone

16. Permit holders at a site subject to Title VI of the FCAA Amendments shall meet the following requirements for protection of stratospheric ozone:

    A. Any on site servicing, maintenance, and repair on refrigeration and nonmotor vehicle air-conditioning appliances using ozone-depleting refrigerants or non-exempt substitutes shall be conducted in accordance with 40 CFR Part 82, Subpart F. Permit holders shall ensure that repairs on or refrigerant removal from refrigeration and nonmotor vehicle air-conditioning appliances using ozone-depleting refrigerants are performed only by properly certified technicians using certified equipment. Records shall be maintained as required by 40 CFR Part 82, Subpart F.

    B. Any on site servicing, maintenance, and repair of fleet vehicle air conditioning using ozone-depleting refrigerants shall be conducted in accordance with 40 CFR Part 82, Subpart B. Permit holders shall ensure that repairs or refrigerant removal are performed only by properly certified technicians using certified equipment. Records shall be maintained as required by 40 CFR Part 82, Subpart B.

Permit Location

17. The permit holder shall maintain a copy of this permit and records related to requirements listed in this permit on site.

Permit Shield (30 TAC § 122.148)

18. A permit shield is granted for the emission units, groups, or processes specified in the attached “Permit Shield.” Compliance with the conditions of the permit shall be deemed compliance with the specified potentially applicable requirements or specified potentially applicable state-only requirements listed in the attachment “Permit Shield.” Permit shield provisions shall not be modified by the executive director until notification is provided to the permit holder. No later than 90 days after notification of a change in a determination made by the executive director, the permit holder shall apply for the appropriate permit revision to reflect the new determination. Provisional terms are not eligible for this permit shield. Any term or condition, under a permit shield, shall not be protected by the permit shield if it is replaced by a provisional term or condition or the basis of the term and condition changes.

Attachments

Applicable Requirements Summary

Additional Monitoring Requirements

Permit Shield

New Source Review Authorization References

Applicable Requirements Summary

Note: A “none” entry may be noted for some emission sources in this permit’s “Applicable Requirements Summary” under the heading of “Monitoring and Testing Requirements” and/or “Recordkeeping Requirements” and/or “Reporting Requirements.” Such a notation indicates that there are no requirements for the indicated emission source as identified under the respective column heading(s) for the stated portion of the regulation when the emission source is operating under the conditions of the specified SOP Index Number. However, other relevant requirements pursuant to 30 TAC Chapter 122 including Recordkeeping Terms and Conditions (30 TAC § 122.144), Reporting Terms and Conditions (30 TAC § 122.145), and Compliance Certification Terms and Conditions (30 TAC § 122.146) continue to apply.

Unit Summary

Unit/Group/ Process ID No.	Unit Type	Group/Inclusive Units	SOP Index No.	Regulation	Requirement Driver
BAGHSMS	EMISSION POINTS/STATIONARY VENTS/PROCESS VENTS	N/A	R1151-01	30 TAC Chapter 111, Nonagricultural Processes	No changing attributes.
BAGHSMS	EMISSION POINTS/STATIONARY VENTS/PROCESS VENTS	N/A	R1111-01	30 TAC Chapter 111, Visible Emissions	No changing attributes.
BAGHSMS	STEEL PLANT UNIT	N/A	60AAa-1	40 CFR Part 60, Subpart AAa	No changing attributes.
BAGHSMS	STEEL PLANT UNIT	N/A	63YYYYY-01	40 CFR Part 63, Subpart YYYYY	No changing attributes.
EAF	STEEL PLANT UNIT	N/A	60AAa-01	40 CFR Part 60, Subpart AAa	No changing attributes.
EAF	STEEL PLANT UNIT	N/A	63YYYYY	40 CFR Part 63, Subpart YYYYY	No changing attributes.
EWP	SRIC ENGINES	N/A	60IIII-01	40 CFR Part 60, Subpart IIII	No changing attributes.
EWP	SRIC ENGINES	N/A	63ZZZZ-01	40 CFR Part 63, Subpart ZZZZ	No changing attributes.
EWP2	SRIC ENGINES	N/A	60IIII-02	40 CFR Part 60, Subpart IIII	No changing attributes.
EWP2	SRIC ENGINES	N/A	63ZZZZ-02	40 CFR Part 63, Subpart ZZZZ	No changing attributes.
FUGEAF	STEEL PLANT UNIT	N/A	60AAa-1	40 CFR Part 60, Subpart AAa	No changing attributes.
REHEATXI	EMISSION POINTS/STATIONARY VENTS/PROCESS VENTS	N/A	R1111-01	30 TAC Chapter 111, Visible Emissions	No changing attributes.
REHEATXII	EMISSION POINTS/STATIONARY VENTS/PROCESS VENTS	N/A	R1111-01	30 TAC Chapter 111, Visible Emissions	No changing attributes.

Applicable Requirements Summary

Unit Group Process ID No.	Unit Group Process Type	SOP Index No.	Pollutant	State Rule or Federal Regulation Name	Emission Limitation, Standard or Equipment Specification Citation	Textual Description (See Special Term and Condition 1.B.)	Monitoring And Testing Requirements	Recordkeeping Requirements (30 TAC § 122.144)	Reporting Requirements (30 TAC § 122.145)
BAGHSMS	EP	R1151-01	PM	30 TAC Chapter 111, Nonagricultural Processes	§ 111.151(a) § 111.151(b) § 111.151(c)	No person may cause, suffer, allow, or permit emissions of particulate matter from any source to exceed the allowable rates specified in Table 1 as follows, except as provided by §111.153 of this title (relating to Emissions Limits for Steam Generators).	** See CAM Summary	None	None
BAGHSMS	EP	R1111-01	Opacity	30 TAC Chapter 111, Visible Emissions	§ 111.111(a)(1)(C) § 111.111(a)(1)(E)	Visible emissions from any stationary vent shall not exceed an opacity of 15% averaged over a six minute period for any source with a total flow rate of at least 100,000 acfm unless a CEMS is installed.	[G]§ 111.111(a)(1)(F) ** See CAM Summary	None	None
BAGHSMS	EU	60AAa-1	PM (Opacity)	40 CFR Part 60, Subpart AAa	§ 60.272a(b) § 60.272a(a) § 60.273a(c)	On or after the date of the performance test (by §60.8)no owner or operator shall allow discharge into the atmosphere from dust handling system any gases that exhibit 10 percent opacity or greater.	§ 60.273a(b) § 60.273a(c) § 60.273a(d) § 60.273a(e) § 60.273a(f) § 60.273a(g) § 60.274a(b) § 60.274a(d)	§ 60.276a(a) § 60.276a(g) § 60.276a(h)	§ 60.276a(b) § 60.276a(c) § 60.276a(f)
BAGHSMS	EU	63YYYYY-01	PM	40 CFR Part 63, Subpart YYYYY	§ 63.10686(b)(1) § 63.10686(a) § 63.10686(b) § 63.10690(a)	Except as provided in paragraph (c) of this section, you must not discharge or cause the discharge into the atmosphere from an EAF or AOD vessel any gases which exit from a control device and contain in excess of 0.0052 grains of PM per dry standard cubic foot (gr/dscf).	[G]§ 60.274a(h) § 60.275a(a) § 63.10686(d) § 63.10686(d)(6) § 63.10686(e) § 63.10690(a)	§ 63.10686(d)(6) § 63.10686(e) § 63.10690(a)	§ 63.10686(d)(6) § 63.10686(e) § 63.10690(a) § 63.10690(b) § 63.10690(b)(4) § 63.10690(b)(5) § 63.10690(b)(6)

Applicable Requirements Summary

Unit Group Process ID No.	Unit Group Process Type	SOP Index No.	Pollutant	State Rule or Federal Regulation Name	Emission Limitation, Standard or Equipment Specification Citation	Textual Description (See Special Term and Condition 1.B.)	Monitoring And Testing Requirements	Recordkeeping Requirements (30 TAC § 122.144)	Reporting Requirements (30 TAC § 122.145)
BAGHSMS	EU	63YYYYY-01	PM (Opacity)	40 CFR Part 63, Subpart YYYYY	§ 63.10686(b)(2) § 63.10686(b) § 63.10690(a)	Except as provided in paragraph (c) of this section, you must not discharge or cause the discharge into the atmosphere from an EAF or AOD vessel any gases which exit from a melt shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.	[G]§ 60.274a(h) § 63.10686(d) § 63.10686(d)(6) § 63.10690(a)	§ 63.10686(d)(6) § 63.10690(a)	§ 63.10686(d)(6) § 63.10690(a) § 63.10690(b) § 63.10690(b)(5)
EAF	EU	60AAa-01	PM	40 CFR Part 60, Subpart AAa	§ 60.272a(a)(1)	Gases which exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf) shall not be discharged into the atmosphere.	§ 60.274a(d) [G]§ 60.274a(h) § 60.275a(a) § 60.275a(b) § 60.275a(b)(1) § 60.275a(d) § 60.275a(e) § 60.275a(e)(1) § 60.275a(e)(4) § 60.275a(f) § 60.275a(g) § 60.275a(h) § 60.275a(h)(1) § 60.275a(j)	§ 60.274a(d) § 60.276a(a)	[G]§ 60.276a(f)
EAF	EU	63YYYYY	112(B) HAPS	40 CFR Part 63, Subpart YYYYY	§ 63.10685(a) § 63.10685(a)(1) § 63.10685(b)(2)(iv) § 63.10685(b)(4) § 63.10686(a) § 63.10686(b) § 63.10690(a)	For metallic scrap utilized in the EAF at your facility, you must comply with the requirements in either paragraph (a)(1) or (2) of §63.10685.	§ 63.10686(d)(6) § 63.10686(e) § 63.10690(a)	§ 63.10685(c) § 63.10685(c)(2) § 63.10686(e) § 63.10690(a)	§ 63.10685(c)(3) § 63.10685(d)(6) § 63.10686(e) § 63.10690(a) § 63.10690(b)(1-6)

Applicable Requirements Summary

Unit Group Process ID No.	Unit Group Process Type	SOP Index No.	Pollutant	State Rule or Federal Regulation Name	Emission Limitation, Standard or Equipment Specification Citation	Textual Description (See Special Term and Condition 1.B.)	Monitoring And Testing Requirements	Recordkeeping Requirements (30 TAC § 122.144)	Reporting Requirements (30 TAC § 122.145)
EWP	EU	60IIII-01	CO	40 CFR Part 60, Subpart IIII	§ 60.4205(b) § 60.4202(a)(2) § 60.4206 § 60.4207(b) [G]§ 60.4211(a) § 60.4211(c) [G]§ 60.4211(f) § 60.4218 § 89.112(a)	Owners and operators of emergency stationary CI ICE, that are not fire pump engines, with a maximum engine power greater than or equal to 130 KW and less than or equal to 2237 KW and a displacement of less than 10 liters per cylinder and is a 2007 model year and later must comply with a CO emission limit of 3.5 g/KW-hr, as stated in 40 CFR 60.4202(a)(2) and 40 CFR 89.112(a).	None	None	[G]§ 60.4214(d)
EWP	EU	60IIII-01	NMHC and NO_X	40 CFR Part 60, Subpart IIII	§ 60.4205(b) § 60.4202(a)(2) § 60.4206 § 60.4207(b) [G]§ 60.4211(a) § 60.4211(c) [G]§ 60.4211(f) § 60.4218 § 89.112(a)	Owners and operators of emergency stationary CI ICE, that are not fire pump engines, with a maximum engine power greater than or equal to 75 KW and less than or equal to 560 KW and a displacement of less than 10 liters per cylinder and is a 2007 model year and later must comply with an NMHC+NOx emission limit of 4.0 g/KW-hr, as stated in 40 CFR 60.4202(a)(2) and 40 CFR 89.112(a).	None	None	[G]§ 60.4214(d)

Applicable Requirements Summary

Unit Group Process ID No.	Unit Group Process Type	SOP Index No.	Pollutant	State Rule or Federal Regulation Name	Emission Limitation, Standard or Equipment Specification Citation	Textual Description (See Special Term and Condition 1.B.)	Monitoring And Testing Requirements	Recordkeeping Requirements (30 TAC § 122.144)	Reporting Requirements (30 TAC § 122.145)
EWP	EU	60IIII-01	PM	40 CFR Part 60, Subpart IIII	§ 60.4205(b) § 60.4202(a)(2) § 60.4206 § 60.4207(b) [G]§ 60.4211(a) § 60.4211(c) [G]§ 60.4211(f) § 60.4218 § 89.112(a)	Owners and operators of emergency stationary CI ICE, that are not fire pump engines, with a maximum engine power greater than or equal to 130 KW and less than or equal to 2237 KW and a displacement of less than 10 liters per cylinder and is a 2007 model year and later must comply with a PM emission limit of 0.20 g/KW-hr, as stated in 40 CFR 60.4202(a)(2) and 40 CFR 89.112(a).	None	None	[G]§ 60.4214(d)
EWP	EU	63ZZZZ-01	112(B) HAPS	40 CFR Part 63, Subpart ZZZZ	§ 63.6590(c)	Stationary RICE subject to Regulations under 40 CFR Part 60. An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines as applicable. No further requirements apply for such engines under this part.	None	None	None

Applicable Requirements Summary

Unit Group Process ID No.	Unit Group Process Type	SOP Index No.	Pollutant	State Rule or Federal Regulation Name	Emission Limitation, Standard or Equipment Specification Citation	Textual Description (See Special Term and Condition 1.B.)	Monitoring And Testing Requirements	Recordkeeping Requirements (30 TAC § 122.144)	Reporting Requirements (30 TAC § 122.145)
EWP2	EU	60IIII-02	CO	40 CFR Part 60, Subpart IIII	§ 60.4205(b) § 60.4202(a)(2) § 60.4206 § 60.4207(b) [G]§ 60.4211(a) § 60.4211(c) [G]§ 60.4211(f) § 60.4218 § 89.112(a)	Owners and operators of emergency stationary CI ICE, that are not fire pump engines, with a maximum engine power greater than or equal to 37 KW and less than 130 KW and a displacement of less than 10 liters per cylinder and is a 2007 model year and later must comply with a CO emission limit of 5.0 g/KW-hr, as stated in 40 CFR 60.4202(a)(2) and 40 CFR 89.112(a).	None	None	[G]§ 60.4214(d)
EWP2	EU	60IIII-02	NMHC and NO_X	40 CFR Part 60, Subpart IIII	§ 60.4205(b) § 60.4202(a)(2) § 60.4206 § 60.4207(b) [G]§ 60.4211(a) § 60.4211(c) [G]§ 60.4211(f) § 60.4218 § 89.112(a)	Owners and operators of emergency stationary CI ICE, that are not fire pump engines, with a maximum engine power greater than or equal to 75 KW and less than or equal to 560 KW and a displacement of less than 10 liters per cylinder and is a 2007 model year and later must comply with an NMHC+NOx emission limit of 4.0 g/KW-hr, as stated in 40 CFR 60.4202(a)(2) and 40 CFR 89.112(a).	None	None	[G]§ 60.4214(d)

Applicable Requirements Summary

Unit Group Process ID No.	Unit Group Process Type	SOP Index No.	Pollutant	State Rule or Federal Regulation Name	Emission Limitation, Standard or Equipment Specification Citation	Textual Description (See Special Term and Condition 1.B.)	Monitoring And Testing Requirements	Recordkeeping Requirements (30 TAC § 122.144)	Reporting Requirements (30 TAC § 122.145)
EWP2	EU	60IIII-02	PM	40 CFR Part 60, Subpart IIII	§ 60.4205(b) § 60.4202(a)(2) § 60.4206 § 60.4207(b) [G]§ 60.4211(a) § 60.4211(c) [G]§ 60.4211(f) § 60.4218 § 89.112(a)	Owners and operators of emergency stationary CI ICE, that are not fire pump engines, with a maximum engine power greater than or equal to 75 KW and less than 130 KW and a displacement of less than 10 liters per cylinder and is a 2007 model year and later must comply with a PM emission limit of 0.30 g/KW-hr, as stated in 40 CFR 60.4202(a)(2) and 40 CFR 89.112(a).	None	None	[G]§ 60.4214(d)
EWP2	EU	63ZZZZ-02	112(B) HAPS	40 CFR Part 63, Subpart ZZZZ	§ 63.6590(c)	Stationary RICE subject to Regulations under 40 CFR Part 60. An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines as applicable. No further requirements apply for such engines under this part.	None	None	None

Applicable Requirements Summary

Unit Group Process ID No.	Unit Group Process Type	SOP Index No.	Pollutant	State Rule or Federal Regulation Name	Emission Limitation, Standard or Equipment Specification Citation	Textual Description (See Special Term and Condition 1.B.)	Monitoring And Testing Requirements	Recordkeeping Requirements (30 TAC § 122.144)	Reporting Requirements (30 TAC § 122.145)
FUGEAF	EU	60AAa-1	PM (Opacity)	40 CFR Part 60, Subpart AAa	§ 60.272a(a)(3)	Gases which exit from a shop and exhibit 6 percent opacity or greater due to the operations of any affected EAF(s) or AOD vessel(s) shall not be discharged into the atmosphere.	§ 60.274a(a)(1) § 60.274a(a)(2) § 60.274a(c) § 60.274a(d) § 60.274a(f) § 60.274a(g) [G]§ 60.274a(h) § 60.275a(c) § 60.275a(d) § 60.275a(e) § 60.275a(e)(3) § 60.275a(e)(4) § 60.275a(f) § 60.275a(i) § 60.275a(j)	§ 60.274a(a)(2) § 60.274a(c) § 60.276a(a)	§ 60.276a(c) [G]§ 60.276a(f)
REHEATXI	EP	R1111-01	Opacity	30 TAC Chapter 111, Visible Emissions	§ 111.111(a)(1)(C) § 111.111(a)(1)(E)	Visible emissions from any stationary vent shall not exceed an opacity of 15% averaged over a six minute period for any source with a total flow rate of at least 100,000 acfm unless a CEMS is installed.	[G]§ 111.111(a)(1)(F) ** See Periodic Monitoring Summary	None	None
REHEATXII	EP	R1111-01	Opacity	30 TAC Chapter 111, Visible Emissions	§ 111.111(a)(1)(C) § 111.111(a)(1)(E)	Visible emissions from any stationary vent shall not exceed an opacity of 15% averaged over a six minute period for any source with a total flow rate of at least 100,000 acfm unless a CEMS is installed.	[G]§ 111.111(a)(1)(F) ** See Periodic Monitoring Summary	None	None

Additional Monitoring Requirements

CAM Summary

Unit/Group/Process Information	
ID No.: BAGHSMS	
Control Device ID No.: BAGHSMS	Control Device Type: Fabric Filter
Applicable Regulatory Requirement	
Name: 30 TAC Chapter 111, Visible Emissions	SOP Index No.: R1111-01
Pollutant: Opacity	Main Standard: § 111.111(a)(1)(C)
Monitoring Information	
Indicator: Bag Leak Detection Signal	
Minimum Frequency: four times per hour	
Averaging Period: Establish per EPA Guidance (EPA-454/R-98-015)	
Deviation Limit: 10 million counts with a 6 minute delay	
CAM Text: Each monitoring device shall be installed, operated, calibrated, and maintained in a manner consistent with EPA, Office of Air Quality Planning and Standards, Fabric Filter Bag Leak Detection Guidance (EPA-454/R-98-015).	

CAM Summary

Unit/Group/Process Information	
ID No.: BAGHSMS	
Control Device ID No.: BAGHSMS	Control Device Type: Fabric Filter
Applicable Regulatory Requirement	
Name: 30 TAC Chapter 111, Nonagricultural Processes	SOP Index No.: R1151-01
Pollutant: PM	Main Standard: § 111.151(a)
Monitoring Information	
Indicator: Bag Leak Detection Signal	
Minimum Frequency: four times per hour	
Averaging Period: Establish per EPA Guidance (EPA-454/R-98-015)	
Deviation Limit: 10 million counts with a 6 minute delay	
CAM Text: Each monitoring device shall be installed, operated, calibrated, and maintained in a manner consistent with EPA, Office of Air Quality Planning and Standards, Fabric Filter Bag Leak Detection Guidance (EPA-454/R-98-015).	

Periodic Monitoring Summary

Unit/Group/Process Information	
ID No.: REHEATXI	
Control Device ID No.: N/A	Control Device Type: N/A
Applicable Regulatory Requirement	
Name: 30 TAC Chapter 111, Visible Emissions	SOP Index No.: R1111-01
Pollutant: Opacity	Main Standard: § 111.111(a)(1)(C)
Monitoring Information	
Indicator: Fuel Type	
Minimum Frequency: Annually or at any time an alternate fuel is used	
Averaging Period: n/a	
Deviation Limit: When firing liquid fuel 15% opacity averaged over 6 minutes	
Periodic Monitoring Text: Record the type of fuel used by the unit. If an alternate fuel is fired, either alone or in combination with the specified gas, for a period greater than or equal to 24 consecutive hours it shall be considered and reported as a deviation or the permit holder shall conduct an observation of the stationary vent for each such period to determine if visible emissions are observed. Any time an alternate fuel is fired for a period of greater than 7 consecutive days then visible emissions observations will be conducted no less than once per week. Documentation of all observations shall be maintained. If visible emissions are present during the firing of an alternate fuel, the permit holder shall either list this occurrence as a deviation or the permit holder may determine the opacity consistent with Test Method 9. Any opacity readings that are above the opacity limit from the underlying applicable requirement shall be reported as a deviation.	

Periodic Monitoring Summary

Unit/Group/Process Information	
ID No.: REHEATXII	
Control Device ID No.: N/A	Control Device Type: N/A
Applicable Regulatory Requirement	
Name: 30 TAC Chapter 111, Visible Emissions	SOP Index No.: R1111-01
Pollutant: Opacity	Main Standard: § 111.111(a)(1)(C)
Monitoring Information	
Indicator: Fuel Type	
Minimum Frequency: Annually or at any time an alternate fuel is used	
Averaging Period: n/a	
Deviation Limit: When firing liquid fuel 15% opacity averaged over 6 minutes	
Periodic Monitoring Text: Record the type of fuel used by the unit. If an alternate fuel is fired, either alone or in combination with the specified gas, for a period greater than or equal to 24 consecutive hours it shall be considered and reported as a deviation or the permit holder shall conduct an observation of the stationary vent for each such period to determine if visible emissions are observed. Any time an alternate fuel is fired for a period of greater than 7 consecutive days then visible emissions observations will be conducted no less than once per week. Documentation of all observations shall be maintained. If visible emissions are present during the firing of an alternate fuel, the permit holder shall either list this occurrence as a deviation or the permit holder may determine the opacity consistent with Test Method 9. Any opacity readings that are above the opacity limit from the underlying applicable requirement shall be reported as a deviation.	

Permit Shield

Permit Shield

The Executive Director of the TCEQ has determined that the permit holder is not required to comply with the specific regulation(s) identified for each emission unit, group, or process in this table.

Unit/Group/Process		Regulation	Basis of Determination
ID No.	Group/Inclusive Units		
FUGLMF	N/A	40 CFR Part 60, Subpart AAa	Unit is not one of the processes listed under applicability.
LADLEPREHT	N/A	30 TAC Chapter 112, Sulfur Compounds	Unit does not use liquid fuel.
LADLEPREHT	N/A	40 CFR Part 63, Subpart JJJJJJ	Process heaters are excluded from the definition of a boiler.
LMS	N/A	30 TAC Chapter 112, Sulfur Compounds	Unit does not use liquid fuel.
LMS	N/A	40 CFR Part 60, Subpart AAa	Unit is not one of the processes listed under applicability.
REHEATXI	N/A	30 TAC Chapter 112, Sulfur Compounds	Unit does not use liquid fuel
REHEATXI	N/A	30 TAC Chapter 117, Subchapter B	Facility is located in Leon County, not a listed county
REHEATXI	N/A	40 CFR Part 63, Subpart JJJJJJ	Process heaters are excluded from the definition of a boiler.
REHEATXII	N/A	30 TAC Chapter 112, Sulfur Compounds	Unit does not use liquid fuel
REHEATXII	N/A	30 TAC Chapter 117, Subchapter B	Facility is located in Leon County, not a listed county
REHEATXII	N/A	40 CFR Part 63, Subpart JJJJJJ	Process heaters are excluded from the definition of a boiler.
RLINEPREHT	N/A	30 TAC Chapter 112, Sulfur Compounds	Unit does not use liquid fuel.
RLINEPREHT	N/A	40 CFR Part 63, Subpart JJJJJJ	Process heaters are excluded from the definition of a boiler.
TUNDDRY	N/A	30 TAC Chapter 112, Sulfur Compounds	Unit does not use liquid fuel.

Permit Shield

The Executive Director of the TCEQ has determined that the permit holder is not required to comply with the specific regulation(s) identified for each emission unit, group, or process in this table.

Unit/Group/Process		Regulation	Basis of Determination
ID No.	**Group/Inclusive Units**		
TUNDDRY	N/A	40 CFR Part 63, Subpart JJJJJJ	Process heaters are excluded from the definition of a boiler.
TUNDNZLHT	N/A	30 TAC Chapter 112, Sulfur Compounds	Unit does not use liquid fuel.
TUNDNZLHT	N/A	40 CFR Part 63, Subpart JJJJJJ	Process heaters are excluded from the definition of a boiler.
TUNDPREHT	N/A	30 TAC Chapter 112, Sulfur Compounds	Unit does not use liquid fuel.
TUNDPREHT	N/A	40 CFR Part 63, Subpart JJJJJJ	Process heaters are excluded from the definition of a boiler.

New Source Review Authorization References

New Source Review Authorization References

The New Source Review authorizations listed in the table below are applicable requirements under 30 TAC Chapter 122 and enforceable under this operating permit.

Prevention of Significant Deterioration (PSD) Permits	
PSD Permit No.: PSDTX1029M3	Issuance Date: 12/23/2019
Title 30 TAC Chapter 116 Permits, Special Permits, and Other Authorizations (Other Than Permits By Rule, PSD Permits, or NA Permits) for the Application Area.	
Authorization No.: 53581	Issuance Date: 12/23/2019
Permits By Rule (30 TAC Chapter 106) for the Application Area	
Number: 106.144	Version No./Date: 09/04/2000
Number: 106.183	Version No./Date: 09/04/2000
Number: 106.227	Version No./Date: 09/04/2000
Number: 106.261	Version No./Date: 11/01/2003
Number: 106.262	Version No./Date: 11/01/2003
Number: 106.263	Version No./Date: 11/01/2001
Number: 106.265	Version No./Date: 09/04/2000
Number: 106.371	Version No./Date: 09/04/2000
Number: 106.452	Version No./Date: 09/04/2000
Number: 106.454	Version No./Date: 11/01/2001
Number: 106.472	Version No./Date: 09/04/2000
Number: 106.473	Version No./Date: 09/04/2000
Number: 106.511	Version No./Date: 09/04/2000
Number: 106.532	Version No./Date: 09/04/2000

New Source Review Authorization References by Emissions Unit

The following is a list of New Source Review (NSR) authorizations for emission units listed elsewhere in this operating permit. The NSR authorizations are applicable requirements under 30 TAC Chapter 122 and enforceable under this operating permit.

Unit/Group/Process ID No.	Emission Unit Name/Description	New Source Review Authorization
BAGHSMS	MELTSHOP BAGHOUSE DUST HANDLING	53581, PSDTX1029M3
BAGHSMS	MELTSHOP BAGHOUSE STACK	53581, PSDTX1029M3
EAF	ELECTRIC ARC FURNACE	53581, PSDTX1029M3
EWP2	EMERGENCY WATER PUMP ENGINE	53581, PSDTX1029M3
EWP	EMERGENCY WATER PUMP FOR EAF	53581, PSDTX1029M3
FUGEAF	EAF BUILDING FUGITIVES	53581, PSDTX1029M3
FUGLMF	LMS/CASTER BUILDING FUGITIVES	53581, PSDTX1029M3
LADLEPREHT	LADLE PREHEATERS	53581, PSDTX1029M3
LMS	LADDLE METALURGICAL STATION	53581, PSDTX1029M3
REHEATXII	TEXAS II REHEAT FURNACE STACK	53581, PSDTX1029M3
REHEATXI	TEXAS I REHEAT FURNACE STACK	53581, PSDTX1029M3
RLINEPREHT	RELINE PREHEATERS	53581, PSDTX1029M3
TUNDDRY	TUNDISH DRYERS	53581, PSDTX1029M3
TUNDNZLHT	TUNDISH NOZZLE PREHEATERS	53581, PSDTX1029M3
TUNDPREHT	TUNDISH BURNERS	53581, PSDTX1029M3

Appendix A

Acronym List

The following abbreviations or acronyms may be used in this permit:

ACFM	actual cubic feet per minute
AMOC	alternate means of control
ARP	Acid Rain Program
ASTM	American Society of Testing and Materials
B/PA	Beaumont/Port Arthur (nonattainment area)
CAM	Compliance Assurance Monitoring
CD	control device
CEMS	continuous emissions monitoring system
CFR	Code of Federal Regulations
COMS	continuous opacity monitoring system
CVS	closed vent system
D/FW	Dallas/Fort Worth (nonattainment area)
EP	emission point
EPA	U.S. Environmental Protection Agency
EU	emission unit
FCAA Amendments	Federal Clean Air Act Amendments
FOP	federal operating permit
gr/100 scf	grains per 100 standard cubic feet
HAP	hazardous air pollutant
H/G/B	Houston/Galveston/Brazoria (nonattainment area)
H_2S	hydrogen sulfide
ID No.	identification number
lb/hr	pound(s) per hour
MACT	Maximum Achievable Control Technology (40 CFR Part 63)
MMBtu/hr	Million British thermal units per hour
NA	nonattainment
N/A	not applicable
NADB	National Allowance Data Base
NESHAP	National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61)
NO_x	nitrogen oxides
NSPS	New Source Performance Standard (40 CFR Part 60)
NSR	New Source Review
ORIS	Office of Regulatory Information Systems
Pb	lead
PBR	Permit By Rule
PEMS	predictive emissions monitoring system
PM	particulate matter
ppmv	parts per million by volume
PRO	process unit
PSD	prevention of significant deterioration
psia	pounds per square inch absolute
SIP	state implementation plan
SO_2	sulfur dioxide
TCEQ	Texas Commission on Environmental Quality
TSP	total suspended particulate
TVP	true vapor pressure
U.S.C.	United States Code
VOC	volatile organic compound

Appendix B

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
BAGHSMS	Meltshop Baghouse Stack FINs: EAF, LMS, CASTER, LADLETO, and TUNDDUMP	PM (total)	55.55	243.31	4, 5, 6, 8, 15, 17, 24, 29, 34, 37, 38, 39, 40, 45	4, 5, 6, 8, 9, 15, 24, 29, 33, 34, 38, 39, 40, 49	4, 5, 37, 38, 40, 42, 43, 44, 46, 48, 49
		PM (filterable)	34.21	149.86			
		PM_{10} (total)	55.55	243.31			
		PM_{10} (filterable)	34.21	149.86			
		$PM_{2.5}$ (total)	54.02	236.61			
		$PM_{2.5}$(filterable)	34.21	149.86			
		NOx	283.77	673.50			
		CO	1124.43	1701.08			
		SO_2	555.21	1317.75			
		VOC	136.83	324.75			
		Exempt Solvents	0.07	0.32			
		Benzene	1.32	5.10			
		Pb	0.03	0.15			
		Fluoride	0.23	1.00			
		Sb	0.0062	0.27			
		As	0.015	0.045			
		Be	0.0009	0.00115			
		Cd	0.051	0.109			
		Cr	0.26	0.88			

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
		Cu	0.23	0.77			
		Mn	1.28	5.00			
		Hg	0.40	1.08			
		Ni	0.026	0.101			
		Se	0.023	0.100			
		Ag	0.0092	0.0101			
		Tl	0.029	0.11			
		V	0.070	0.22			
		Zn	13.10	41.40			
CASTERVENT	West LMS/Caster Building Vents FINS: CASTERVENT, LADLEPREHT, TUNDPREHT, RLINEPREHT, TUNDDRY, SENPREHT (5)	PM	15.76	31.22	3, 6, 8,17, 39	6, 8, 24, 39, 49	49
		PM_{10}	12.24	24.58			
		$PM_{2.5}$	8.72	17.93			
		NOx	18.24	46.38			
		CO	12.02	38.96			
		SO_2	0.09	0.28			
		VOC	0.80	2.58			
		Exempt Solvents	0.004	0.02			
		Pb	0.02	0.03			
		Fluoride	0.0005	0.001			

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
RUNOUTVENT	Billet Caster Runout Building Vents FINs: Caster, Torch (5)	PM	6.59	11.60	3, 6, 8, 18, 34, 39	6, 8, 34, 39, 49	37, 42, 43, 44, 46, 47, 48, 49
		PM_{10}	5.62	9.89			
		$PM_{2.5}$	3.34	5.91			
		NOx	1.32	2.89			
		CO	1.11	2.42			
		SO_2	0.008	0.017			
		VOC	0.22	0.81			
		Exempt Solvents	0.08	0.34			
		Pb	0.0001	0.0001			
		Fluoride	0.01	0.02			
FINISHVENT	Rolling Mill and Billet Storage Building Vents (5)	PM	56.64	142.58	3, 6, 8, 16, 34, 39	6, 8, 33, 34, 39, 49	37, 42, 43, 44, 46, 47, 48, 49
		PM_{10}	48.66	122.49			
		$PM_{2.5}$	19.20	48.34			
		VOC	3.38	14.82			
		Exempt Solvents	1.78	7.78			
		Pb	0.0005	0.0019			
REHEATXI	TEXAS I Reheat Station Stack	PM	1.35	5.91	3, 6, 8, 24, 34, 38, 39, 45	6, 8, 24, 34, 38, 39, 49	37, 38, 42, 43, 44, 46, 47, 48, 49
		PM_{10}	1.35	5.91			
		$PM_{2.5}$	1.35	5.91			
		CO	14.91	65.29			

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
		NOx	16.29	71.35			
		SO_2	0.11	0.47			
		VOC	0.98	4.27			
REHEATXII	TEXAS II Reheat Station Stack	PM	1.54	6.08	3, 6, 8, 24, 34, 38, 39, 45	6, 8, 24, 34, 38, 39, 49	37, 38, 42, 43, 44, 46, 47, 48, 49
		PM_{10}	1.54	6.08			
		$PM_{2.5}$	1.54	6.08			
		CO	10.35	40.82			
		NOx	15.53	61.23			
		SO_2	0.12	0.48			
		VOC	1.12	4.40			
SLAGDUMP	Slag Pot Dump Pile (5)	PM	0.48	1.42	7, 8, 39	7, 8, 39, 49	49
		PM_{10}	0.23	0.68			
		$PM_{2.5}$	0.03	0.10			
		Pb	0.00001	0.00004			
SLAGPROC	Slag/Mill Scale Processing (5)	PM	2.55	1.12	8, 39	8, 21, 22, 23, 39, 49	49
		PM_{10}	1.17	0.46			
		$PM_{2.5}$	0.17	0.06			
		Pb	0.00007	0.00003			
FUGLANCE	Outdoor Scrap Lancing (5)	PM	4.46	2.30	3, 8, 39	8, 39, 49	49
		PM_{10}	4.46	2.30			

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
		$PM_{2.5}$	4.46	2.30			
		NOx	2.07	4.53			
		CO	1.74	3.81			
		SO_2	0.01	0.03			
		VOC	0.11	0.25			
TEAROUT	Ladle Tearout and Tundish Dump (5)	PM	1.09	0.40	8, 39	8, 39, 49	49
		PM_{10}	0.52	0.19			
		$PM_{2.5}$	0.08	0.03			
		Pb	0.00003	0.00001			
CLEANOUT	EAF Drop Out Box (5)	PM	0.55	0.46	8, 39	8, 39, 49	49
		PM_{10}	0.26	0.02			
		$PM_{2.5}$	0.04	0.003			
		Pb	0.001	0.0001			
ALLOYDUMP	Alloy Dump to Larry Car (5)	PM	0.08	0.02	8, 39	8, 39, 49	49
		PM_{10}	0.04	0.01			
		$PM_{2.5}$	0.006	0.002			
ALLOYEAF	Alloy dump at EAF	PM	0.08	0.02	8, 39	8, 39, 49	49
		PM_{10}	0.04	0.01			
		$PM_{2.5}$	0.006	0.002			
ALLOYBUNKR		PM	0.04	0.11	8, 39	8, 39, 49	49

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
	Alloy Storage Bunkers (5)	PM_{10}	0.02	0.05			
		$PM_{2.5}$	<0.01	<0.01			
LIMEBIN1	Lime Silo No. 1 Bin Vent	PM	<0.01	<0.01	6, 38	6, 38, 49	38, 49
		PM_{10}	<0.01	<0.01			
		$PM_{2.5}$	<0.01	<0.01			
LIMEBIN2	Lime Silo No. 2 Bin Vent	PM	<0.01	<0.01	6, 38	6, 38, 49	38, 49
		PM_{10}	<0.01	<0.01			
		$PM_{2.5}$	<0.01	<0.01			
DOLOBIN1	Dolomite Silo No. 1 Bin Vent	PM	<0.01	<0.01	6, 38	6, 38, 49	38, 49
		PM_{10}	<0.01	<0.01			
		$PM_{2.5}$	<0.01	<0.01			
CARBONBIN2	Carbon Silo Nos. 2, 4 and 6 to Common Bin Vent	PM	<0.01	<0.01	6, 38	6, 38, 49	38, 49
		PM_{10}	<0.01	<0.01			
		$PM_{2.5}$	<0.01	<0.01			
CARBONBIN	Carbon Silo, Carbon Bin 3 and Carbon Silo #5 to Common Bin Vent	PM	<0.01	<0.01	6, 38	6, 38, 49	38, 49
		PM_{10}	<0.01	<0.01			
		$PM_{2.5}$	<0.01	<0.01			
SCALPITXI	Texas I Mill Scale Cleanout (5)	PM	0.96	0.19	8, 39	8, 39, 49	49
		PM_{10}	0.45	0.09			
		$PM_{2.5}$	0.07	0.01			

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
		Pb	<0.00001	<0.00001			
SCALPITXII	Texas II Mill Scale Cleanout (5)	PM	0.96	0.19	8, 39	8, 39, 49	49
		PM_{10}	0.45	0.09			
		$PM_{2.5}$	0.07	0.01			
		Pb	<0.00001	<0.00001			
SCALPITRM	Roll Mill Scale Cleanout (5)	PM	1.92	0.38	8, 39	8, 39, 49	49
		PM_{10}	0.91	0.18			
		$PM_{2.5}$	0.14	0.03			
		Pb	<0.00001	<0.00001			
CASTSPRAYW	Caster Spray Chamber Exhaust (West)	PM	0.03	0.10			
		PM_{10}	0.02	0.08			
		$PM_{2.5}$	<0.01	<0.01			
		VOC	0.59	2.59			
		Exempt Solvents	0.31	1.36			
		Fluoride	0.01	0.03			
CASTSPRAYE	Caster Spray Chamber Exhaust (East)	PM	0.03	0.100			
		PM_{10}	0.02	0.08			
		$PM_{2.5}$	<0.01	<0.01			
		VOC	0.59	2.59			
		Exempt Solvents	0.31	1.36			

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
		Fluoride	0.01	0.03			
CWTCCRMI	Texas I Contact Cooling Tower	PM	0.09	0.38			
		PM_{10}	0.05	0.21			
		$PM_{2.5}$	<0.01	<0.01			
CWTNCRMI	Roll Mill Non-Contact Cooling Tower	PM	0.05	0.22			
		PM_{10}	0.03	0.12			
		$PM_{2.5}$	<0.01	<0.01			
CWTCHILLER	Texas II Chiller Tower	PM	0.02	0.07			
		PM_{10}	<0.01	0.04			
		$PM_{2.5}$	<0.01	<0.01			
CWTNCMS	New Melt Shop Cooling Tower	PM	0.56	2.47			
		PM_{10}	0.31	1.38			
		$PM_{2.5}$	<0.01	0.01			
SCRAPSTGPR	Scrap Unloading Area Primary (5)	PM	0.94	0.93	8, 39	8, 39, 49	49
		PM_{10}	0.45	0.46			
		$PM_{2.5}$	0.07	0.07			
		Pb	0.002	0.002			
SCRAPSTGN	Scrap and Tire Storage Area North (5)	PM	2.89	6.27	8, 39	8, 39, 49	49
		PM_{10}	1.40	3.12			
		$PM_{2.5}$	0.21	0.47			

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
		Pb	0.005	0.012			
SCRAPSTGS	Scrap Storage Area South (5)	PM	1.89	1.86	8, 39	8, 39, 49	49
		PM_{10}	0.90	0.91			
		$PM_{2.5}$	0.14	0.14			
		Pb	0.004	0.003			
SCRAPTRKE	Scrap Truck Dump Area (5)	PM	0.19	0.71	8, 39	8, 39, 49	49
		PM_{10}	0.09	0.34			
		$PM_{2.5}$	0.01	0.05			
		Pb	0.0004	0.0013			
SCRAPSTGNW	Scrap Storage Area Northwest (5)	PM	1.09	1.57	8, 39	8, 39, 49	49
		PM_{10}	0.52	0.78			
		$PM_{2.5}$	0.08	0.12			
		Pb	0.002	0.003			
LANDFILL	Non-Hazardous Landfill Area (5)	PM	0.71	2.70	8, 39	8, 39, 49	49
		PM_{10}	0.35	1.35			
		$PM_{2.5}$	0.05	0.20			
FUELLOCOD	Locomotive Fueling Station Diesel Tank	VOC	<0.01	<0.01	3	24, 49	49
FUELSLAGD1	Slag Fueling Station Diesel Tank #1	VOC	<0.01	<0.01	3	24, 49	49

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
FUELSLAGD2	Slag Fueling Station Diesel Tank #2	VOC	<0.01	<0.01	3	24, 49	49
FUELSLAGG	Slag Fueling Station Gasoline Tank	VOC	0.58	0.82	3	24, 49	49
FUELMOBD	Mobile Maintenance Diesel Tank	VOC	<0.01	<0.01	3	24, 49	49
FUELMOBG	Mobile Maintenance Gasoline Tank	VOC	0.58	1.01	3	24, 49	49
FUELLUBEG	Lube Fuel Station Gasoline Tank	VOC	0.86	0.47	3	24, 49	49
FUELSCRAP	Scrap Vehicle Fueling Diesel Tank	VOC	<0.01	0.01	3	24, 49	49
FUELSHIP	Shipping Vehicle Fueling Diesel Tank	VOC	<0.01	<0.01	3	24, 49	49
FUELPUMP	Cooling Water Emergency Pumps	VOC	<0.01	<0.01	3	24, 49	49
FUELBHD	Baghouse Fueling Station Diesel Tank	VOC	<0.01	<0.01	3	24, 49	49

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
FUGEAF	EAF Building Fugitives (5)	PM	9.78	23.21	4, 6, 39	4, 6, 39, 49	4, 49
		PM_{10}	5.67	13.46			
		$PM_{2.5}$	5.06	12.00			
		NOx	0.002	0.006			
		CO	0.14	0.34			
		SO_2	0.003	0.007			
		VOC	0.003	0.008			
		Pb	0.01	0.024			
FUGLMS	LMS/Caster Building Fugitives (5)	PM	8.61	20.44	3, 6, 8, 39	6, 8, 39, 49	49
		PM_{10}	4.99	11.85			
		$PM_{2.5}$	4.45	10.57			
		NOx	2.95	7.01			
		CO	2.17	5.16			
		SO_2	5.56	13.19			
		VOC	0.05	0.11			
		Pb	0.009	0.021			
		Fluoride	0.021	0.090			

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
PLASMA	Meltshop Cutting Emissions (5)	PM	1.76	2.38	19		
		PM_{10}	1.76	2.38			
		$PM_{2.5}$	1.76	2.38			
		NOx	0.007	0.01			
		CO	0.006	0.008			
		SO_2	<0.0001	<0.0001			
		VOC	<0.0004	0.001			
		Pb	0.0002	0.0002			
BLAST	Abrasive Blasting (5)	PM	2.75	12.03	25	49	49
		PM_{10}	0.33	1.43			
		$PM_{2.5}$	0.05	0.21			
BLASTCAB	Abrasive Blast Cabinet Baghouse Stack	PM	0.13	0.56	6, 12, 38	6, 38, 49	38, 49
		PM_{10}	0.13	0.56			
		$PM_{2.5}$	0.13	0.56			
BILLCUT	Billet Cutting (5)	PM	0.01	0.01	8, 39	8, 39, 49	49
		PM_{10}	0.01	0.01			
		$PM_{2.5}$	0.01	0.01			
HWBLR1	Heating Water Boiler #1	PM	0.02	0.07	3	24, 49	49
		PM_{10}	0.02	0.07			
		$PM_{2.5}$	0.02	0.07			

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
		NOx	0.22	0.96			
		CO	0.18	0.81			
		SO_2	0.001	0.006			
		VOC	0.01	0.05			
HWBLR2	Heating Water Boiler #2	PM	0.02	0.07	3	24, 49	49
		PM_{10}	0.02	0.07			
		$PM_{2.5}$	0.02	0.07			
		NOx	0.22	0.96			
		CO	0.18	0.81			
		SO_2	0.001	0.006			
		VOC	0.01	0.05			
CBLR1	Domestic Boiler #1	PM	0.003	0.013		24, 49	49
		PM_{10}	0.003	0.013			
		$PM_{2.5}$	0.003	0.013			
		NOx	0.04	0.17			
		CO	0.03	0.14			
		SO_2	<0.001	0.001			
		VOC	0.002	<0.01			
CBLR2	Domestic Boiler #2	PM	0.003	0.013		24, 49	49
		PM_{10}	0.003	0.013			

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
		$PM_{2.5}$	0.003	0.013			
		NOx	0.04	0.17			
		CO	0.03	0.14			
		SO_2	<0.001	0.001			
		VOC	0.002	<0.01			
SLAGPREHT	Slag Pot Preheater (5)	PM	0.08	0.04		24, 49	49
		PM_{10}	0.08	0.04			
		$PM_{2.5}$	0.08	0.04			
		NOx	0.98	0.49			
		CO	0.82	0.41			
		SO_2	0.006	0.003			
		VOC	0.05	0.03			
EWP	Emergency Cooling Water Pump Engine (6)	PM	1.36	0.07	4	4, 24, 27, 49	4, 49
		PM_{10}	1.36	0.07			
		$PM_{2.5}$	1.36	0.07			
		NOx	19.13	0.96			
		CO	4.12	0.21			
		SO_2	1.27	0.06			
		VOC	1.52	0.08			
EWP2		PM	0.24	0.01	4	4, 24, 27, 49	4, 49

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
	Emergency Cooling Water Pump Engine (6)	PM_{10}	0.24	0.01			
		$PM_{2.5}$	0.24	0.01			
		NOx	3.41	0.17			
		CO	0.74	0.04			
		SO_2	0.23	0.01			
		VOC	0.27	0.01			
CWTTXIIRF	Texas II Reheat Furnace Cooling Tower	PM	0.01	0.04			
		PM_{10}	0.01	0.02			
		$PM_{2.5}$	<0.0001	<0.0001			
FUELEAF	EAF Building Diesel	VOC	0.003	<0.001			
DOCFUG	Drop-Out Chamber Storage and Loading (5)	PM	0.28	0.04	8, 39	8, 39, 49	49
		PM_{10}	0.13	0.02			
		$PM_{2.5}$	0.02	<0.01			
ALL	All Sources	Any HAP	---	<10.00		49	
		All HAPS	---	<25.00			
SHEARFUG	Scrap Shearing	PM	0.22	0.68			
		PM_{10}	0.11	0.34			
		$PM_{2.5}$	0.02	0.05			
PLASMA3	Plasma Scrap Cutting Station North	PM	0.02	0.07	20		
		PM_{10}	0.02	0.07			

Major NSR Summary Table

Permit Numbers: 53581 and PSDTX1029M3					Issuance Date: December 23, 2019		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)		Monitoring and Testing	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Conditions/ Application Information	Special Conditions/ Application Information	Special Conditions/ Application Information
		$PM_{2.5}$	0.02	0.07			
		Lead	1.68E-06	7.36E-06			
		NOx	0.50	2.19			
FUELPUMP2	TXII Reheat Emergency Water	VOC	<0.01	<0.01	3	24, 49	49

(1) Emission point identification - either specific equipment designation or emission point number from plot plan.
(2) Specific point source name. For fugitive sources, use area name or fugitive source name.
(3) VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
NOx - total oxides of nitrogen
SO_2 - sulfur dioxide
PM - total particulate matter, suspended in the atmosphere, including PM_{10} and $PM_{2.5}$, as represented
PM_{10} - total particulate matter equal to or less than 10 microns in diameter, including $PM_{2.5}$, as represented
$PM_{2.5}$ - particulate matter equal to or less than 2.5 microns in diameter
CO - carbon monoxide
Pb - lead
Sb - antimony
As - arsenic
Be - beryllium
Cd - cadmium
Cr - chromium
Cu - copper
Mn - manganese
Hg - mercury
Ni - nickel
Se - selenium
Ag - silver
Tl - thallium
V - vanadium
Zn - zinc
HAP - hazardous air pollutant as listed in § 112(b) of the Federal Clean Air Act or Title 40 Code of Federal Regulations Part 63, Subpart C

(4) Compliance with annual emission limits (tons per year) is based on a 12-month rolling period.
(5) Emission rate is an estimate and is enforceable through compliance with the applicable special condition(s) and permit application representations.
(6) Limited to 100 hours per year of non-emergency operation.
(7) Planned startup and shutdown emissions are included. Maintenance activities are not authorized by this permit and will need separate authorization unless the activity can meet the conditions of 30 TAC §116.119.

Texas Commission on Environmental Quality
Air Quality Permit

A Permit Is Hereby Issued To
Nucor Corporation
Authorizing the Construction and Operation of
Steel Mill
Located at **Jewett, Leon County, Texas**
Latitude 31° 21′ 26″ Longitude −96° 9′ 53″

Permits: 53581 and PSDTX1029M3

Amendment Date: December 23, 2019

Expiration Date: October 2, 2023

For the Commission

1. **Facilities** covered by this permit shall be constructed and operated as specified in the application for the permit. All representations regarding construction plans and operation procedures contained in the permit application shall be conditions upon which the permit is issued. Variations from these representations shall be unlawful unless the permit holder first makes application to the Texas Commission on Environmental Quality (commission) Executive Director to amend this permit in that regard and such amendment is approved. [Title 30 Texas Administrative Code (TAC) Section 116.116 (30 TAC § 116.116)] [1]
2. **Voiding of Permit**. A permit or permit amendment is automatically void if the holder fails to begin construction within 18 months of the date of issuance, discontinues construction for more than 18 months prior to completion, or fails to complete construction within a reasonable time. Upon request, the executive director may grant an 18-month extension. Before the extension is granted the permit may be subject to revision based on best available control technology, lowest achievable emission rate, and netting or offsets as applicable. One additional extension of up to 18 months may be granted if the permit holder demonstrates that emissions from the facility will comply with all rules and regulations of the commission, the intent of the Texas Clean Air Act (TCAA), including protection of the public's health and physical property; and (b)(1)the permit holder is a party to litigation not of the permit holder's initiation regarding the issuance of the permit; or (b)(2) the permit holder has spent, or committed to spend, at least 10 percent of the estimated total cost of the project up to a maximum of $5 million. A permit holder granted an extension under subsection (b)(1) of this section may receive one subsequent extension if the permit holder meets the conditions of subsection (b)(2) of this section. [30 TAC § 116.120]
3. **Construction Progress**. Start of construction, construction interruptions exceeding 45 days, and completion of construction shall be reported to the appropriate regional office of the commission not later than 15 working days after occurrence of the event. [30 TAC § 116.115(b)(2)(A)]
4. **Start-up Notification**. The appropriate air program regional office shall be notified prior to the commencement of operations of the facilities authorized by the permit in such a manner that a representative of the commission may be present. The permit holder shall provide a separate notification for the commencement of operations for each unit of phased construction, which may involve a series of units commencing operations at different times. Prior to operation of the facilities authorized by the permit, the permit holder shall identify the source or sources of allowances to be utilized for compliance with Chapter 101, Subchapter H, Division 3 of this title (relating to Mass Emissions Cap and Trade Program). [30 TAC § 116.115(b)(2)(B)]
5. **Sampling Requirements**. If sampling is required, the permit holder shall contact the commission's Office of Compliance and Enforcement prior to sampling to obtain the proper data forms and procedures. All sampling and testing procedures must be approved by the executive director and coordinated with the regional representatives of the commission. The permit holder is also responsible for providing sampling facilities and conducting the sampling operations or contracting with an independent sampling consultant. [30 TAC § 116.115(b)(2)(C)]
6. **Equivalency of Methods.** The permit holder must demonstrate or otherwise justify the equivalency of emission control methods, sampling or other emission testing methods, and monitoring methods proposed as alternatives to methods indicated in the conditions of the permit. Alternative methods shall be applied for in writing and must be reviewed and approved by the executive director prior to their use in fulfilling any requirements of the permit. [30 TAC § 116.115(b)(2)(D)]
7. **Recordkeeping.** The permit holder shall maintain a copy of the permit along with records containing the information and data sufficient to demonstrate compliance with the permit, including production records and

operating hours; keep all required records in a file at the plant site. If, however, the facility normally operates unattended, records shall be maintained at the nearest staffed location within Texas specified in the application; make the records available at the request of personnel from the commission or any air pollution control program having jurisdiction in a timely manner; comply with any additional recordkeeping requirements specified in special conditions in the permit; and retain information in the file for at least two years following the date that the information or data is obtained. [30 TAC § 116.115(b)(2)(E)]

8. **Maximum Allowable Emission Rates**. The total emissions of air contaminants from any of the sources of emissions must not exceed the values stated on the table attached to the permit entitled “Emission Sources--Maximum Allowable Emission Rates.” [30 TAC § 116.115(b)(2)(F)] [1]
9. **Maintenance of Emission Control**. The permitted facilities shall not be operated unless all air pollution emission capture and abatement equipment is maintained in good working order and operating properly during normal facility operations. The permit holder shall provide notification in accordance with 30 TAC §101.201, 101.211, and 101.221 of this title (relating to Emissions Event Reporting and Recordkeeping Requirements; Scheduled Maintenance, Startup, and Shutdown Reporting and Recordkeeping Requirements; and Operational Requirements). [30 TAC§ 116.115(b)(2)(G)]
10. **Compliance with Rules**. Acceptance of a permit by an applicant constitutes an acknowledgment and agreement that the permit holder will comply with all rules and orders of the commission issued in conformity with the TCAA and the conditions precedent to the granting of the permit. If more than one state or federal rule or regulation or permit condition is applicable, the most stringent limit or condition shall govern and be the standard by which compliance shall be demonstrated. Acceptance includes consent to the entrance of commission employees and agents into the permitted premises at reasonable times to investigate conditions relating to the emission or concentration of air contaminants, including compliance with the permit. [30 TAC § 116.115(b)(2)(H)]
11. **This** permit may not be transferred, assigned, or conveyed by the holder except as provided by rule. [30 TAC § 116.110(e)]
12. **There** may be additional special conditions attached to a permit upon issuance or modification of the permit. Such conditions in a permit may be more restrictive than the requirements of Title 30 of the Texas Administrative Code. [30 TAC § 116.115(c)]
13. **Emissions** from this facility must not cause or contribute to “air pollution” as defined in Texas Health and Safety Code (THSC) §382.003(3) or violate THSC § 382.085. If the executive director determines that such a condition or violation occurs, the holder shall implement additional abatement measures as necessary to control or prevent the condition or violation.
14. **The** permit holder shall comply with all the requirements of this permit. Emissions that exceed the limits of this permit are not authorized and are violations of this permit. [1]

[1] Please be advised that the requirements of this provision of the general conditions may not be applicable to greenhouse gas emissions.

Common Acronyms in Air Permits

°C = Temperature in degrees Celsius
°F = Temperature in degrees Fahrenheit
°K = Temperature in degrees Kelvin
µg = microgram
µg/m^3 = microgram per cubic meter
acfm = actual cubic feet per minute
AMOC = alternate means of control
AOS = alternative operating scenario
AP-42 = Air Pollutant Emission Factors, 5th edition
APD = Air Permits Division
API = American Petroleum Institute
APWL = air pollutant watch list
BPA = Beaumont/ Port Arthur
BACT = best available control technology
BAE = baseline actual emissions
bbl = barrel
bbl/day = barrel per day
bhp = brake horsepower
BMP = best management practices
Btu = British thermal unit
Btu/scf = British thermal unit per standard cubic foot or feet
CAA = Clean Air Act
CAM = compliance-assurance monitoring
CEMS = continuous emissions monitoring systems
cfm = cubic feet (per) minute
CFR = Code of Federal Regulations
CN = customer ID number
CNG = compressed natural gas
CO = carbon monoxide
COMS = continuous opacity monitoring system
CPMS = continuous parametric monitoring system
DFW = Dallas/ Fort Worth (Metroplex)
DE = destruction efficiency
DRE = destruction and removal efficiency
dscf = dry standard cubic foot or feet
dscfm = dry standard cubic foot or feet per minute
ED = (TCEQ) Executive Director
EF = emissions factor
EFR = external floating roof tank
EGU = electric generating unit
EI = Emissions Inventory
ELP = El Paso
EPA = (United States) Environmental Protection Agency
EPN = emission point number
ESL = effects screening level
ESP = electrostatic precipitator
FCAA = Federal Clean Air Act
FCCU = fluid catalytic cracking unit
FID = flame ionization detector
FIN = facility identification number
ft = foot or feet
ft/sec = foot or feet per second
g = gram
gal/wk = gallon per week
gal/yr = gallon per year
GLC = ground level concentration
GLC_{max} = maximum (predicted) ground-level concentration
gpm = gallon per minute
gr/1000scf = grain per 1000 standard cubic feet
gr/dscf = grain per dry standard cubic feet
H_2CO = formaldehyde
H_2S = hydrogen sulfide
H_2SO_4 = sulfuric acid
HAP = hazardous air pollutant as listed in § 112(b) of the Federal Clean Air Act or Title 40 Code of Federal Regulations Part 63, Subpart C
HC = hydrocarbons
HCl = hydrochloric acid, hydrogen chloride
Hg = mercury
HGB = Houston/Galveston/Brazoria
hp = horsepower
hr = hour
IFR = internal floating roof tank
in H_2O = inches of water
in Hg = inches of mercury
IR = infrared
ISC3 = Industrial Source Complex, a dispersion model
ISCST3 = Industrial Source Complex Short-Term, a dispersion model
K = Kelvin; extension of the degree Celsius scaled-down to absolute zero
LACT = lease automatic custody transfer
LAER = lowest achievable emission rate
lb = pound
hp = horsepower
hr = hour lb/day = pound per day
lb/hr = pound per hour
lb/MMBtu = pound per million British thermal units
LDAR = Leak Detection and Repair (Requirements)
LNG = liquefied natural gas
LPG = liquefied petroleum gas
LT/D = long ton per day
m = meter
m^3 = cubic meter
m/sec = meters per second
MACT = maximum achievable control technology
MAERT = Maximum Allowable Emission Rate Table
MERA = Modeling and Effects Review Applicability
mg = milligram
mg/g = milligram per gram
mL = milliliter
MMBtu = million British thermal units
MMBtu/hr = million British thermal units per hour
MSDS = material safety data sheet
MSS = maintenance, startup, and shutdown
MW = megawatt
NAAQS = National Ambient Air Quality Standards
NESHAP = National Emission Standards for Hazardous Air Pollutants
NGL = natural gas liquids
NNSR = nonattainment new source review
NO_x = total oxides of nitrogen

NSPS = New Source Performance Standards
PAL = plant-wide applicability limit
PBR = Permit(s) by Rule
PCP = pollution control project
PEMS = predictive emission monitoring system
PID = photo ionization detector
PM = periodic monitoring
PM = total particulate matter, suspended in the atmosphere, including PM_{10} and $PM_{2.5}$, as represented
$PM_{2.5}$ = particulate matter equal to or less than 2.5 microns in diameter
PM_{10} = total particulate matter equal to or less than 10 microns in diameter, including $PM_{2.5}$, as represented
POC = products of combustion
ppb = parts per billion
ppm = parts per million
ppmv = parts per million (by) volume
psia = pounds (per) square inch, absolute
psig = pounds (per) square inch, gage
PTE = potential to emit
RA = relative accuracy
RATA = relative accuracy test audit
RM = reference method
RVP = Reid vapor pressure
scf = standard cubic foot or feet
scfm = standard cubic foot or feet (per) minute
SCR = selective catalytic reduction
SIL = significant impact levels
SNCR = selective non-catalytic reduction
SO_2 = sulfur dioxide
SOCMI = synthetic organic chemical manufacturing industry
SRU = sulfur recovery unit
TAC = Texas Administrative Code
TCAA = Texas Clean Air Act
TCEQ = Texas Commission on Environmental Quality
TD = Toxicology Division
TLV = threshold limit value
TMDL = total maximum daily load
tpd = tons per day
tpy = tons per year
TVP = true vapor pressure
VOC = volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
VRU = vapor recovery unit or system

Special Conditions

Permit Numbers 53581 and PSDTX1029M3

Emission Standards

1. This permit authorizes only those sources of emissions listed in the attached table entitled "Emission Sources - Maximum Allowable Emission Rates," and those sources are limited to the emission limits and other conditions specified in that attached table. In addition, this permit authorizes all emissions from planned startup and shutdown activities associated with facilities or groups of facilities authorized by this permit.

Fuel Specifications

2. Fuel for the Billet Reheat Furnaces (Emission Point Nos. [EPN] REHEATXI and REHEATXII), Ladle Preheaters, Tundish Preheaters, Tundish Nozzle Preheaters, Reline Preheaters, Tundish Dryers (EPN CASTERVENT), Ladle Metallurgical Station (LMS) (EPN FUGLMS), Caster Runout Torches (EPN RUNOUTVENT), Slagpot Preheater (EPN SLAGPREHT), Plasma Cutting Units (EPN PLASMA), Plasma Scrap Cutting Station North (EPN PLASMA3), Boiler #1 (EPN HWBLR1), Boiler # 2 (EPN HWBLR2), Domestic Boiler #1 (EPN CBLR1), and Domestic Boiler #2 (EPN CBLR2) shall be pipeline-quality natural gas. Fuel for the Cutting Torches (EPN FUGLANCE) shall be either propane or pipeline-quality natural gas. Use of any other fuel will require prior approval of the Executive Director of the Texas Commission on Environmental Quality (TCEQ). **(12/19)**

3. Upon request by the Executive Director of the TCEQ or the TCEQ Regional Director or any local air pollution control program having jurisdiction, the holder of this permit shall provide a sample and/or an analysis of the fuels used in these facilities or shall allow air pollution control program representatives to obtain a sample for analysis.

Federal Applicability

4. These facilities shall comply with all applicable requirements of the U.S. Environmental Protection Agency (EPA) regulations on Standards of Performance for New Stationary Sources in Title 40 Code of Federal Regulations (40 CFR) Part 60, specifically the following:

   A. Subpart A - General Provisions;

   B. Subpart AAa - Steel Plant Electric Arc Furnaces; and

   C. Subpart IIII - Stationary Compression Ignition Internal Combustion Engines.

5. These facilities shall comply with all applicable requirements of the EPA Regulations on National Emission Standards for Hazardous Air Pollutants for Source Categories in 40 CFR Part 63, specifically the following:

   A. Subpart A - General Provisions;

   B. Subpart YYYYY - Electric Arc Furnace Steelmaking Facilities; and

   C. Subpart CCCCCC - Gasoline Dispensing Facilities.

Opacity/Visible Emission Limitations

6. Opacity of particulate matter emissions from the emission points shown in the following table shall not exceed the specified opacity values, averaged over a six-minute period. **(12/19)**

Table 1: Opacity Limits

EPN	Emission Point Name	Opacity	Notes
BAGHSMS	Meltshop Baghouse Stack	3 Percent	NSPS AAa, BACT
REHEATXI, REHEATXII	Texas I and Texas II Reheat Station Stacks	3 Percent	BACT
FUGEAF	EAF Building Fugitives	6 Percent	NSPS AAa
FUGLMS	LMS/Caster Building Fugitives	6 Percent	BACT
LIMEBIN1 LIMEBIN2 DOLOBIN1 CARBONBIN CARBONBIN2 BLASTCAB	Lime Silo No. 1 Bin Vent Lime Silo No. 2 Bin Vent Dolomite Silo No. 1 Bin Vent Carbon Silo, Carbon Silo 5, Carbon Bin 3 to Common Bin Vent Carbon Silo Nos. 2, 4 and 6 to Common Bin Vent Abrasive Blast Cabinet Baghouse Stack	5 percent	BACT
CASTERVENT RUNOUTVENT FINISHVENT	West LMS/Caster Building Vents Billet Caster Runout Building Vents Rolling Mill and Billet Storage Building Vents	6 percent	BACT

BACT - best available control technology

7. Opacity of emissions from any slag handling transfer point on belt conveyors or any screen shall not exceed 10 percent, averaged over a six-minute period.

8. Visible fugitive emissions from the following sources shall not leave the property for more than 30 cumulative seconds in any six-minute period: Melt Shop, LMS/Caster Building, Billet Bay Building Vents, Rolling Mill Building Vents, Texas I Reheat Station, Texas II Reheat Station, Slag Dump, Slag Mill Processing, Outdoor Scrap Lancing, Ladle Tearout and Tundish Dump, EAF Drop Out Box and Inspection Ports Clean-out, Alloy Truck Dump, Alloy Storage Bunker, Texas I Mill Scale Clean Out, Texas II Mill Scale Clean Out, Roll Mill Scale Cleanout, Scrap Unloading Area, Scrap and Tire Storage Area North, Scrap Storage Area South, Scrap Truck Dump, Scrap Storage Area Northwest, Non-Hazardous Landfill Area, Billet Cutting, and Drop-Out Chamber Storage and Loading. **(12/19)**

   Stack emissions may leave the plant property provided stack opacity restrictions are not violated.

Operational Limitations, Work Practices, and Plant Design

9. As represented, production of molten steel shall not exceed 316 tons per hour (tph), 6,600 tons per day (tpd) and 1,500,000 tons per year (tpy) in any rolling 12-month period. Production rates shall be calculated based on operating hours and tons of steel produced as measured by the tap weight and averaged over a 24-hour day starting at 7:00 a.m. **(12/19)**

10. A fabric filter baghouse with reverse air cleaning properly installed and in good working order shall control PM emissions from the EAF, LMS, and Caster. Particulate emissions from the Meltshop Baghouse Stack (EPN BAGHSMS) shall not exceed total PM (front-half and back-half) of 0.0052 grain per dry standard cubic foot (gr/dscf) and front-half PM of 0.0032 gr/dscf in the exhaust gases.

11. The Meltshop Baghouse Stack (EPN BAGHSMS) exhaust at a height of 120 feet, shall attain a stack minimum flow rate of 1,091,000 dscf per minute while in the melting and refining stages of the Electric Arc Furnace except during periods of equipment malfunction in which the stack flow rate shall not be less than 20 percent below the required minimum flow rate for a maximum of 10 minutes per 24-hour period.

12. A fabric filter baghouse designed to meet an outlet grain loading of not more than 0.005 gr/dscf of exhaust, properly installed and in good working order, shall control particulate matter emissions from the Abrasive Blast Cabinet when this equipment is in operation. **(04/16)**

13. The roof of the EAF building shall be completely enclosed to ensure the 6% opacity averaged over six minutes requirement is met for the building.

14. A system to collect and transport mill scale from the roll mill straighteners in the Roll Mill to a fabric filter that exhausts into the Roll Mill Building shall be employed. The fabric filter shall have a design outlet grain loading not greater than 0.005 gr/dscf.

15. All hood, duct, and collection systems shall be effective in capturing emissions from process equipment and in minimizing fugitive emissions from the buildings. The hood and duct systems shall be maintained free of holes, cracks, and other conditions that would reduce the collection efficiency of the emission capture system as represented in the application.

16. Rollmill oil and grease net usage shall be limited to 320 tpy in any rolling 12-month period. **(04/16)**

17. Caster oil and grease net usage shall be limited to 140 tpy in any rolling 12-month period. **(04/16)**

18. Use of mold powder having a maximum fluoride content of 20% is authorized. **(08/14)**

19. The plasma cutting operation shall employ a water table to minimize fumes from the cutting process and shall be limited to a maximum operating schedule of 2,800 hours per year. **(05/18)**

20. The emissions from Plasma Scrap Cutting Station North shall be collected and routed to the cartridge filter with 99.9% control efficiency for particulate matters. **(12/19)**

21. Slag processing shall not exceed 300 tph and 317,050 tpy in any rolling 12-month period.

22. Mill Scale processing shall not exceed 300 tph and 51,000 tpy in any rolling 12-month period.

23. The primary slag crusher shall be limited to a throughput of 69 tph and 72,922 tpy. Slag, refractory materials, and spent/broken EAF electrodes are authorized to be crushed.

24. Total natural gas combusted for reheat furnaces, REHEATXI and REHEATXII shall not exceed 1,554 MMscf/yr and 1,600 MMscf/yr, respectively.

    To establish a federally enforceable limit for Green House Gas emissions and to comply with EPA permitting requirements, CO_{2e} from EAF CEMS, CP-1 natural gas combustion, diesel for stationary sources combustion, and propane combustion shall not exceed 263,039 tons CO_{2e}/year.

    CP-1 equals site wide natural gas total minus EAF natural gas total. **(12/19)**

25. Non enclosed abrasive blasting operations shall be authorized for use including, but not limited to, support of EAF equipment repair (FIN BLAST). **(12/19)**

    A. Blast media used by FIN BLAST shall be limited to 4,205 tpy of coal/copper slag.

    B. Bulk blast media shall be received in bags and manually transferred to the abrasive blast units.

26. Use of wood pallets and scraps as a defoaming agent in the slag pots is authorized.

27. The diesel engines powered emergency water pumps (EPNs EWP and EWP2) are limited to 100 non-emergency operating hours per year each. **(12/19)**

28. Plant roads shall be paved and cleaned and/or sprinkled with water as necessary to minimize fugitive dust emissions and to maintain compliance with the TCEQ rules and regulations.

29. The Meltshop Baghouse dust collection and handling system, from the Meltshop Baghouse hoppers to the shipping container or vehicle, shall be totally enclosed. This collection and handling system shall be physically inspected once per month to ensure that the system is properly maintained to prevent any dust emissions from becoming airborne.

30. Replaced or used Meltshop Baghouse bags shall be placed in sealed containers and shall be disposed of in a manner that will prevent any dust from becoming airborne.

31. Permanently mounted water spray bars shall be installed at all shaker screens, and at all slag processing material transfer points, including the slag dump. Area type water sprays shall be installed at all slag stockpiles and active slag work areas. All water spray systems shall be operated as necessary to maintain compliance with all TCEQ rules and regulations.

32. Drop-out chamber solids storage (EPN DOCFUG) shall be partially enclosed with at least 3 sides. **(04/16)**

Chemical and Operational Flexibility

33. The owner/operator is authorized to adjust the method of operation of the Electric Arc Furnace and the Rolling Mill to optimize production and emissions control, so long as maximum production does not exceed production rates listed in Special Condition 9 and emissions comply with the emission limits specified in the Maximum Allowable Emissions Rate Table. Permissible adjustments include, but are not limited to that specified by paragraphs A through H of this condition. This condition does

not authorize an increase in production rate over permitted levels, addition of burners or lances, increases in burner heat input, increases in nominal electric current capacity to the EAF, or increases in fuel use.

A. New or replacement compounds or products that serve the same basic process function and the emissions shall be emitted from the same location as the replaced compound or product emissions.

B. Changes in billet size up to 12" X 12" including round billets.

C. Changes in billet length.

D. Changes in types, quantities, grades, and location of feedstock addition. Any such changes shall meet BACT limitations.

E. Change in product grade, type, shape, length, and dimension of finished products in the Roll Mill.

F. Addition of new process materials to the furnaces meeting the criteria of Paragraph H or changes in raw material usage or fuel service that do not require construction or modification to existing equipment.

G. Changes in rolling oils and process additives subject to Paragraph H criteria and improvement in control system in the roll mill.

H. The Effects Screening Level (ESL) for any new or replacement compound or product authorized pursuant to paragraphs F or G shall not be less than the ESL value for any current compound or product and the emission rate (ER) for the replacement compound or product shall not be greater than the ER for the current compound or product, except if the following condition is met:

where: there is a direct substitution of one chemical for another

$$\frac{ER2}{ESL2} \leq \frac{ER1}{ESL1}$$

OR

where: the replacement has different constituents

$$\frac{ER2a}{ESL2a} + \frac{ER2b}{ESL2b} + \cdots + \frac{ER2n}{ESL2n} \leq \frac{ER1a}{ESL1a} + \frac{ER1b}{ESL1b} + \cdots + \frac{ER1n}{ESL1n}$$

where:

ER1 is the ER of an authorized compound or product (chemical).

ER2 is the ER of the replacement compound or product (chemical).

ESL1 is the ESL for an authorized compound or product.

ESL2 is the ESL for the replacement compound or product.

The ESL shall be taken from the permit application or the current TCEQ ESL list. The use of new chemicals not listed in the current TCEQ ESL list will require that the TCEQ Toxicology Division develop an ESL for each chemical to be applied in the ratio test set forth above.

Records as required in Special Condition No. 49.O shall be maintained at this site by the permit holder to demonstrate compliance with this condition and Special Condition No. 1 above.

Initial Determination of Compliance

34. To demonstrate compliance with the MAERT, represented equipment specifications, and represented speciated PM emissions, the holder of this permit shall perform stack sampling and other testing as required to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere. Sampling shall occur within 60 days after achieving the maximum production rate but no later than 180 days after initial start-up of the new Melt Shop.

    The holder of this permit shall demonstrate compliance with the following:

    A. Maximum allowable emission rates for the Meltshop Baghouse Stack (EPN BAGHSMS). Air contaminants to be tested for include (but are not limited to) PM, particulate matter equal to or less than 10 microns in diameter (PM_{10}), particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$), nitrogen oxide (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), volatile organic compounds (VOC), vanadium, antimony, arsenic, beryllium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, and zinc;

    B. Emissions of PM, PM_{10}, $PM_{2.5}$, NO_x, CO, SO_2, VOC, and vanadium are to be measured by approved EPA Reference Methods. Emissions of antimony, arsenic, beryllium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, and zinc are to be measured by EPA Reference Method 29;

    C. Sampling to demonstrate maximum emissions for PM, PM_{10}, and $PM_{2.5}$ shall occur during the charging and melting processes. Sampling to demonstrate maximum emissions of CO shall occur during the charging and melting processes;

    D. Represented stack flow rate for the Meltshop Baghouse Stack (EPN BAGHSMS) as detailed in Special Condition No. 11;

    E. Maximum allowable emission rates for Reheat Furnaces (EPNs REHEATXI and REHEATXII), if and when the holder of this permit installs new replacement reheat furnaces or retrofits existing furnaces with low-NO_x burner technology. Air contaminants to be tested for include (but are not limited to) NO_x, as measured by approved EPA Reference Methods;

    F. Represented outlet grain loading of 0.0032 gr/dscf front-half PM catch and 0.0052 gr/dscf total PM catch from the Meltshop Baghouse, as measured by TCEQ modified Method 5 or equivalent;

    G. Capture effectiveness of the EAF Direct Shell Evacuation and Roof Canopy collection systems for control of PM emissions from the EAF, using EPA TM 9 or equivalent, to demonstrate that the opacity is less than 6 percent, averaged over a six-minute period;

    H. Capture effectiveness of the Close Capture and Roof Canopy collection systems for the control of PM emissions from the LMS and Caster Deck, using EPA TM 9 or equivalent, to demonstrate that the opacity is less than 6 percent, averaged over a six-minute period; and

    I. Maximum allowable emission rates for the Billet Caster Runout Building Vents (EPN RUNOUTVENT) and Rolling Mill and Billet Storage Building Vents (EPN FINISHVENT). Air contaminants to be tested for include (but are not limited to) PM, as measured by TCEQ modified Method 5A or equivalent or approved alternative.

35. If, as a result of stack sampling, compliance with the MAERT cannot be demonstrated, the holder of this permit shall adjust any operating parameters (including reduction of molten steel production rate) so as to comply with Special Condition No. 1 and the MAERT.

36. If opacity exceeds 6 percent from any opening, the holder of this permit shall take immediate action to correct the opacity exceedance and/or adjust any operating parameters (including reduction of molten steel production rate) so as to comply with Special Condition No. 6.

37. If the holder of this permit is required to adjust any operating parameters for compliance, then beginning no later than 60 days after the date of the test conducted, the holder of this permit shall submit to the TCEQ on a monthly basis, a record of adjusted operating parameters and daily records of molten steel production sufficient to demonstrate compliance with the MAERT. Daily records of molten steel production and operating parameters shall be distributed as follows:

    One copy to the appropriate TCEQ Regional Office.

    One copy to the TCEQ Office of Air, Air Permits Division in Austin.

Demonstration of Continuous Compliance

38. The holder of this permit shall conduct a quarterly visible emissions determination to demonstrate compliance with the opacity limitations specified in this permit for the Meltshop Baghouse Stack (EPN BAGHSMS), Texas I and Texas II Reheat Station Stacks (EPNs REHEATXI and REHEATXII), Lime Silo No. 1 Bin Vent (EPN LIMEBIN1), Lime Silo No. 2 Bin Vent (EPN LIMEBIN2), Dolomite Silo No. 1 Bin Vent (EPN DOLOBIN1), Carbon Silo, Carbon Silo 5 and Carbon Bin 3 to Common Bin Vent (EPN CARBONBIN), Carbon Silo Nos. 2, 4 and 6 to Common Bin Vent (EPN CARBONBIN2), and the Abrasive Blast Cabinet Baghouse Stack (EPN BLASTCAB). This visible emissions determination shall be performed: 1) during normal plant operations, 2) for a minimum of six minutes, 3) approximately perpendicular to plume direction, 4) with the sun behind the observer (to the extent practicable), and 5) at least two stack heights, but not more than five stack heights, from the emission point. If visible emissions are observed from the emission point, the owner or operator shall: **(12/19)**

    A. Take immediate action to eliminate visible emissions, record the corrective action within 24 hours, and comply with any applicable requirements in 30 Texas Administrative Code (TAC) § 101.201, Emissions Event Reporting and Record Keeping Requirements; or

    B. Determine opacity using 40 CFR Part 60, Appendix A, Test Method 9. If the opacity limit is exceeded, take immediate action (as appropriate) to reduce opacity to within the permitted limit, record the corrective action within 24 hours, and comply with applicable requirements in 30 TAC § 101.201, Emissions Event Reporting and Record Keeping Requirements.

39. The holder of this permit shall conduct a quarterly visible emissions determination to demonstrate compliance with the visible emissions limitation specified in this permit for the Melt Shop, LMS/Caster Building, Billet Bay Building Vents, Rolling Mill Building Vents, Texas I Reheat Station, Texas II Reheat Station, Slag Dump, Slag Mill Processing, Outdoor Scrap Lancing, Ladle Tearout and Tundish Dump, EAF Drop Out Box and Inspection Ports Clean-out, Alloy Truck Dump, Alloy Storage Bunker, Texas I Mill Scale Clean Out, Texas II Mill Scale Clean Out, Roll Mill Scale Cleanout, Scrap Unloading Area, Scrap and Tire Storage Area North, Scrap Storage Area South, Scrap Truck Dump, Scrap Storage Area Northwest, Non-Hazardous Landfill Area, Billet Cutting,

and Drop-Out Chamber Storage and Loading. This visible emissions determination shall be performed: 1) during normal plant operations, 2) for a minimum of six minutes, 3) approximately perpendicular to plume direction, 4) with the sun behind the observer (to the extent practicable), 5) at least 15 feet, but not more than 0.25 mile, from the plume, and 6) in accordance with EPA 40 CFR Part 60, Appendix A, Test Method 22, except where stated otherwise in this condition. If visible emissions leaving the property exceed 30 cumulative seconds in any six-minute period, the owner or operator shall take immediate action (as appropriate) to eliminate the excessive visible emissions. The corrective action shall be documented within 24 business hours of completion. **(04/16)**

40. The holder of this permit shall install, calibrate, maintain, and operate a continuous emission monitoring system (CEMS) and continuous flow rate sensor to measure and record the concentrations of NO_x, CO, SO_2, O_2, and exhaust flow rate from the Meltshop Baghouse Stack (EPN BAGHSMS). The initial certification and relative accuracy test audit (RATA) shall be conducted prior to or during the sampling required by Special Condition No. 34, and include the following:

A. The CEMS and flow rate sensor shall meet the design and performance specifications, pass the field tests, and meet the installation requirements and the data analysis and reporting requirements specified in the applicable Performance Specification Numbers. 1 through 9, 40 CFR Part 60, Appendix B. If there is no applicable performance specifications in 40 CFR Part 60, Appendix B, the permit holder shall submit proposed performance specifications, which shall be subject to review and approval by the Executive Director of the TCEQ. The proposed specifications shall be submitted to the TCEQ Regional Director with jurisdiction; **(04/16)**

B. The system shall be zeroed and spanned daily and corrective action taken when the 24-hour span drift exceeds two times the amounts specified in 40 CFR Part 60, Appendix B or as specified by the TCEQ if not specified in Appendix B.

Each monitor shall be quality-assured at least quarterly in accordance with 40 CFR Part 60, Appendix F, Procedure 1, and Section 5.1.2. Cylinder Gas Audit (CGA) conducted in all four calendar quarters may be used in lieu of RATA for non-NSPS sources and for NSPS sources not subject to 40 CFR Part 60, Appendix F.

The flow rate monitoring system shall be maintained according to 40 CFR Part 60, Appendix B;

C. The monitoring data shall be reduced to hourly average concentrations at least once everyday, using a minimum of four equally spaced data points from each one hour period. The individual average concentrations shall be reduced to units of the permit allowable emission rate in pounds per hour at least once everyday and cumulative tpy on a 12-month rolling average at least once every month;

D. The TCEQ Regional Director with jurisdiction shall be notified as soon as possible after the discovery of any CEMS malfunction which is expected to result in more than 24 hours of lost data. Supplemental stack concentration measurements may be required at the discretion of the appropriate TCEQ Regional Director in case of extended CEMS downtime;

E. All monitoring data and quality-assurance data shall be maintained by the source for a period of two years and shall be made available to the TCEQ Executive Director or designated representative upon request;

F. The TCEQ Regional Office with jurisdiction shall be notified in writing at least 21 days prior to any quarterly CGA required by Appendix F in order to provide the TCEQ staff the opportunity to observe the testing;

G. All CGA in excess of ±15 percent accuracy or 5 parts per million, whichever is greater, and any CEMS downtime shall be reported to the appropriate TCEQ Regional Director in the "Excess Emissions and CEMS Downtime" quarterly report that is used to comply with 40 CFR § 60.7(c), and necessary corrective action shall be taken. Supplemental stack concentration measurements may be required at the discretion of the appropriate TCEQ Regional Director; and

H. Quality assured (or valid) data shall be generated when the meltshop (EPN BAGHSMS) is operating except during performance of daily zero and span checks and quarterly quality assurance tests. Loss of valid data due to periods of monitor breakdown, out-of-control operations (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5% of the meltshop operating time on a quarterly basis.

Sampling Requirements

41. The holder of this permit is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense. Sampling ports and platforms shall be incorporated into the design of the stacks according to the specifications set forth in the attachment entitled "Chapter 2, Stack Sampling Facilities" prior to stack sampling. Alternate sampling facility designs may be submitted for approval by the TCEQ Regional Office with jurisdiction.

42. A pretest meeting shall be held with personnel from the TCEQ before the required tests are performed. The TCEQ Regional Office with jurisdiction shall be notified not less than 45 days prior to sampling to schedule a pretest meeting. Test methods to be used shall be determined at this pretest meeting. The notice shall include: **(04/16)**

    A. Date for pretest meeting;

    B. Date sampling will occur;

    C. Points or sources to be sampled;

    D. Name of firm conducting sampling;

    E. Type of sampling equipment to be used; and

    F. Method or procedure to be used in sampling.

    The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for submitting test reports.

43. A written proposed description of any deviation from sampling procedures specified in permit conditions or TCEQ or applicable EPA sampling procedures shall be made available to the TCEQ prior to the pretest meeting. The TCEQ Regional Office shall approve or disapprove of any deviation from specified sampling procedures.

44. Requests to waive testing for any pollutant specified may be submitted for approval to the TCEQ Office of Air, Air Permits Division in Austin.

45. The plant shall operate at maximum authorized steel production rates during stack emissions testing. Replacement reheat furnaces or retrofitted reheat furnaces shall operate at maximum firing rates during stack emissions testing. If the plant is unable to operate at maximum production rates during testing or the replaced or retrofitted reheat furnaces are unable to operate at maximum firing rates during testing, then additional stack testing shall be conducted within 60 days of achieving a steel production rate (based on tap weight and averaged over a 24-hour day starting at 7:00 a.m.) or a firing rate (based on firing rates averaged over a 24-hour period) that exceeds the previous stack test production rate/firing rate by +10 percent.

46. Requests for additional time to perform sampling shall be submitted to the TCEQ Regional Office with jurisdiction. Additional time to comply with any applicable federal requirements requires the EPA approval, and requests shall be submitted to the EPA Region 6.

47. The sampling report shall include the following:

    A. Steel production rates, in tph;

    B. Fuel consumption rates, standard cubic feet per minute; and

    C. Any other pertinent parameters, as determined at the pretest meeting.

48. The final sampling report shall be provided within 60 days after sampling is completed. Sampling reports shall comply with the provisions of Chapter 14 of the TCEQ Sampling Procedures Manual. Copies of the final sampling reports shall be distributed as follows:

    One copy to the appropriate TCEQ Regional Office.

    One copy to the TCEQ Office of Air, Air Permits Division in Austin.

    One copy to the EPA, Region 6.

Recordkeeping/Reporting Requirements

49. The following records shall be maintained at this facility and made available at the request of personnel from the TCEQ or any other air pollution control program having jurisdiction. These records shall be totaled for each calendar month, retained for a rolling 60-month period, and include the following:

    A. To show compliance with Special Condition 9, a daily record of operating hours and molten steel produced in tons per 24-hour period. From this data, average hourly production shall be calculated;

    B. To show compliance with Special Condition 9, an annual record of molten steel produced in tons on a rolling 12-month basis;

    C. An annual record of rollmill and caster oil and grease net usage in tons on a rolling 12-month basis; **(04/16)**

    D. To show compliance with Special Condition 24, annual records on a rolling 12-month basis of total natural gas (in cubic feet), total propane (in gallons), and total diesel (in gallons) and CO_{2e} emissions in tons/year; **(10/16)**

E. An annual record of natural gas used for the Reheat Furnaces (EPNs REHEATXI and REHEATXII) in cubic feet on a rolling 12-month basis;

F. An annual record of slag processed in tons on a rolling 12-month basis;

G. An annual record of mill scale processed in tons on a rolling 12-month basis;

H. An annual record of slag crushed in tons on a rolling 12-month basis;

I. An annual record of coal/copper slag and starblast used in tons on a rolling 12-month basis;

J. Quarterly observations for visible emissions and/or opacity determinations from the Meltshop Baghouse Stack (EPN BAGHSMS), Texas I and Texas II Reheat Station Stacks (EPNs REHEATXI and REHEATXII), Lime Silo No. 1 Bin Vent (EPN LIMEBIN1), Lime Silo No. 2 Bin Vent (EPN LIMEBIN2), Dolomite Silo No. 1 Bin Vent (EPN DOLOBIN1), Carbon Silo, Carbon Silo 5 and Carbon Bin 3 to Common Bin Vent (EPN CARBONBIN), Carbon Silo Nos. 2, 4 and 6 to Common Bin Vent (EPN CARBONBIN2), and the Abrasive Blast Cabinet Baghouse Stack (EPN BLASTCAB); **(12/19)**

K. Quarterly observations for visible emissions determinations from the Melt Shop, LMS/Caster Building, Billet Bay Building Vents, Rolling Mill Building Vents, Texas I Reheat Station, Texas II Reheat Station, Slag Dump, Slag Mill Processing, Outdoor Scrap Lancing, Ladle Tearout and Tundish Dump, EAF Drop Out Box and Inspection Ports Clean-out, Alloy Truck Dump, Alloy Storage Bunker, Texas I Mill Scale Clean Out, Texas II Mill Scale Clean Out, Roll Mill Scale Cleanout, Scrap Unloading Area, Scrap and Tire Storage Area North, Scrap storage Area South, Scrap Truck Dump, Scrap Storage Area Northwest, Non-Hazardous Landfill Area, Billet Cutting, and Drop-Out Chamber Storage and Loading; **(04/16)**

L. Records of operating hours for the diesel engine powered emergency water pump and the plasma cutting operation in hours on a rolling 12-month basis; **(05/18)**

M. A monthly record of inspection of the Meltshop Baghouse dust collection and handling system. The inspection record shall include the date of inspection, any deficiencies noted, and corrections implemented;

N. Records of cleaning and/or watering of roads; **(08/14)**

O. Records required to document changes made per Special Condition 33;

P. Records required under 40 CFR Part 60 Subparts A and AAa. The holder of this permit shall report excess of the limits, as detailed in the Operational Limitations, Work Practices, and Plant Design Section of this permit, to the appropriate TCEQ Regional Office within 48 hours of an exceedance; and

Q. Records shall be kept in sufficient detail to allow emission rates of Hazardous Air Pollutants (HAPS) to be accurately determined from all emission points having the potential to emit HAPS. Using this recorded data, a report shall be produced for the emission of HAPs (in tons per year) over the previous 12 consecutive months. The required records shall be kept with examples of the method of data reduction including units, conversion factors, assumptions, and the basis of the assumptions.

Other Conditions

50. The holder of this permit shall physically identify and clearly mark in a conspicuous location all point sources as listed on the MAERT as follows:

A. The FINs as submitted to the Emissions Inventory Section of the TCEQ for this permit; and

B. The EPNs as listed on the MAERT.

The identification numbers and EPNs shall be maintained so as to always be clearly visible.

Date: December 23, 2019

Emission Sources - Maximum Allowable Emission Rates

Permit Numbers 53581 and PSDTX1029M3

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities, sources, and related activities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

Air Contaminants Data

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
BAGHSMS	Meltshop Baghouse Stack FINs: EAF, LMS, CASTER, LADLETO, and TUNDDUMP	PM (total)	55.55	243.31
		PM (filterable)	34.21	149.86
		PM_{10} (total)	55.55	243.31
		PM_{10} (filterable)	34.21	149.86
		$PM_{2.5}$ (total)	54.02	236.61
		$PM_{2.5}$ (filterable)	34.21	149.86
		NO_x	283.77	673.50
		CO	1124.43	1701.08
		SO_2	555.21	1317.75
		VOC	136.83	324.75
		Exempt Solvents	0.07	0.32
		Benzene	1.32	5.10
		Pb	0.03	0.15
		Fluoride	0.23	1.00
		Sb	0.0062	0.27
		As	0.015	0.045
		Be	0.0009	0.00115
		Cd	0.051	0.109
		Cr	0.26	0.88
		Cu	0.23	0.77
		Mn	1.28	5.00

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
		Hg	0.40	1.08
		Ni	0.026	0.101
		Se	0.023	0.100
		Ag	0.0092	0.0101
		Tl	0.029	0.11
		V	0.070	0.22
		Zn	13.10	41.40
CASTERVENT	West LMS/Caster Building Vents FINS: CASTERVENT, LADLEPREHT, TUNDPREHT, RLINEPREHT, TUNDDRY, SENPREHT (5)	PM	15.76	31.22
		PM_{10}	12.24	24.58
		$PM_{2.5}$	8.72	17.93
		NO_x	18.24	46.38
		CO	12.02	38.96
		SO_2	0.09	0.28
		VOC	0.80	2.58
		Exempt Solvents	0.004	0.02
		Pb	0.02	0.03
		Fluoride	0.0005	0.001
RUNOUTVENT	Billet Caster Runout Building Vents FINs: Caster, Torch (5)	PM	6.59	11.60
		PM_{10}	5.62	9.89
		$PM_{2.5}$	3.34	5.91
		NO_x	1.32	2.89
		CO	1.11	2.42
		SO_2	0.008	0.017
		VOC	0.22	0.81

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
		Exempt Solvents	0.08	0.34
		Pb	0.0001	0.0001
		Fluoride	0.01	0.02
FINISHVENT	Rolling Mill and Billet Storage Building Vents (5)	PM	56.64	142.58
		PM_{10}	48.66	122.49
		$PM_{2.5}$	19.20	48.34
		VOC	3.38	14.82
		Exempt Solvents	1.78	7.78
		Pb	0.0005	0.0019
REHEATXI	TEXAS I Reheat Station Stack	PM	1.35	5.91
		PM_{10}	1.35	5.91
		$PM_{2.5}$	1.35	5.91
		CO	14.91	65.29
		NO_x	16.29	71.35
		SO_2	0.11	0.47
		VOC	0.98	4.27
REHEATXII	TEXAS II Reheat Station Stack	PM	1.54	6.08
		PM_{10}	1.54	6.08
		$PM_{2.5}$	1.54	6.08
		CO	10.35	40.82
		NO_x	15.53	61.23
		SO_2	0.12	0.48
		VOC	1.12	4.40

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
SLAGDUMP	Slag Pot Dump Pile (5)	PM	0.48	1.42
		PM_{10}	0.23	0.68
		$PM_{2.5}$	0.03	0.10
		Pb	0.00001	0.00004
SLAGPROC	Slag/Mill Scale Processing (5)	PM	2.55	1.12
		PM_{10}	1.17	0.46
		$PM_{2.5}$	0.17	0.06
		Pb	0.00007	0.00003
FUGLANCE	Outdoor Scrap Lancing (5)	PM	4.46	2.30
		PM_{10}	4.46	2.30
		$PM_{2.5}$	4.46	2.30
		NO_x	2.07	4.53
		CO	1.74	3.81
		SO_2	0.01	0.03
		VOC	0.11	0.25
TEAROUT	Ladle Tearout and Tundish Dump (5)	PM	1.09	0.40
		PM_{10}	0.52	0.19
		$PM_{2.5}$	0.08	0.03
		Pb	0.00003	0.00001
CLEANOUT	EAF Drop Out Box (5)	PM	0.55	0.46
		PM_{10}	0.26	0.02
		$PM_{2.5}$	0.04	0.003
		Pb	0.001	0.0001

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
ALLOYDUMP	Alloy Dump To Larry Car (5)	PM	0.08	0.02
		PM_{10}	0.04	0.01
		$PM_{2.5}$	0.006	0.002
ALLOYEAF	Alloy dump at EAF	PM	0.08	0.02
		PM_{10}	0.04	0.01
		$PM_{2.5}$	0.006	0.002
ALLOYBUNKR	Alloy Storage Bunkers (5)	PM	0.04	0.11
		PM_{10}	0.02	0.05
		$PM_{2.5}$	<0.01	<0.01
LIMEBIN1	Lime Silo No. 1 Bin Vent	PM	<0.01	<0.01
		PM_{10}	<0.01	<0.01
		$PM_{2.5}$	<0.01	<0.01
LIMEBIN2	Lime Silo No. 2 Bin Vent	PM	<0.01	<0.01
		PM_{10}	<0.01	<0.01
		$PM_{2.5}$	<0.01	<0.01
DOLOBIN1	Dolomite Silo No. 1 Bin Vent	PM	<0.01	<0.01
		PM_{10}	<0.01	<0.01
		$PM_{2.5}$	<0.01	<0.01
CARBONBIN2	Carbon Silo Nos. 2, 4 and 6 to Common Bin Vent	PM	<0.01	<0.01
		PM_{10}	<0.01	<0.01
		$PM_{2.5}$	<0.01	<0.01
CARBONBIN	Carbon Silo, Carbon Bin 3 and Carbon Silo #5 to Common Bin Vent	PM	<0.01	<0.01
		PM_{10}	<0.01	<0.01
		$PM_{2.5}$	<0.01	<0.01

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
SCALPITXI	Texas I Mill Scale Cleanout (5)	PM	0.96	0.19
		PM_{10}	0.45	0.09
		$PM_{2.5}$	0.07	0.01
		Pb	<0.00001	<0.00001
SCALPITXII	Texas II Mill Scale Cleanout (5)	PM	0.96	0.19
		PM_{10}	0.45	0.09
		$PM_{2.5}$	0.07	0.01
		Pb	<0.00001	<0.00001
SCALPITRM	Roll Mill Scale Cleanout (5)	PM	1.92	0.38
		PM_{10}	0.91	0.18
		$PM_{2.5}$	0.14	0.03
		Pb	<0.00001	<0.00001
CASTSPRAYW	Caster Spray Chamber Exhaust (West)	PM	0.03	0.10
		PM_{10}	0.02	0.08
		$PM_{2.5}$	<0.01	<0.01
		VOC	0.59	2.59
		Exempt Solvents	0.31	1.36
		Fluoride	0.01	0.03
CASTSPRAYE	Caster Spray Chamber Exhaust (East)	PM	0.03	0.100
		PM_{10}	0.02	0.08
		$PM_{2.5}$	<0.01	<0.01
		VOC	0.59	2.59
		Exempt Solvents	0.31	1.36
		Fluoride	0.01	0.03

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
CWTCCRMI	Texas I Contact Cooling Tower	PM	0.09	0.38
		PM_{10}	0.05	0.21
		$PM_{2.5}$	<0.01	<0.01
CWTNCRMI	Roll Mill Non-Contact Cooling Tower	PM	0.05	0.22
		PM_{10}	0.03	0.12
		$PM_{2.5}$	<0.01	<0.01
CWTCHILLER	Texas II Chiller Tower	PM	0.02	0.07
		PM_{10}	<0.01	0.04
		$PM_{2.5}$	<0.01	<0.01
CWTNCMS	New Melt Shop Cooling Tower	PM	0.56	2.47
		PM_{10}	0.31	1.38
		$PM_{2.5}$	<0.01	0.01
SCRAPSTGPR	Scrap Unloading Area Primary (5)	PM	0.94	0.93
		PM_{10}	0.45	0.46
		$PM_{2.5}$	0.07	0.07
		Pb	0.002	0.002
SCRAPSTGN	Scrap and Tire Storage Area North (5)	PM	2.89	6.27
		PM_{10}	1.40	3.12
		$PM_{2.5}$	0.21	0.47
		Pb	0.005	0.012
SCRAPSTGS	Scrap Storage Area South (5)	PM	1.89	1.86
		PM_{10}	0.90	0.91
		$PM_{2.5}$	0.14	0.14
		Pb	0.004	0.003

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
SCRAPTRKE	Scrap Truck Dump Area (5)	PM	0.19	0.71
		PM_{10}	0.09	0.34
		$PM_{2.5}$	0.01	0.05
		Pb	0.0004	0.0013
SCRAPSTGNW	Scrap Storage Area Northwest (5)	PM	1.09	1.57
		PM_{10}	0.52	0.78
		$PM_{2.5}$	0.08	0.12
		Pb	0.002	0.003
LANDFILL	Non-Hazardous Landfill Area (5)	PM	0.71	2.70
		PM_{10}	0.35	1.35
		$PM_{2.5}$	0.05	0.20
FUELLOCOD	Locomotive Fueling Station Diesel Tank	VOC	<0.01	<0.01
FUELSLAGD1	Slag Fueling Station Diesel Tank #1	VOC	<0.01	<0.01
FUELSLAGD2	Slag Fueling Station Diesel Tank #2	VOC	<0.01	<0.01
FUELSLAGG	Slag Fueling Station Gasoline Tank	VOC	0.58	0.82
FUELMOBD	Mobile Maintenance Diesel Tank	VOC	<0.01	<0.01
FUELMOBG	Mobile Maintenance Gasoline Tank	VOC	0.58	1.01
FUELLUBEG	Lube Fuel Station Gasoline Tank	VOC	0.86	0.47
FUELSCRAP	Scrap Vehicle Fueling Diesel Tank	VOC	<0.01	0.01
FUELSHIP	Shipping Vehicle Fueling Diesel Tank	VOC	<0.01	<0.01
FUELPUMP	Cooling Water Emergency Pumps Fuel Tank	VOC	<0.01	<0.01

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
FUELBHD	Baghouse Fueling Station Diesel Tank	VOC	<0.01	<0.01
FUGEAF	EAF Building Fugitives (5)	PM	9.78	23.21
		PM_{10}	5.67	13.46
		$PM_{2.5}$	5.06	12.00
		NO_x	0.002	0.006
		CO	0.14	0.34
		SO_2	0.003	0.007
		VOC	0.003	0.008
		Pb	0.01	0.024
FUGLMS	LMS/Caster Building Fugitives (5)	PM	8.61	20.44
		PM_{10}	4.99	11.85
		$PM_{2.5}$	4.45	10.57
		NO_x	2.95	7.01
		CO	2.17	5.16
		SO_2	5.56	13.19
		VOC	0.05	0.11
		Pb	0.009	0.021
		Fluoride	0.021	0.090
PLASMA	Meltshop Cutting Emissions (5)	PM	1.76	2.38
		PM_{10}	1.76	2.38
		$PM_{2.5}$	1.76	2.38
		NO_x	0.007	0.01
		CO	0.006	0.008
		SO_2	<0.0001	<0.0001

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
		VOC	<0.0004	0.001
		Pb	0.0002	0.0002
BLAST	Abrasive Blasting (5)	PM	2.75	12.03
		PM_{10}	0.33	1.43
		$PM_{2.5}$	0.05	0.21
BLASTCAB	Abrasive Blast Cabinet Baghouse Stack	PM	0.13	0.56
		PM_{10}	0.13	0.56
		$PM_{2.5}$	0.13	0.56
BILLCUT	Billet Cutting (5)	PM	0.01	0.01
		PM_{10}	0.01	0.01
		$PM_{2.5}$	0.01	0.01
HWBLR1	Heating Water Boiler #1	PM	0.02	0.07
		PM_{10}	0.02	0.07
		$PM_{2.5}$	0.02	0.07
		NO_x	0.22	0.96
		CO	0.18	0.81
		SO_2	0.001	0.006
		VOC	0.01	0.05
HWBLR2	Heating Water Boiler #2	PM	0.02	0.07
		PM_{10}	0.02	0.07
		$PM_{2.5}$	0.02	0.07
		NO_x	0.22	0.96
		CO	0.18	0.81
		SO_2	0.001	0.006

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
		VOC	0.01	0.05
CBLR1	Domestic Boiler #1	PM	0.003	0.013
		PM_{10}	0.003	0.013
		$PM_{2.5}$	0.003	0.013
		NO_x	0.04	0.17
		CO	0.03	0.14
		SO_2	<0.001	0.001
		VOC	0.002	<0.01
CBLR2	Domestic Boiler #2	PM	0.003	0.013
		PM_{10}	0.003	0.013
		$PM_{2.5}$	0.003	0.013
		NO_x	0.04	0.17
		CO	0.03	0.14
		SO_2	<0.001	0.001
		VOC	0.002	<0.01
SLAGPREHT	Slag Pot Preheater (5)	PM	0.08	0.04
		PM_{10}	0.08	0.04
		$PM_{2.5}$	0.08	0.04
		NO_x	0.98	0.49
		CO	0.82	0.41
		SO_2	0.006	0.003
		VOC	0.05	0.03
EWP	Emergency Cooling Water Pump Engine (6)	PM	1.36	0.07
		PM_{10}	1.36	0.07

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates (7)	
			lbs/hour	TPY (4)
		$PM_{2.5}$	1.36	0.07
		NO_x	19.13	0.96
		CO	4.12	0.21
		SO_2	1.27	0.06
		VOC	1.52	0.08
EWP2	Emergency Cooling Water Pump Engine (6)	PM	0.24	0.01
		PM_{10}	0.24	0.01
		$PM_{2.5}$	0.24	0.01
		NO_x	3.41	0.17
		CO	0.74	0.04
		SO_2	0.23	0.01
		VOC	0.27	0.01
CWTTXIIRF	Texas II Reheat Furnace Cooling Tower	PM	0.01	0.04
		PM_{10}	0.01	0.02
		$PM_{2.5}$	<0.0001	<0.0001
FUELEAF	EAF Building Diesel Tank	VOC	0.003	<0.001
DOCFUG	Drop-Out Chamber Storage and Loading (5)	PM	0.28	0.04
		PM_{10}	0.13	0.02
		$PM_{2.5}$	0.02	<0.01
ALL	All Sources	Any HAP	-	<10.00
		All HAPS	-	<25.00
SHEARFUG	Scrap Shearing	PM	0.22	0.68
		PM_{10}	0.11	0.34
		$PM_{2.5}$	0.02	0.05

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	**Source Name (2)**	**Air Contaminant Name (3)**	**Emission Rates (7)**	
			lbs/hour	**TPY (4)**
PLASMA3	Plasma Scrap Cutting Station North	PM	0.02	0.07
		PM_{10}	0.02	0.07
		$PM_{2.5}$	0.02	0.07
		Lead	1.68E-06	7.36E-06
		NOx	0.50	2.19
FUELPUMP2	TXII Reheat Emergency Water Pump Fuel Tank	VOC	<0.01	<0.01

(1) Emission point identification - either specific equipment designation or emission point number from plot plan.
(2) Specific point source name. For fugitive sources, use area name or fugitive source name.
(3) VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
NO_x - total oxides of nitrogen
SO_2 - sulfur dioxide
PM - total particulate matter, suspended in the atmosphere, including PM_{10} and $PM_{2.5}$, as represented
PM_{10} - total particulate matter equal to or less than 10 microns in diameter, including $PM_{2.5}$, as represented
$PM_{2.5}$ - particulate matter equal to or less than 2.5 microns in diameter
CO - carbon monoxide
Pb - lead
Sb - antimony
As - arsenic
Be - beryllium
Cd - cadmium
Cr - chromium
Cu - copper
Mn - manganese
Hg - mercury
Ni - nickel
Se - selenium
Ag - silver
Tl - thallium
V - vanadium
Zn - zinc
HAP - hazardous air pollutant as listed in § 112(b) of the Federal Clean Air Act or Title 40 Code of Federal Regulations Part 63, Subpart C
(4) Compliance with annual emission limits (tons per year) is based on a 12 month rolling period.
(5) Emission rate is an estimate and is enforceable through compliance with the applicable special condition(s) and permit application representations.
(6) Limited to 100 hours per year of non-emergency operation.
(7) Planned startup and shutdown emissions are included. Maintenance activities are not authorized by this permit and will need separate authorization unless the activity can meet the conditions of 30 TAC §116.119.

Date: December 23, 2019

Table D-1
Meltshop Baghouse Emission Calculations
Nucor Steel Jewett Division

EAF Contribution to EPN BAGHSMS

Updated 7/15/2015

316 tons per hour maximum melt shop steel production of liquid steel
1,500,000 tons per year liquid steel production

Contaminant	Short-term Emission Factor		Annual Emission Factor		Emission Rates	
	lb/ton scrap melted (raw steel)	Source	lb/ton scrap melted (raw steel)	Source	lb/hr	tpy
Carbon monoxide (CO)	3.56	C	2.0000	A		1500.0
Nitrogen Oxides (NO_x)	0.3000	B	0.3000	B	94.80	225.0
Sulfur Dioxide (SO_2)	0.3500	B	0.3500	B	110.60	262.5
Mercury (Hg)	0.0017	B	0.0017	G	0.53	1.250
Volatile Organic Compounds (VOC)	0.4270	A	0.4270	A	134.93	320.3
Benzene					1.32	5.1

0.3

LMS Contribution to EPN BAGHSMS

316 tons per hour maximum melt shop steel production of liquid steel
1,500,000 tons per year liquid steel production

Contaminant	Short-term Emission Factor		Annual Emission Factor		Emission Rates	
	lb/ton liquid steel production	Source	lb/ton liquid steel production	Source	lb/hr	tpy
Carbon monoxide (CO)		C	0.174	D		130.50
Nitrogen Oxides (NO_x)	0.548	D	0.548	D	173.168	411.00
Sulfur Dioxide (SO_2)	1.407	D	1.407	D	444.612	1055.25
Volatile Organic Compounds (VOC)	0.004	D	0.004	D	1.264	3.00

Caster Contribution to EPN BAGHSMS

316 tons per hour maximum melt shop steel production of liquid steel
1,500,000 tons per year liquid steel production

Contaminant	Caster Emission Factor		Emission Rates	
	lb/ton steel production	Source	lb/hr	tpy
Carbon monoxide (CO)	0.0941	C		70.58
Nitrogen Oxides (NO_x)	0.05	F	15.8	37.50
Sulfur Dioxide (SO_2)	-			
Mercury (Hg)	-			
Volatile Organic Compounds (VOC)	0.002	F	0.632	1.50
Benzene				

TOTAL for EPN BAGHSMS

Emission Rates	
lb/hr	**tpy**
1124.43	**1701.08**
283.77	**673.50**
555.21	**1317.75**
0.53	**1.25**
136.83	**324.75**
1.32	**5.10**

CO Emission Factor due to combustion of mineral oil (5):

Estimated chemical structure of mineral oil:		$C_{16}H_{34}$	
Specific gravity:	0.875		
Estimated density:	7.28875	lb/gal	
Boiling point deg C:	360		
Flash Point deg C:	215		
Estimated molecular weight:		226.28	lb/lbmole
Annual mineral oil usage =		39130.4348	gal

Assume 75% stoichiometric combustion, then 25% goes to CO emissions

$C_{16}H_{34} + 22.5\ O_2 \rightarrow 12\ CO_2 + 4\ CO + 17\ H_2O$

$$\text{lb CO /gal } C_{16}H_{34} = \frac{7.2888 \text{ lb } C_{16}H_{34}}{\text{gal } C_{16}H_{34}} \times \frac{1 \text{ lb mole } C_{16}H}{226.28 \text{ lb } C_{16}H_{34}} \times \frac{4 \text{ lb mole CO}}{1 \text{ lb mole } C_{16}H_{34}} \times \frac{28 \text{ lb CO}}{1 \text{ lb mole CO}}$$

lb CO /gal $C_{16}H_{34}$ = 3.6077

CO Emission Factor = 141,169 lb CO/yr

$$\frac{141{,}169 \text{ lb CO}}{\text{yr}} \times \frac{1 \text{ yr}}{1500000 \text{ tons of steel}} = \boxed{0.0941 \text{ lb/tons of steel}}$$

Notes:

1. Emission Factors were taken from the following:
   - A. Based on emission factors used by similar steel mills located in Texas.
   - B. Emission factor derived from actual stack concentration data from a similar Nucor mill.
   - C. Emission factors based on sampling data and ratiod for production rate changes.
   - D. Department of Energy, Energy and Environmental Profile of the U.S. Iron and Steel Industry, Section 1, Overview, Table 1-15.
   - E. Calculated from the partial combustion of mineral oil used to aid the casting process.
   - F. Department of Energy, Energy and Environmental Profile of the U.S. Iron and Steel Industry, Section 6, Emission Factors for Casting, Table 6-3.
   - G. Combined factor developed from 2004 Amendment and based on CEMS data.

Kessler, Joseph R <joseph.r.kessler@wv.gov>

Re: EPA Comments on Nucor Steel West Virginia LLC Proposed Permit

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Wed, May 4, 2022 at 4:02 PM
To: "Supplee, Gwendolyn" <Supplee.Gwendolyn@epa.gov>, "Leary, Justin" <Leary.Justin@epa.gov>, "Wejrowski, Mark" <Wejrowski.Mark@epa.gov>, "Opila, MaryCate" <Opila.MaryCate@epa.gov>, "Leon-Guerrero, Tim" <Leon-Guerrero.Tim@epa.gov>
Cc: "McKeone, Beverly D" <beverly.d.mckeone@wv.gov>, Laura M Crowder <laura.m.crowder@wv.gov>, Jon D McClung <jon.d.mcclung@wv.gov>
Bcc: Bill Bruscino <bbruscino@trinityconsultants.com>, "Alteri, Sean [Corp]" <sean.alteri@nucor.com>

Please see the attached response to your comments concerning the following permitting action:

Nucor Steel West Virginia LLC
West Virginia Steel Mill
Permit Application: R14-0039
Plant ID No.: 053-00085

Thank You,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

On Fri, Apr 29, 2022 at 1:59 PM Supplee, Gwendolyn <Supplee.Gwendolyn@epa.gov> wrote:

> Hi Joe –
>
> Attached are EPA's comments on the Nucor Steel West Virginia LLC on the proposed Prevention of Significant Deterioration (PSD) Permit for Nucor Steel West Virginia LLC (Nucor). If you would like to discuss any of EPA's comments, please let me know, and I can set a meeting up.
>
> Many thanks, Gwen

Gwendolyn K. Supplee

Life Scientist

U.S. Environmental Protection Agency, Region 3

Air and Radiation Division

Permits Branch (3AD10)

Supplee.Gwendolyn@epa.gov

215-814-2763

EPA Comment Response (14-0039).pdf
1351K

Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475

Harold D. Ward, Cabinet Secretary
dep.wv.gov

May 4, 2022

Mary Cate Opila, P.E., Ph.D.
Chief, Permits Branch
U.S. EPA, Region III,
Air & Radiation Division

RE: **Response to Comments**
Nucor Steel West Virginia LLC
West Virginia Steel Mill
Permit No. R14-0039
Plant ID No. 053-00085

Dear Ms. Opila:

On April 29, 2022, the West Virginia Division of Air Quality (DAQ) received a letter from you with comments concerning Nucor Steel West Virginia LLC's (Nucor's) Preliminary Determination/Fact Sheet (PD/FS) and Draft Permit (R14-0039). The DAQ would like to thank you on the timely submission of the comments and take this opportunity to respond to each below. While your comments are summarized below, the provided responses are based on the full comments included in your letter.

I. COMMENTS ON PERMIT/ENGINEERING ANALYSIS

Comment A: Use of Slag on Facility Unpaved Haulroads
USEPA provided comments concerning the use of slag as a surface material on the unpaved roads and mobile work areas of the proposed facility. USEPA was concerned that the use of EAF slag as a surface material would possibly create unaccounted for sources of lead and other particulate matter hazardous air pollutants (PM-HAPs).

DAQ Response: Upon request, Nucor provided information on metals testing done on slag formed during steel making at their Decatur, Alabama facility. Nucor's Decatur facility is a sheet steel mill similar to the one proposed in West Virginia that also produces a slag comparable to the slag that will be produced from the proposed West Virginia mill. Data from Toxicity Characteristic Leaching

Procedure (TCLP) testing at the Decatur facility has shown "non-detect" (ND) levels of lead from three (3) different tests on the slag (and either ND or only trace amounts of other metals). Additionally, the DAQ believes it is not clear that, even if present in substantive amounts, lead or other metals encapsulated within the slag would have the same acute or chronic effects as emissions of these pollutants in elemental form. Therefore, based on the above, the DAQ does not believe it is necessary to quantify any additional sources of lead or PM-HAPs based on the use of slag on the facility's roadways or as a result of the slag processing operations at the facility. Please note that the lead emission rate from the slag cutting operations (SLAG-CUT) is based only on the AP-42, Table 1.4-2 emission factor for the trace amounts of lead emissions resulting from the combustion of natural gas in the slag torch (0.0005 lb/10^6 scf). Nucor did not calculate any lead emissions from material handling of the slag.

However, to further address your concern, the DAQ will add the following slag testing requirement in Permit Number R14-0039 to confirm the concentration levels of lead and other metals in the slag produced in the proposed West Virginia mill (requirement 4.3.6): "*Within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit, and at a minimum of once per rolling twelve (12) month period thereafter, the permittee shall perform a test on a representative sample of EAF and LMF slag (that was produced on-site) to determine the concentration of lead and other metals defined as HAPs in the slag. This testing shall be performed in accordance with a protocol submitted pursuant to 3.3.1(c).*"

Comment B(1): LMF VOC BACT

USEPA commented that the chosen BACT VOC emission limit for the LMF (0.005 lbs/ton) was higher than a different source in the RBLC (0.004 lbs/ton) and requested additional justification for this BACT selection.

DAQ Response: It is noted that the aggregate BACT emission limit was applied to the multiple emission sources of the EAF and LMF and that this combined BACT was 0.098 lb-VOC/ton-steel. This BACT is contrast to the much higher BACT applied to the Nucor Steel Mill permitted in Jewett, TX that was issued with an emission limit of 0.431 lb-VOC/ton-steel (which included therein an LMF emission rate of 0.004 lbs/ton). While the DAQ acknowledges that the BACT emission limit was based on an LMF contribution of 0.005 lb-VOC/ton-steel, we believe it is more appropriate to compare and review the "true" BACT limit given for the combination of the EAF/LMF. And using that metric, the proposed VOC BACT emission rate for the EAF/LMF is appropriate and far lower than the Jewett VOC BACT emission limit. Additionally, Nucor has noted that "*the resulting emission limit and compliance demonstration for* [the Jewett, TX facility] *was established as a combined EAF/LMF/Caster VOC emission limit. Hence, the individual 0.004 lb/ton VOC LMF limit has not been proven in practice.*"

Comment B(2): BACT Lime Fluxing

USEPA requested that lime fluxing - identified as a BACT control technology - should be required at all times.

DAQ Response: Pursuant to your comment, the word "or" was removed from footnote (8) of Table 4.1.4(a) of Permit R14-0039. However, the DAQ notes that Nucor has indicated that scenarios exist where grades of steel may be made that do not require lime fluxing or where lime fluxing is not appropriate. Additionally, Nucor has proposed installing SO_2 CEMS to provide a continuous compliance demonstration with the SO_2 BACT emission limit on the EAF/LMF stacks. To both

protect the BACT determination and not effectively redefine the source, the footnote will be revised to the following: "*The permittee shall limit the sulfur content of the EAF feedstock materials utilizing scrap management and shall add lime fluxing to the charge so as to meet the SO_2 emission limit given in this Table except and only at times where specific process requirements preclude the use of lime fluxing. At all times the SO_2 emission limits given in this table remain in effect.*"

Comment B(3): LMF SO_2 BACT
USEPA commented that no justification was provided for the LMF SO_2 BACT selection of 0.04 lb-SO_2/ton-steel.

DAQ Response: Nucor provided the following additional justification for the selection of an LMF BACT emission rate of 0.04 lb-SO_2/ton-steel:

> Nucor used EPA's recommended top-down, 5-step approach and RBLC database to establish separate EAF and LMF BACT emission limits for each process unit. There are limited individual entries for LMF SO_2 BACT in the RBLC database. In fact, most entries in the database present a combined emission limit representing the EAF/LMF, the melt shop, or other groupings of equipment. Nucor addressed the combined EAF/LMF BACT analysis in Section 4.4.2 of the application narrative. Through the top-down BACT analysis, Nucor identified the Scrap Management Plan as the most effective SO_2 control option and established a BACT emission limit consistent with the recently issued permit for Steel Dynamics Texas Mill (2020). The Steel Dynamics Texas permit contained a combined SO_2 BACT emission limit of 0.24 lb/ton on a rolling 30-day average with separate limits of 0.20 lb/ton for the EAF and 0.04 lb/ton for the LMF. The Nucor WV draft R14 permit contains the same EAF, LMF, and combined EAF/LMF SO_2 BACT emission limits as this recent BACT determination.

The DAQ would concur that the 0.24 lb-SO_2/ton-steel combined BACT limit on the EAFs/LMFs (again, the "true" enforceable BACT limit as given in the permit) is an appropriate selection of BACT based on Nucor's selection process and the data available.

Comment C: HCl Performance Testing/PKL1-SCR Monitoring
USEPA requested that, due to the importance of the pickling line scrubber in helping the facility stay under the major source threshold for HAPs, the permit should include compliance testing for this source to establish scrubber operating parameters, and include parametric monitoring for the scrubber operations after compliance testing is performed, to ensure that the scrubber meets the HCl emission limit and also ensures that the limit is enforceable.

DAQ Response: Pursuant to your comment, a performance test for HCl from the Pickling Line (PKL-1) was added to Table 4.3.2. of Permit R14-0039. It is noted that liquid flow rate monitoring is already required for the Pickling Line Scrubber (PKL1-SCR) and that under 4.1.10(d)(3), this flow rate is to be determined by "*manufacturer's recommendation or site-specific testing so as achieve compliance with the associated emission limit.*" The DAQ believes that liquid flow rate monitoring for PKL1-SCR within ranges established during the now required performance test is reasonable and appropriate for determining continuing compliance with the HCL emission limit from PKL-1.

Comment D: EPA Mailing Address
USEPA requested that their mailing address for correspondence be changed to that as given.

DAQ Response: Pursuant to your comment, the address was changed under Requirement 3.5.3. of Permit Number R14-0039.

Comment E: Melt Shop Collection System
USEPA requested that a periodic inspection be added to Requirement 4.1.10(c) relating to the requirements to maintain the Melt Shop particulate matter collection systems.

DAQ Response: Pursuant to your comment, Requirement 4.1.10(c) was rewritten to include a requirement for a periodic inspection. Requirement 4.1.10(c) now reads "*At a minimum of once per rolling twelve (12) month period, the permittee shall thoroughly inspect the melt shop particulate matter collection systems to determine if the hooding and duct systems are effective in capturing emissions from the intended equipment and in preventing excess fugitive emissions from the building. All holes, cracks, and other conditions that would substantially reduce the collection efficiency of the emission capture system shall be fixed upon discovery at any time including the annual inspection. The results of the inspection and any corrective action taken shall be recorded pursuant to section 4.4.1. Any inspection performed pursuant to 40 CFR §60.274a (d) shall count toward compliance with 4.1.10(c).*"

Comment F: GHG BACT Implementation Plan
USEPA requested that the requirement to submit a GHG Implementation Plan (4.1.11(e)) include language that WVDEP review and approve the plan.

DAQ Response: Pursuant to your comment, "for review and approval" was added to requirement 4.1.11(e) of Permit Number R14-0039. Requirement 4.1.11(e) now reads "*The permittee shall, within 60 days of plant startup, submit for review and approval to the Director a GHG BACT Implementation Plan that describes the method of implementation of the requirements given under (a) through (d) above. The plan will include specifics on actions taken to meet the requirements including training methods, use of specific energy efficient devices, O&M procedures, etc. This plan will thereafter be maintained on-site and updated as needed.*"

II. COMMENTS ON AIR QUALITY ANALYSIS REPORT

The responses to your comments concerning the Air Quality Analysis Report were prepared by Mr. Jon McClung (Modeling Supervisor) and are attached to this document.

Thank you for your timely comments concerning R14-0039. We will provide notification when a final determination is made regarding this permitting action and provide links to all final documents. Should you have any questions, please contact me at (304) 926-0499 ext. 41271 or Mr. Jon McClung at ext. 41277.

Sincerely,

Joseph Kessler

Digitally signed by: Joseph Kessler
DN: CN = Joseph Kessler email = joseph.r.kessler@wv.gov C = US O = WV Department of Environmental Protection OU = Division of Air Quality
Date: 2022.05.04 15:13:26 -04'00'

Joseph R. Kessler, PE
Engineer

MEMO

To: Joe Kessler
From: Jon McClung

Jonathan D. McClung

Digitally signed by: Jonathan D. McClung
DN: CN = Jonathan D. McClung email = JON.D.MCCLUNG@WV.GOV C = AD O = Department of Environmental Protection OU = Division of Air Quality
Date: 2022.05.04 10:44:17 -04'00'

CC: David Fewell, Bev McKeone, Ed Andrews, Steve Pursley, Rex Compston
Date: May 4, 2022
Re: Responses to EPA Region 3 Comments on Nucor's Air Quality Impact Analysis
Nucor Steel West Virginia LLC
West Virginia Steel Mill
PSD Permit Application: R14-0039
Plant ID: 053-00085

I have completed my review of EPA Region 3 comments on Nucor's air quality impact analysis submitted by Nucor Steel West Virginia LLC (Nucor) in support of the PSD permit application (R14-0039) for the proposed construction of a steel making plant in Apple Grove, West Virginia, within Mason County. This dispersion modeling analysis is required pursuant to §45-14-9 (Requirements Relating to the Source's Impact on Air Quality). I have prepared responses to EPA's comments and both the set of EPA's comments and my responses are attached.

Nucor has demonstrated that the proposed project will not cause or contribute to any violations of applicable NAAQS or increment standards.

West Virginia Department of Environmental Protection
Division of Air Quality
Response to comments on:

Nucor Steel Mill, Apple Grove, WV
PSD Air Permit Application Modeling Comments
Prepared by EPA Region 3, April 2022

3. Modeled Emission Sources

Comment 1: Electric arc furnace (EAF) slag contains a relatively high percentage of lead (as well as other heavy metals). The slag cutting and processing operation is the only slag-related lead source included in Nucor's lead modeling analysis. There are no lead emissions associated with any of the other slag handling, processing or stockpiling operations.

Nucor's modeling analysis contains PM emissions from all 4 slag handling, processing and stockpiling operations. These include slag cutting and processing (volume), slag processing (volume), slag stockpiling (volume) and slag cutting (point). EPA believes all of these slag sources should have been included in the lead modeling analysis unless they can be shown to be insignificant sources of lead emissions.

WVDAQ Response: Nucor has analyzed the slag from other Nucor facilities and these analyses result in non-detects for lead. The lead emissions from the slag cutting and processing operation only arise because of the lead emission factor relating to the combustion of natural gas. Since lead is not present in the slag, modeling for lead is not necessary in the other slag operations EPA notes in Comment 1.

Comment 2: Section 4.1.3. Material Handling & Storage Operations of Nucor's draft permit, item g (2) reads:

> *All unpaved roads and mobile work areas shall be graded with gravel,* ***slag, or a mixture of the two*** *so as to provide a suitable surface for the use of trucks and other heavy equipment. Unpaved roads and mobile work areas shall be provided with additional* ***slag*** *or gravel as needed to maintain the road surface;*

Given this condition, EPA feels that all road surfaces may be potential sources of lead since slag material (a potential lead source) can be used on Nucor road surfaces. Additionally, Nucor's permit application mentions the use of vacuum sweepers for additional dust control. The operation of these devices could also be another potential source of lead emissions.

EPA is concerned that Nucor's slag handling will contribute to possibly unaccounted sources of lead and other hazardous air pollutants or HAPs (mainly heavy metals) if the material is used on its haul roads. It would be prudent, in EPA's opinion, to provide some type of formal material analysis of the slag to gauge its potential to generate lead and HAPs air emissions.

WVDAQ Response: Please see response to Comment 1.

Comment 3: It appears that estimated slag particulate emissions assumed the EAF slag was at ambient temperature. Slag from tapped pots is extremely warm and can create vertical updrafts as it cools. The initial vertical release dimension (2.835 m) of the volume source associated with the slag stockpile source is relatively low. For comparison, the initial vertical release dimensions for the melt-shop fugitives, a very warm source (400 K) were 21.243 meters.

If slag in the stockpile areas has not cooled to temperatures near ambient levels, vertical updrafts from the cooling slag may loft (particulate) emissions much higher than the modeled initial vertical dimension. Additionally, very warm slag material in any outside uncontrolled areas may be significant sources of (additional) condensible particulate emissions. Poorly controlled emissions from exposed cooling slag have the potential to create off-site dusting issues.

WVDAQ Response: The AERMOD User's Guide (User's Guide for the AMS/EPA Regulatory Model (AERMOD) (EPA-454/B-21-001) contains guidelines on designating initial vertical and lateral dimensions for volume sources. These dimensions are determined solely based on physical dimensions without consideration for temperature influences.

From Table 3-2. (Summary of Suggested Procedures for Estimating Initial Lateral Dimensions σyo and Initial Vertical Dimensions σzo for Volume and Line Sources), the Initial Vertical Dimension (σzo) for an Elevated Source (he > 0) on or Adjacent to a Building is equal to the building height divided by 2.15. Table A-3. (Summary of Volume Source Parameters) from Nucor's electronic spreadsheet lists the melt shop fugitives building height as 42.67 m and the corresponding initial vertical dimension as 21.24 m ((42.67 m + 3m[roof vent height])/2.15m). This calculation does not account for thermal effects, which is consistent with EPA's User's Guide.

Accordingly, Nucor based the initial vertical dimension of the slag stockpile on the physical dimensions of the stockpile. EPA's comment is suggesting that Nucor effectively perform some type of dispersion analysis based on thermal effects to inform the calculation of the initial vertical dimension of a volume source when no rule or guidance exists.

Further, AERMOD is limited for volume sources in that even once initial vertical and lateral dimensions are specified thermal effects are not accounted for by AERMOD. WVDAQ suggests that EPA refine AERMOD to take account for thermal effects on volume and area sources in AERMOD. WVDAQ has determined that Nucor appropriately performed the dispersion modeling analysis.

Comment 4: There is a discrepancy in modeled stack base elevations for several sources in Nucor's modeling analysis. The (off-site) sources are listed as OH_1_1, OH_1_4 and OH_1_6 in the AERMOD LOCATION input file lines. Stack base elevations for these 3 sources are listed as 175.73 meters, 175.76 meters and 175.76 meters in the PM-2.5 NAAQS model input file and 178.6 meters (for all 3 sources) in the PM-10 NAAQS input file. OH_1_1 and OH_1_4 are also included in the 1-hour NO_2 NAAQS run. Both sources have stack base elevations of

178.6 meters, which match the values in the PM-10 NAAQS input file. This discrepancy in modeled stack base elevations should be properly addressed.

WVDAQ Response: Sources OH_1_1, OH_1_4, and OH_1_6 correspond to sources at the Kyger Creek Power Plant in Ohio and is 29.5 km from the proposed Nucor site. The modeled stack height for OH_1_1 and OH_1_4 is 253 meters. WVDAQ has modeled OH_1_1 and OH_1_4 at a stack height of 65 meters and the maximum modeled impact was virtually identical to the modeled impact at a stack height of 253 meters. WVDAQ believes that the very small differences in stack base elevations will result in insignificant differences in design concentrations and will not change the conclusions of the analysis. WVDAQ believes Nucor's modeling analysis is appropriate and acceptable.

Comment 5: Stack parameters for Nucor's emergency generator (EMGEN6) CO simulations appear to be slightly different than their values for the other pollutant model simulations. The CO (SIL) AERMOD input file lists the emergency generators stack height (in meters), stack temperature (in Kelvin), stack velocity (in meters per second) and stack diameter (in meters) as 2.44, 791.48, 4.51 and 0.4 respectively. Corresponding values for the emergency generator in the other pollutant model simulations are 2.438, 791.483, 4.505 and 0.396.

These differences appear to be due to rounding and probably do not impact final model concentrations significantly.

WVDAQ Response: WVDAQ believes that these differences are insignificant and will not affect the results of Nucor's air quality impact analysis.

Comment 6: Local elevations nearly match the stack base elevations across the different sources in the Nucor modeling analysis. This suggests little to no site regrading. Will there be any efforts to enhancing building base elevations during the Nucor steel mill construction phase that would change any of the modeled stack base elevations?

WVDAQ Response: Section 2.5.1 of the Final Permit states:

"The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Application R14-0039 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;

[45CSR§§13-5.10 and 13-10.3]"

WVDAQ has relied upon the plans and specifications in in Permit Application R14-0039 and reviewed the modeling analysis in accordance with these plans. The language included in Section 2.5.1 of the Final Permit requires Nucor to construct and operate in accordance with the application. Any changes would need to be addressed by Nucor in an appropriate permit modification.

3.5.3 Increment Consuming Regional Sources

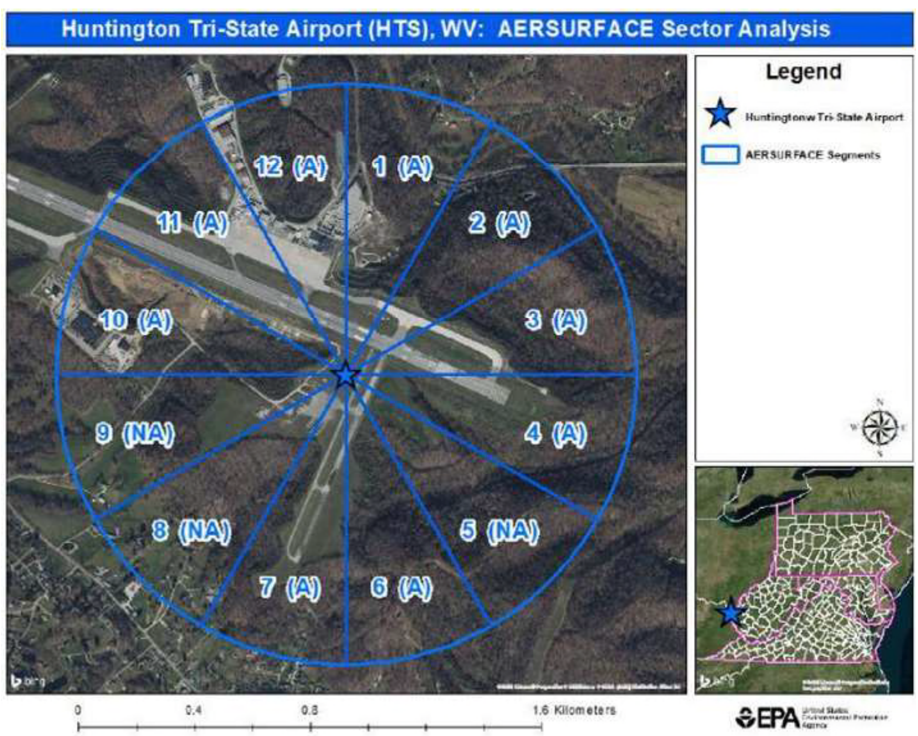
Comment 7: The list of sources shown in Table 3-1 almost certainly have had significant emission reductions since they were commissioned. A negative emission rate could be applicable in regards to NOx or SO_2 (if needed) for the increment analysis. Excluding the sources in the model increment analysis is probably conservative for these pollutants.

WVDAQ Response: WVDAQ agrees with EPA that the increment analysis is conservative and that Nucor's analysis is appropriate and acceptable.

4.6 Meteorological Data

Comment 8: It appears that the final AERMET processed input files used average, no-snow conditions in AERSURFACE. Surface roughness values were determined for 12 equal 30-degree sectors out to 1-km. The AERSURFACE input file indicates Nucor defined 9 sectors as "Airport" and 3 sectors as "Non-Airport". EPA Figure 1 shows the 12 sectors surrounding the HTS ASOS tower location, which was verified, and the AERSURFACE sector definitions (A = airport, NA = non-airport). Visually, most of the sector definitions appear to be assessed. Additional discussion on how to determine sector definitions (airport versus nonairport) can be found in EPA's AERSURFACE users guide sections 2.3.2, 2.4.1.3 and 3.2.10.

Figure 1. AERSURFACE Sectors for Huntington Tri-State Airport



WVDAQ Response: WVDAQ agrees that Nucor properly assessed the airport/non-airport designations in the AERSURFACE analysis. Nucor appropriately designated the project site as not having continuous snow cover ("no snow") and used average precipitation conditions for 2016, 2017, and 2020 and used wet precipitations for 2018 and 2019.

Comment 9: It doesn't appear that an analysis of local snow cover near the proposed Nucor steel mill was completed. Nor does it appear that an analysis was made to determine possible variability in soil moisture over the 5-year meteorological period used in the modeling analysis. An analysis of 30-year precipitation data is mentioned in this section but it doesn't appear to have actually been completed. Instead, it appears average (soil moisture) conditions were set for the entire 5-year simulation period. Snow-cover and soil moisture have impacts on the final albedo and Bowen ratios that are part of the AERMET stage 3 processing step.

Please confirm EPA's findings. This comment was made in order to enhance the meteorological documentation summary for the 5-year modeling analysis.

WVDAQ Response: WVDAQ evaluated the number of days with greater than 0.1 inches of snow at HTS (from https://w2.weather.gov/climate/index.php?wfo=rlx) and there was no month in the included 5 year (2016 – 2020) period that had more than 8 days of snow cover. Therefore, Nucor appropriately selected "no continuous snow cover" in the analysis.

Nucor included with the electronic modeling information the file "Precipitation Classification.csv" documenting the analysis of the 30-yr precipitation data. This analysis determined the 30th percentile and 70th percentile total annual precipitation amounts and then used these values to compare to the annual precipitation amounts for 2016 – 2020, which match the years of meteorological data used by Nucor in the dispersion modeling analysis. Precipitation below the 30th percentile is dry, between the 30th and 70th percentile is average, and over the 70th percentile is wet. The average, wet, and dry designations determine which set of albedo and Bowen ratio values are selected by AERSURFACE. This precipitation analysis by Nucor showed that 2016, 2017, and 2020 had average precipitation and 2018 and 2019 had wet precipitation conditions. Nucor used these annual designations in AERSURFACE which is appropriate.

WVDAQ also notes that several presentations at EPA's R/S/L Modelers' Workshops over the years have documented that AERMOD is relatively insensitive to differences in albedo and Bowen ratio.

Comment 10: The AERMINUTE input file lists the Huntington Tri-State Airport's (HTS) ice-free wind installation date as 4/19/2007. The actual date for HTS according to National Weather Service records appears to be 1/26/2007. EPA does not believe this error has any impact on the AERMINUTE processing.

WVDAQ Response: The WVDAQ agrees with EPA that this discrepancy does not have any impact on the AERMINUTE processing.

Comment 11: Nucor's modeling analysis only processed HTS's 1-minute data in AERMINUTE. AERMINUTE is capable of processing both 1-minute and 5-minute data. There is 5-minute data available for HTS. Utilizing the 5-minute data in tandem with the 1-minute data would allow for additional filling of missing hours in the final AERMET produces meteorological files if both the hourly and 1-minute values are missing.

WVDAQ Response: A potential concern related to the use of NWS meteorological data for dispersion modeling is the often high incidence of calms and variable wind conditions reported for the Automated Surface Observing Stations (ASOS) in use at most NWS stations since the mid-1990's. The purpose of AERMINUTE is to reduce the number of calms and missing winds in the surface data by using archived 1-minute winds for the ASOS stations to calculate hourly average wind speed and directions, which are used to supplement the standard archive of hourly observed winds processed in AERMET.

EPA notes in the AERMINUTE User's Guide (EPA-454/B-15-006) that "The impetus for including the 5-minute data files is due to 253 stations across the U.S. missing 1-minute data files for June through December of 2013. These stations did have 5-minute data files however that could be used to supplement the missing data." Nucor used NWS data from HTS for 2016 to 2020.

Nucor's AERMOD output files indicate that 43,848 hours of meteorological data were used in the modeling analysis, with 2375 calm hours identified, resulting in a calm hour percentage of 5.4%, which is a relatively low percentage of calms. WVDAQ acknowledges that 5-minute data can be used to supplement 1-minute data when 1-minute data is missing. WVDAQ further believes that Nucor's use of 1-minute data is appropriate and resulted in a relatively low level of calm winds and that the modeling analysis is reasonable and appropriate.

Comment 12: Huntington's 1-minute and 5-minute data appear to be missing from September of 2019 through March of 2020. Please confirm this for documentation purposes.

WVDAQ Response: Huntington's 1-minute data appear to be missing from September of 2019 through mid-April of 2020. AERMINUTE uses the 1-minute data to fill in data that are missing from the standard hourly ASOS data, and does not use the 1-minute data if the hourly data are present. As noted above, Nucor's AERMOD output files indicate that 43,848 hours of meteorological data were used in the modeling analysis, with 2375 calm hours identified, resulting in a calm hour percentage of 5.4%, which is a relatively low percentage of calms.

Comment 13: EPA reviewed the AERMET processing files provided by West Virginia. We have noted an issue with the Pittsburgh, PA upper air soundings for another application in Pennsylvania over the same 5-year simulation period Nucor processed. In some instances, Pittsburgh's upper air file does not contain a surface measurement line (labelled line 9 in the upper air file). Line 9 represents the surface measurement at the time the balloon is released Failure to collect surface measurements (line 9) prevents AERMET from processing the morning sounding data collected after the balloon is released. A warning flag is generated and posted to the

AERMET stage 1 report file. EPA identified this warning line in the AERMET Stage 1 files included in the Nucor modeling files. The line in the Stage 1 report (for 2017) reads:

20160606 UPPERAIR W36 GETFSL : SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG # 321

EPA has reviewed the AERMET sfc (surface) files used in Nucor's modeling analysis using R[1], a language and environment for statistical computing, and identified all days where AERMET produced no convective mixing heights over the 5-year simulation period. There were a total of 32 days in the modeling analysis that had no convective mixing heights in the AERMET ".sfc" file. AERMOD will not calculate model concentrations for hours that have positive heat flux but no morning sounding information. The lack of (daytime) convective mixing heights on 32 days out of 1,827 modeled days leads to a significant number of hours where model concentrations are basically missing from Nucor's modeling simulation. For the short-term 1-hr NO2 and SO2 NAAQS, this means there is a possibility that daily highs that could be occuring during daylight hours are not simulated in AERMOD on any day the morning sounding is not processed (a missing line 9 occurrence for example).

EPA surveyed Nucor's AERMET stage 1 report files and the Pittsburgh FSL file to come up with a more complete picture of potential factors that contributed to the unprocessed hours over the 5-year model simulation. The table on the next page summarizes all of the days with missing convective mixing heights. Of the 32 total days, 10 days were identified as having no morning sounding from Pittsburgh, 20 days were flagged as having a (morning) sounding without a surface measurement (line 9) and 2 days (highlighted in yellow) appear to have some other reason that no convective mixing heights were calculated by AERMET. The lines in highlighted in pink identify soundings with missing surface measurement for evening or afternoon hours. AERMET only processes "morning" soundings, which are used to construct the daytime convective mixing heights used by AERMOD. EPA suggests a more complete accounting of the "missing" morning soundings be constructed as well as some type of assessment if the days without convective mixing heights would have any impact on the final model concentrations. EPA will provide a "corrected" upper air file with an additional 20 days of upper air morning soundings. A substituted 12z surface measurement using the Pittsburgh ASOS site was inserted into the file to ensure the remainder of the sounding was processed by AERMET.

WVDAQ Response: EPA's *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA-454/R-99-005) provides guidance for the collection and processing of meteorological data for general use in air quality modeling applications. Guidance is provided for the in situ monitoring of primary meteorological variables (wind direction, wind speed, temperature, humidity, pressure, and radiation) for remote sensing of winds, temperature, and humidity, and for processing of derived meteorological variables such as stability, mixing height, and turbulence.

Although this document is guidance for the collection of data via site-specific monitors, it can also be applied to the evaluation of other types of data, including NWS airport data, which was used by Nucor. Page 5-4 of this document states that **"**the meteorological data base must be 90 percent complete (before substitution) in order to be acceptable for use in regulatory dispersion modeling." The AERMOD output files for the Nucor dispersion modeling analysis indicate

that 43,848 hours of meteorological data were processed with a total of 919 missing hours identified (2.10 Percent). This is a very high meteorological data completeness rate of 97.9%.

EPA notes in the analysis above that “The lack of (daytime) convective mixing heights on 32 days out of 1,827 modeled days leads to a significant number of hours where model concentrations are basically missing from Nucor’s modeling simulation.” This results in a data completeness rate of 98.2%.

Both the AERMOD output file completeness rate of 97.9% and EPA’s convective mixing height completeness rate of 98.2% are very high and exceed EPA’s completeness threshold identified in EPA’s guidance (EPA-454/R-99-005). WVDAQ has determined that Nucor’s meteorological data used in the dispersion modeling analysis is appropriate and acceptable and exceeds EPA’s completeness requirements.

Nucor, WV: Summary of AERMET Days with Missing Convective Mixing Heights 2016-20

Date	PIT Morning Sounding	Convective Mixing Heights (Zic)	Stage 1 Report, W36	Hour Sounding Missing Line 9
2016-06-06		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-06-19		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-08-26		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-09-04		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-10-06			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2016-10-24			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2016-11-12		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2016-12-27		No Convective Mixing Heights		
2017-01-11		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-04-04			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-04.21			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-05-07			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-07-24			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2017-07-27		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-09-07		No Convective Mixing Heights		
2017-09-18			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	8
2017-10-27		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-11-03		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2017-11-09		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2018-01-04		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2018-03-15			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2018-05-16			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2018-08-19	No 12z Sounding	No Convective Mixing Heights		
2018-12-21	No 12z Sounding	No Convective Mixing Heights		
2018-12-29		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-01-16			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2019-02-13			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2019-03-24		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-04-01	No 12z Sounding	No Convective Mixing Heights		
2019-04-02	No 12z Sounding	No Convective Mixing Heights		
2019-04-20	No 12z Sounding	No Convective Mixing Heights		
2019-04-21	No 12z Sounding	No Convective Mixing Heights		
2019-04-22	No 12z Sounding	No Convective Mixing Heights		
2019-04-23	No 12z Sounding	No Convective Mixing Heights		
2019-04-28		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-05-05		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-05-20		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-06-28		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-07-22			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	
2019-09-02			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	8
2019-10-29		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-11-06		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2019-12-16		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	2
2020-11-26	No 12z Sounding	No Convective Mixing Heights		
2020-11-27	No 12z Sounding	No Convective Mixing Heights		

4.8 Receptor Grids

Comment 14: EPA disagrees that the rail line that traverses through the western portion of Nucor's proposed facility does not constitute ambient air. The rail line appears to terminate at the M&G Polymers facility on the north side of the proposed Nucor steel plant. It's EPA's opinion that the rail line is not under control of Nucor. Furthermore, the personnel operating the locomotives that travel along this section of rail are not employed by Nucor. EPA would therefore counter that the area along the rail line constitutes ambient air and should be assessed for compliance with the NAAQS and PSD increments.

WVDAQ Response: The EPA defines ambient air at 40CFR50.1(e) – "***Ambient air*** means that portion of the atmosphere, external to buildings, to which the general public has access." The key point in this definition is access by the general public. WV DAQ has determined that Nucor will preclude access by the general public to the area along the rail line and disagrees with EPA that this area constitutes ambient air.

Nucor notes that railroad tracks and rights-of-way are private property and access by the general public is considered trespassing per W. Va. Code § 61-3B-3. This rule states, "It is an unlawful trespass for any person to knowingly, and without being authorized, licensed or invited, to enter or remain on any property, other than a structure or conveyance, as to which notice against entering or remaining is either given by actual communication to such person or by posting, fencing or cultivation." Nucor has identified methods that will preclude access by the general public to the rail line that traverses through Nucor's proposed facility. For the proposed facility location, Nucor will restrict general public access via physical fencing, signage at all entry and exit points, remote monitoring (e.g., 24-hour video surveillance), and on-site security staffing. Remote monitoring will provide Nucor constant surveillance of all facility access points and dedicated security staff will respond immediately to any potential trespassing incidents.

Furthermore, Nucor intends to establish routine security patrols to allow passageway to authorized personnel while monitoring and further deterring unauthorized general public access at all entry and exit points. Through these security measures, Nucor will preclude general public access and minimize all transient access to the proposed facility property Therefore, Nucor excluded receptors from the industrial plant roadways and main line railroads that cross the facility property. Finally, any transient access will not be by members of the general public.

Language has been added to the final permit requiring the permittee to restrict public access to all areas as indicated in the PSD Air Permit Application Modeling Report.

Comment 15: EPA is concerned that Nucor's modeled ambient air boundary may be improperly delineated. Nucor's operations will cover an extensive area. The facility's boundary along the Ohio River is approximately 2.2 km and the total perimeter is probably on the order of 7 km for the portion of the plant on the west side of WV Route 2 and 3 km and 4 km for the portions of the plant on the east side of WV Route 2. This is an extensive area to preclude public access via a physical boundary, such as a fence.

To ensure the ambient air boundary is properly controlled (outside of the rail line mentioned in our previous comment), it would be helpful if Nucor could provide additional explanation and documentation regarding some points on Figure 4-3 of Trinity's March 2022 *PSD Air Permit Application Modeling Report*. EPA is specifically concerned about possible public access along the property's frontage with WV Route 2, at the railroad access points (labeled C and D on Figure 4-3), the barge access points (labeled A and B on Figure 4-3) and the extensive fence line along the Ohio River boundary. This barrier, if improperly installed, may be subject to possible flooding damage. EPA notes there is about a 3-6 m increase in elevation from the normal pool elevation of the Ohio River to points inland along the eastern shore of the river. It's unclear if the fence should be within the Ohio River flood plain or if would be more prudent to place a barrier like this along the higher banks along east shore of the river.

WVDAQ Response: On December 2, 2019, EPA issued the memorandum *Revised Policy on Exclusions from Ambient Air*, from Andrew Wheeler to EPA Regional Administrators. This memo establishes the EPA policy that a fence or other physical barrier is not the only type of measure that may be used to establish that the general public does not have access to an area of land, and thereby that area of land would not fall within the definition of ambient air in 40CFR50.1(e) – "***Ambient air*** means that portion of the atmosphere, external to buildings, to which the general public has access."

This EPA revised policy expands methods for precluding access by the general public to include video surveillance, monitoring, clear signage, and routine security patrols. Further, EPA recognizes that future technologies could include drones and more advanced video surveillance technologies will potentially be used to preclude public access. The WVDAQ has determined that Nucor's proposed methods utilize a combination of physical barriers and methods consistent with EPA's revised policy and will preclude access by the general public.

For the proposed facility location, Nucor will restrict general public access via physical fencing, signage at all entry and exit points, remote monitoring (e.g., 24-hour video surveillance), and on-site security staffing. Remote monitoring will provide Nucor constant surveillance of all facility access points and dedicated security staff will respond immediately to any potential trespassing incidents. Furthermore, Nucor intends to establish routine security patrols to allow passageway to authorized personnel while monitoring and further deterring unauthorized general public access at all entry and exit points. Through these security measures, Nucor will preclude general public access and minimize all transient access to the proposed facility property. Finally, any transient access will not be by members of the general public.

As noted in the previous response, language has been added to the final permit requiring the permittee to restrict public access to all areas as indicated in the PSD Air Permit Application Modeling Report.

6.2 Class II NAAQS Analysis

Comment 16: Nucor's 1-hour SO_2 NAAQS modeling analysis does not appear to include several large coal-fired power plants in Gallia County, OH. These include the General J M Gavin

(Gavin) and Kyger Creek coal-fired power plants in Gallia County, OH. These power plants are significant SO_2 sources. Nucor selected a background monitor that was not impacted by these sources, *"[G]iven that the Gavin Power Plant is included in the regional inventory ..."* Instead, Nucor selected a more "regional" background site to avoid "double-counting"; explicitly modeling a source that is already accounted for in the background monitor concentration.

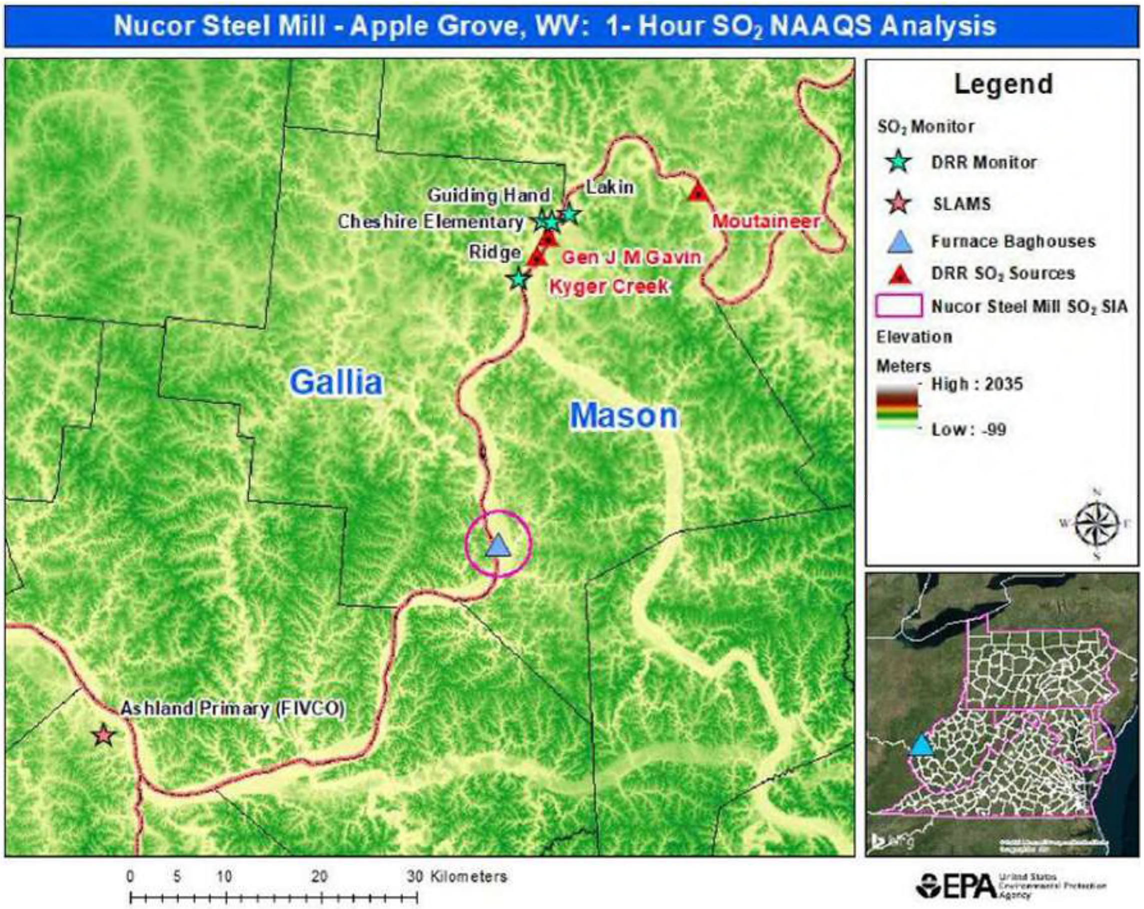
Nucor's 1-hr SO_2 NAAQS model input file does not include Gavin, Kyger Creek or Mountaineer, another coal-fired power plant in northern Mason County, WV. Nucor's 1-hr NO_2 analysis, however, does include the Gallia County, OH sources (and John Amos in Putnam County, WV). Annual 2021 SO_2 emissions reported to EPA's Clean Air Market Division (CAMD) were 25,792.6, 3,813.1 and 3,117.6 tons for Gavin, Kyger Creek and Mountaineer respectively. Figure 2 shows the location of Nucor's largest SO_2 sources, the Furnace Baghouses, Nucor's modeled 1-hr SO_2 significant impact area (SIA), the large Data Requirement Rule (DRR) sources in Gallia and Mason counties, the DRR SO_2 monitoring sites near Gavin and Kyger Creek and the SLAMS background monitor used for the 1-hr SO_2 NAAQS modeling analysis (Ashland Primary FIVCO).

Nucor's 1-hr SO_2 modeling analysis did not include the potential impacts of these large SO_2 DRR sources within the Nucor Steel Mill's modeled significant impact area (SIA). The DRR sources are neither explicitly modeled nor included in the model background concentration. In EPA's opinion, the potential impact of these sources is not properly accounted for in the 1-hr SO_2 NAAQS analysis and the analysis is therefore deficient.

To gauge the impact of the large DRR sources north of the Nucor steel mill in Gallia and Mason counties, EPA reran Nucor's 1-hr SO_2 NAAQS analysis using a 1-hr season by hour of day background concentration for the Lakin, WV (54-053-0001) DRR monitor. This monitor should provide a very conservative background concentration since it is located much closer to the Gavin and Kyger Creek DRR sources than the Nucor steel mill is. Table 1 shows the EPA constructed season by hour of day background SO_2 concentrations for the Lakin, WV monitor. Hour 1 values are probably missing due to that hour being used for daily calibration and maintenance activities. Modeled background concentrations for this hour were interpolated based on the hour 24 and hour 2 values.

Background concentrations are higher during the daytime hours and the spring, summer and fall seasons. Gavin and Kyger Creek's primary stacks are very high, over 200 meters based on the model input files, so vertical mixing must take place to bring stack emissions to ground level where the monitor is located. This accounts for daytime and the seasonal trends in the background concentrations. Vertical mixing is generally greatest during the daytime hours and outside of the cooler winter months when morning inversions are stronger and can limit daytime mixing depths.

Figure 2. Nucor 1-Hour SO_2 Modeling Analysis Overview



EPA used Nucor's receptor grid, which is limited to portions of the plant's SIA (where its emissions could exceed the 1-hr SO_2 significant impact levels) and extends roughly 3.4 km from the steel mill. Additionally, EPA reprocessed the AERMET input files to use the filled in Pittsburgh, PA upper air soundings as described in Comment 13. This reduced the number of "missing" hours summarized in the AERMOD output file from 919 hours to 766 hours.

Table 2 summarizes EPA's final revised modeling results using the Lakin, WV monitor background concentration along with the reprocessed meteorological data. Revised modeling showed modeled 1-hour SO_2 concentrations within the Nucor steel mill's SIA were below the NAAQS.

Table 1. EPA Constructed Season by Hour of Day SO_2 Background Concentrations

Lakin, WV (54-053-0001): 2018-20 Background SO2 Concentrations (ppb) by Season/Hour of Day												
	Winter			Spring			Summer			Fall		
Hour	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours
1		271	271		276	276		276	276		273	273
2	1.7	10	271	1.2	3	276	0.5	0	276	0.8	2	273
3	1.0	11	271	0.8	3	276	0.2	0	276	0.9	2	273
4	1.8	14	271	1.1	3	276	0.2	0	276	0.7	2	273
5	1.3	15	271	1.1	4	276	0.2	0	276	0.6	2	273
6	1.0	15	271	1.0	3	276	0.2	0	276	0.7	2	273
7	1.1	15	271	1.0	4	276	0.8	1	276	0.3	2	273
8	1.1	16	271	1.3	5	276	1.6	1	276	0.8	2	273
9	1.2	15	271	2.6	5	276	5.0	1	276	1.6	3	273
10	3.3	11	271	15.5	6	276	8.1	3	276	6.5	3	273
11	5.8	9	271	18.4	10	276	23.6	8	276	13.5	4	273
12	8.1	13	271	20.3	16	276	30.8	10	276	28.3	10	273
13	8.8	18	271	26.4	14	276	44.1	7	276	30.2	12	273
14	9.5	12	271	22.4	6	276	35.4	3	276	35.2	6	273
15	16.2	7	271	27.1	4	276	35.0	3	276	24.9	7	273
16	7.1	7	271	21.4	3	276	22.6	3	276	25.4	5	273
17	5.9	8	271	21.7	3	276	11.3	3	276	17.0	3	273
18	2.8	7	271	9.5	3	276	6.6	4	276	9.1	3	273
19	1.6	9	271	5.2	3	276	3.9	1	276	3.0	3	273
20	1.3	9	271	3.3	3	276	1.7	1	276	1.9	2	273
21	1.1	11	271	2.2	3	276	1.1	0	276	1.5	2	273
22	1.8	12	271	1.4	3	276	0.2	0	276	1.7	2	273
23	2.5	12	271	1.0	3	276	0.2	0	276	1.2	2	273
24	2.5	11	271	0.8	3	276	0.2	0	276	1.2	2	273

The peak model concentration for EPA's revised analysis is 46.5 ppb; this value was determined using EPA's accepted conversion factor of 196.4 $\mu g/m^3$ equaling 75 ppb. The summary table is based on results from the AERMOD MAXDCON file, which breaks down source group contributions to the final peak model concentration. Nucor's total contribution is about 5% of the peak model concentration with the background being the largest contributor to the peak model concentration. The background is conservative since it represents ambient concentrations near the Gallia County, OH DRR sources. Impacts from these sources should be much lower near the Nucor steel mill since it is located nearly 30 km from the Lakin, WV monitor.

Table 2. EPA's Revised 1-hr SO_2 NAAQS Analysis with Lankin, WV Background

Revised 1-hr SO2 Model Concentrations using Lakin, WV Background Concentration in Part per Billion (ppb)								
UTM Easting (m)	UTM Northing (m)	Elevation (m)	Furnace Baghouses (ppb)	Met Shop Fugitives (ppb)	Other Nucor (ppb)	Off-Site (ppb)	Background (ppb)	Peak Model (ppb)
398802.4	4278308.6	178.95	0.843	1.642	0.011	< 0.001	44.051	46.546

WVDAQ Response: WVDAQ has determined that Nucor adequately and appropriately considered the impacts from the Gavin and Kyger Creek Power Plants in Ohio and from the Mountaineer Power Plant in WV in the 1-hr SO_2 air quality analysis. The approved protocol states that "For SO_2 consideration, the nearest monitors to the proposed site are located in Cheshire, OH and Point Pleasant, WV, approximately 33 km north of the site and within the vicinity of the Gavin Power Plant. Considering the Gavin Power Plant is ***expected*** to be included in the regional inventory for the site, using the Cheshire or Point Pleasant monitors would result in "double-counting" of nearby source impacts." (emphasis added).

The approved protocol states that Nucor will use the 20D screening method and that "any sources beyond the SIA but within this ROI will be screened using the "20D" procedure. Under this Q/d-based screening procedure, sources outside the SIA will be excluded from the inventories for short-term averaging periods if the entire facility's emissions (tpy) are less than 20 times the distance (km) from the facility to Nucor, and sources outside the SIA will be excluded from the inventories for annual averaging periods if the entire facility's emissions (tpy) are less than 20 times the distance (km) from the facility to the nearest edge of the SIA." The radius of impact (ROI) is identified in the approved Nucor protocol as "…the radius of impact (ROI) [i.e., the significant impact area (SIA) plus 50 km (or 10 km for 1-hour NO_2 and SO_2…" Sources outside of the ROI would be excluded from the regional source inventory for the dispersion modeling analysis.

Table C-3. (Full Screening Analysis) of Trinity's modeling report contains the results of the regional source inventory screening analysis. For 1-hr SO_2, The Amos and Mountaineer Power Plants in WV and the Gavin and Kyger Creek Power Plants in Ohio are all excluded because they are beyond the radius of impact (ROI). From Table C-1. (Significant Impact Area) of Trinity's modeling report, the significant impact area for 1-hr SO_2 is 3.38 km. This means that at all receptor locations beyond 3.38 km Nucor's air quality impacts are below the significant impact level, and thus could not cause or contribute to a potential modeled violation of the 1-hr SO_2 NAAQS. The radius of impact (ROI) is defined for this 1-hr SO_2 analysis as the significant impact area (SIA) plus 10km. The ROI for 1-hr SO_2 is therefore 13.38 km (10 km plus 3.38 km).

From Table C-3 in Trinity's report, the distances from Nucor to the facilities in EPA's comment are: Mountaineer Power Plant in WV (41.4 km), Gavin Power Plant in OH (33.6 km), and Kyger Creek Power Plant in OH (29.5 km). The facilities identified by EPA's comment were included in the air quality impacts analysis by considering their emissions and distances from the proposed Nucor site and comparing to appropriate an appropriate screening level. All of the

distances for the facilities identified in EPA's comment are beyond the ROI of 13.38 km and were appropriately screened out of the dispersion modeling analysis.

In section 8.3.3.b.iii of 40CFR51(Appendix W), EPA states that "The number of nearby sources to be explicitly modeled in the air quality analysis is expected to be few except in unusual situations. In most cases, the few nearby sources will be located within the first 10 to 20 km from the source(s) under consideration." Nucor's screening analysis that excluded three facilities from the dispersion modeling analysis, which are significantly farther than 20 km from the proposed Nucor site, is consistent with Appendix W.

Finally, EPA's own analysis confirms that the analysis by Nucor is appropriate and demonstrates that the Nucor facility will not cause or contribute to any violation of the 1-hr SO_2 NAAQS.

Comment 17: Model background concentrations from the Ashland, KY monitor were included in Nucor's 1-hr NO_2 NAAQS analysis. The final modeling report did not contain a breakdown of the season by hour of day background concentrations included in the modeling analysis.

EPA downloaded the 2018 through 2020 1-hour NOx concentrations for the Ashland, KY monitor (21-019-0017) and calculated the season by hour of day NOx concentrations in accordance with EPA's March 1, 2011 clarification memorandum[2]; we used the average of the 3rd highest hourly values by hour of day and season for each year (2018 through 2020). Table 3 shows the EPA calculated background NOx concentrations that could be used in the AERMOD 1-hr NO_2 NAAQS analysis. Our values do not appear to match the values in the BACKGRND source section lines in the provided AERMOD input file. We ask that the AERMOD background concentrations be reexamined to ensure the correct values were modeled.

EPA notes that Nucor's 1-hr NO_2 modeling analysis is probably conservative given the background site appears to be significantly impacted by mobile source emissions. The model background monitor is located in a much more urban setting than the proposed Nucor steel mill. Given this setting, background (NO_2) values would probably be significantly lower than the actual modeled values if a more similar rural monitoring site, which would more closely resemble conditions near the Nucor steel mill, was used. Regardless, Nucor's modeling analysis shows modeled 1-hr NO_2 concentrations are below the NAAQS.

Table 3. EPA Constructed Season by Hour of Day NOx Background Concentrations

Askland Primary (FIVCO), KY (21-019-0017): 2018-20 Background NOx Concentrations (ppb) by Season/Hour of Day												
	Winter			Spring			Summer			Fall		
Hour	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours
1	57.3	0	270	28.0	0	276	14.0	1	276	33.3	0	273
2	54.0	211	270	29.0	184	276	8.0	184	276	9.0	256	273
3	60.0	148	270	26.0	184	276	13.0	184	276	37.0	135	273
4	60.0	0	270	34.0	1	276	15.3	0	276	35.0	0	273
5	64.0	0	270	38.7	0	276	15.3	1	276	37.0	0	273
6	68.7	18	270	43.3	21	276	15.3	20	276	38.3	20	273
7	72.0	18	270	51.3	22	276	17.0	19	276	39.0	21	273
8	72.3	0	270	61.0	8	276	18.7	5	276	47.3	4	273
9	76.0	5	270	46.3	8	276	16.7	7	276	59.3	5	273
10	76.3	6	270	28.7	11	276	11.7	10	276	44.0	5	273
11	52.0	5	271	12.7	11	276	8.0	9	276	35.0	6	273
12	41.3	4	271	8.0	12	276	5.3	11	276	20.0	6	273
13	17.3	5	271	7.0	14	276	3.7	11	276	12.3	5	273
14	17.0	6	271	6.0	9	276	3.0	9	276	10.7	2	273
15	14.7	7	271	5.3	6	276	2.0	8	276	8.7	0	273
16	16.3	5	271	6.3	4	276	2.7	5	276	9.3	1	273
17	22.3	5	270	6.0	3	276	3.3	4	276	11.3	1	273
18	29.7	2	270	6.7	2	276	3.0	3	276	16.0	0	273
19	45.3	0	270	8.7	0	276	4.3	0	276	22.0	0	273
20	44.7	0	270	13.3	0	276	5.0	1	276	28.7	1	273
21	44.0	0	270	19.3	0	276	6.3	1	276	29.7	0	273
22	45.7	0	270	21.0	0	276	8.0	1	276	29.7	0	273
23	43.7	0	270	21.0	0	276	9.7	1	276	29.7	0	273
24	49.0	0	270	25.0	0	276	13.7	1	276	33.0	0	273

WVDAQ Response: WVDAQ has determined that Nucor appropriately derived 1-hr NO_2 background values by season-and-hour-of-day. WVDAQ independently obtained the raw hourly NO_2 monitored values and developed the season-and-hour-of-day values consistent with EPA guidance. WVDAQ values match the values used by Nucor found in the model input file, with limited exceptions for values that required substitution because of missing values during calibration of monitoring equipment. WVDAQ agrees with EPA that the NO_2 background values used are likely to be much higher than the actual background values of NO_2 at the project site. As EPA notes, Nucor's modeling analysis shows modeled 1-hr NO_2 concentrations are below the NAAQS.

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		2/6/2018 1:36:30 PM	WG1070446
Fluid	1		2/6/2018 1:36:30 PM	WG1070446
Initial pH	9.51		2/6/2018 1:36:30 PM	WG1070446
Final pH	9.38		2/6/2018 1:36:30 PM	WG1070446

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.0100	0.20	1	02/08/2018 06:07	WG1070871

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Arsenic	ND		0.100	5	1	02/07/2018 19:33	WG1070891
Barium	0.733		0.100	100	1	02/07/2018 19:33	WG1070891
Cadmium	ND		0.100	1	1	02/07/2018 19:33	WG1070891
Chromium	ND		0.100	5	1	02/07/2018 19:33	WG1070891
Lead	ND		0.100	5	1	02/07/2018 19:33	WG1070891
Selenium	ND		0.100	1	1	02/07/2018 19:33	WG1070891
Silver	ND		0.100	5	1	02/07/2018 19:33	WG1070891

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		1/6/2019 1:15:44 PM	WG1219878
Fluid	1		1/6/2019 1:15:44 PM	WG1219878
Initial pH	10.38		1/6/2019 1:15:44 PM	WG1219878
Final pH	11.10		1/6/2019 1:15:44 PM	WG1219878

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	12.2	T8	1	01/05/2019 10:55	WG1219474

Sample Narrative:

L1057633-09 WG1219474: 12.18 at 24.2C

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.0100	0.20	1	01/07/2019 18:03	WG1220127

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Arsenic	ND		0.100	5	1	01/07/2019 15:58	WG1220134
Barium	1.07		0.100	100	1	01/07/2019 15:58	WG1220134
Cadmium	ND		0.100	1	1	01/07/2019 15:58	WG1220134
Chromium	ND		0.100	5	1	01/07/2019 15:58	WG1220134
Lead	ND		0.100	5	1	01/07/2019 15:58	WG1220134
Selenium	ND		0.100	1	1	01/07/2019 15:58	WG1220134
Silver	ND		0.100	5	1	01/07/2019 15:58	WG1220134

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		2/13/2020 11:17:59 AM	WG1427302
TCLP ZHE Extraction	-		2/13/2020 10:34:42 AM	WG1427238
Fluid	1		2/13/2020 11:17:59 AM	WG1427302
Initial pH	9.16		2/13/2020 11:17:59 AM	WG1427302
Final pH	7.43		2/13/2020 11:17:59 AM	WG1427302

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.0100	0.20	1	02/16/2020 17:29	WG1427901

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Arsenic	ND		0.100	5	1	02/14/2020 17:41	WG1427959
Barium	0.749		0.100	100	1	02/14/2020 17:41	WG1427959
Cadmium	ND		0.100	1	1	02/14/2020 17:41	WG1427959
Chromium	0.202		0.100	5	1	02/14/2020 17:41	WG1427959
Lead	ND		0.100	5	1	02/14/2020 17:41	WG1427959
Selenium	ND		0.100	1	1	02/14/2020 17:41	WG1427959
Silver	ND		0.100	5	1	02/14/2020 17:41	WG1427959

Kessler, Joseph R <joseph.r.kessler@wv.gov>

EPA Comments on Nucor Steel West Virginia LLC Proposed Permit

2 messages

Supplee, Gwendolyn <Supplee.Gwendolyn@epa.gov> Fri, Apr 29, 2022 at 1:59 PM
To: "Kessler, Joseph R" <joseph.r.kessler@wv.gov>
Cc: "McKeone, Beverly D" <beverly.d.mckeone@wv.gov>, "Leary, Justin" <Leary.Justin@epa.gov>, "Wejrowski, Mark" <Wejrowski.Mark@epa.gov>, "Opila, MaryCate" <Opila.MaryCate@epa.gov>, "Leon-Guerrero, Tim" <Leon-Guerrero.Tim@epa.gov>

Hi Joe –

Attached are EPA's comments on the Nucor Steel West Virginia LLC on the proposed Prevention of Significant Deterioration (PSD) Permit for Nucor Steel West Virginia LLC (Nucor). If you would like to discuss any of EPA's comments, please let me know, and I can set a meeting up.

Many thanks, Gwen

Gwendolyn K. Supplee

Life Scientist

U.S. Environmental Protection Agency, Region 3

Air and Radiation Division

Permits Branch (3AD10)

Supplee.Gwendolyn@epa.gov

215-814-2763

2 attachments

EPA Comments Nucor Steel WV LLC_04-29-22 Signed.pdf
266K

NucorWV_EPA3_ModelingComments_Final.pdf
1410K

Kessler, Joseph R <joseph.r.kessler@wv.gov> Wed, May 4, 2022 at 8:36 AM
Draft To: "Supplee, Gwendolyn" <Supplee.Gwendolyn@epa.gov>, "Leary, Justin" <Leary.Justin@epa.gov>, "Wejrowski, Mark" <Wejrowski.Mark@epa.gov>, "Opila, MaryCate" <Opila.MaryCate@epa.gov>, "Leon-Guerrero, Tim" <Leon-Guerrero.Tim@epa.gov>
Cc: "McKeone, Beverly D" <beverly.d.mckeone@wv.gov>, Laura M Crowder <laura.m.crowder@wv.gov>, Jon D McClung <jon.d.mcclung@wv.gov>

Please see the attached response to your comments concerning the following permitting action:

Nucor Steel West Virginia LLC
West Virginia Steel Mill
Permit Application: R14-0039
Plant ID No.: 053-00085

Thank You,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov
[Quoted text hidden]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Joseph R. Kessler, P.E.
Engineer
West Virginia Department of Environmental Protection (WVDEP)
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304

Dear Mr. Kessler,

The Environmental Protection Agency (EPA) offers the following comments on the proposed Prevention of Significant Deterioration (PSD) Permit for Nucor Steel West Virginia LLC (Nucor). This permit will authorize the construction of a new sheet steel mill located near Apple Grove, Mason County, West Virginia capable of producing up to 3,000,000 tons of steel per year. The facility triggers PSD requirements for Carbon Monoxide (CO), Oxides of Nitrogen (NOx), Particulate Matter (PM10, PM2.5, and filterable particulate matter), Sulfur Dioxide (SO2), Volatile Organic Compounds (VOCs), Greenhouse Gases (GHGs), Lead (Pb), and Fluorides (F).

These comments are provided to ensure that the project meets federal Clean Air Act requirements, that the permit will provide necessary information so that the basis for the permit decisions is transparent and readily accessible to the public, and that the permit record provides adequate support for the decisions.

I. <u>PERMIT/ENGINEERING ANALYSIS COMMENTS:</u>

A. Permit Condition 4.1.3.g(2) allows Nucor to grade unpaved roads and mobile work areas with gravel, slag, or a mixture of the two to provide a suitable surface for the use of trucks and other heavy equipment. The modeling analysis submitted by Nucor shows that slag from the Electric Arc Furnaces (EAFs) contains lead as well as other heavy metals. EPA is concerned that the use of EAF slag as a road grading material will possibly create unaccounted sources of lead and other hazardous air pollutants (HAPs) if the material is used on Nucor's haul roads. If Nucor intends to use slag generated by the facility on its' unpaved roads and mobile work areas, EPA recommends, at a minimum, to require Nucor to perform some type of formal material analysis of the slag to gauge its potential to generate lead and other HAP air emissions. Please note that EPA has additional comments related to Nucor's modeling analysis for slag-related lead emissions in Enclosure 1 of this letter.

B. Page 42 of the Fact Sheet provides the BACT determinations for VOCs and SO2 for the EAFs and Ladle Metallurgy Furnaces (LMFs).

1. On page 4-26 of the permit application submitted by Nucor, Nucor indicated that it was selecting a higher BACT emission limit for VOCs (0.005 lbs/ton steel vs. 0.004 lbs/ton steel) for the LMFs because the RBLC search for similar sources showed that the more stringent limit of 0.004 lbs/ton steel was associated with an EAF source with a higher VOC emission limit than the proposed West Virginia plants. If the proposed VOC limit from the West Virginia's EAF sources is lower than the sources identified in the RBLC search, WVDEP should provide further justification as to why the higher VOC BACT emission limit was selected for the Nucor facility.
2. WVDEP indicates in the Fact Sheet that BACT limit for SO_2 emissions from the EAFs is the use of a Scrap Management Plan as well as the use of lime injection in the melting process to remove sulfur in the form of the slag. However, the corresponding permit condition [Condition No. 4.1.4.a, Table 4.1.4(a)], seems to indicate that the use of fluxes to meet the SO2 emission limit is not required at all times. If the use of lime fluxing is a required BACT Technology, the table should be revised to indicate that the use of lime fluxing is required at all times.
3. Neither Nucor's permit application, nor WVDEP's fact sheet provides the basis for the selection of the BACT SO_2 emission limit for the LMFs as 0.04 lb SO_2/ ton steel on a rolling 30-day average. In the Fact Sheet, WVDEP should provide further explanation why the suggested limit should be considered BACT.

C. Hydrochloric Acid (HCl) emissions from the Pickling line (PLST-1) are controlled by the pickling line scrubber (PKL1-SCR). Page 19 of the Fact Sheet indicates that the HCl emission limit from the outlet stream of the PKL1-SCR was based on a vendor guarantee that the HCl outlet concentration in the scrubber would not exceed 6 ppm, with an associated HCl potential to emit from the Pickling Line of 0.25 lb/hr and 1.09 tons/year [Permit Condition 4.1.6b(3)]. Due to importance of the pickling line scrubber in helping the facility stay under the major source threshold for Hazardous Air Pollutants (HAPs), the permit should include compliance testing for this source to establish scrubber operating parameters, and include parametric monitoring for the scrubber operations after compliance testing is performed, to ensure that the scrubber meets the HCl emission limit and also ensures that the limit is enforceable.

D. The EPA mailing address for correspondence in Permit Condition No. 3.5.3. should be updated to:

Section Chief
U.S. Environmental Protection Agency, Region III
Enforcement and Compliance Assurance Division
Air Section (3ED21)
Four Penn Center
1600 John F Kennedy Blvd
Philadelphia, PA 19103-2852

E. Permit Condition No. 4.1.10.c requires the Melt Shop Collection Systems (hooding and duct systems) to be maintained free of holes, cracks, and other conditions that would substantially reduce the collection efficiency of the emission capture system. EPA recommends that WVDEP include a periodic monitoring event to ensure compliance with this permit condition.

F. Permit Condition No. 4.1.11.e requires Nucor, within 60 days of plant startup, to submit to WVDEP a GHG BACT Implementation Plan that describes how the facility will implement GHG BACT requirements in Permit Condition No's 4.1.11.a. through 4.1.11.d. of the draft permit. EPA recommends that WVDEP include a requirement that WVDEP also needs to review and approve the GHG BACT Implementation Plan after submittal by Nucor.

II. AIR QUALITY ANALYSIS REPORT

A. EPA comments on the modeling analysis are included in Enclosure 1.

Thank you for the opportunity to review this proposed permit. If you have any questions or concerns regarding these comments, please contact me or Gwendolyn Supplee of my staff at 215-814-2763 or supplee.gwendolyn@epa.gov.

Sincerely,

MARY CATHERINE OPILA

Digitally signed by MARY CATHERINE OPILA
Date: 2022.04.29 13:36:43 -04'00'

Mary Cate Opila, P.E., Ph.D.
Chief, Permits Branch
Air & Radiation Division
EPA Region 3

Enclosure

3. Modeled Emission Sources

Comment 1: Electric arc furnace (EAF) slag contains a relatively high percentage of lead (as well as other heavy metals). The slag cutting and processing operation is the only slag-related lead source included in Nucor's lead modeling analysis. There are no lead emissions associated with any of the other slag handling, processing or stockpiling operations.

Nucor's modeling analysis contains PM emissions from all 4 slag handling, processing and stockpiling operations. These include slag cutting and processing (volume), slag processing (volume), slag stockpiling (volume) and slag cutting (point). EPA believes all of these slag sources should have been included in the lead modeling analysis unless they can be shown to be insignificant sources of lead emissions.

Comment 2: Section 4.1.3. Material Handling & Storage Operations of Nucor's draft permit, item g (2) reads:

> *All unpaved roads and mobile work areas shall be graded with gravel, **slag, or a mixture of the two** so as to provide a suitable surface for the use of trucks and other heavy equipment. Unpaved roads and mobile work areas shall be provided with additional **slag** or gravel as needed to maintain the road surface;*

Given this condition, EPA feels that all road surfaces may be potential sources of lead since slag material (a potential lead source) can be used on Nucor road surfaces. Additionally, Nucor's permit application mentions the use of vacuum sweepers for additional dust control. The operation of these devices could also be another potential source of lead emissions.

EPA is concerned that Nucor's slag handling will contribute to possibly unaccounted sources of lead and other hazardous air pollutants or HAPs (mainly heavy metals) if the material is used on its haul roads. It would be prudent, in EPA's opinion, to provide some type of formal material analysis of the slag to gauge its potential to generate lead and HAPs air emissions.

Comment 3: It appears that estimated slag particulate emissions assumed the EAF slag was at ambient temperature. Slag from tapped pots is extremely warm and can create vertical updrafts as it cools. The initial vertical release dimension (2.835 m) of the volume source associated with the slag stockpile source is relatively low. For comparison, the initial vertical release dimensions for the melt-shop fugitives, a very warm source (400 K) were 21.243 meters.

If slag in the stockpile areas has not cooled to temperatures near ambient levels, vertical updrafts from the cooling slag may loft (particulate) emissions much higher than the modeled initial vertical dimension. Additionally, very warm slag material in any outside uncontrolled areas may be significant sources of (additional) condensible particulate emissions. Poorly controlled emissions from exposed cooling slag have the potential to create off-site dusting issues.

Comment 4: There is a discrepancy in modeled stack base elevations for several sources in Nucor's modeling analysis. The (off-site) sources are listed as OH_1_1, OH_1_4 and OH_1_6 in the AERMOD LOCATION input file lines. Stack base elevations for these 3 sources are listed as 175.73 meters, 175.76 meters and 175.76 meters in the PM-2.5 NAAQS model input file and 178.6 meters (for all 3 sources) in the PM-10 NAAQS input file. OH_1_1 and OH_1_4 are also included in the 1-hour NO_2 NAAQS run. Both sources have stack base elevations of 178.6 meters, which match the values in the PM-10 NAAQS input file. This discrepancy in modeled stack base elevations should be properly addressed.

Comment 5: Stack parameters for Nucor's emergency generator (EMGEN6) CO simulations appear to be slightly different than their values for the other pollutant model simulations. The CO (SIL) AERMOD input file lists the emergency generators stack height (in meters), stack temperature (in Kelvin), stack velocity (in meters per second) and stack diameter (in meters) as 2.44, 791.48, 4.51 and 0.4 respectively. Corresponding values for the emergency generator in the other pollutant model simulations are 2.438, 791.483, 4.505 and 0.396.

These differences appear to be due to rounding and probably do not impact final model concentrations significantly.

Comment 6: Local elevations nearly match the stack base elevations across the different sources in the Nucor modeling analysis. This suggests little to no site regrading. Will there be any efforts to enhancing building base elevations during the Nucor steel mill construction phase that would change any of the modeled stack base elevations?

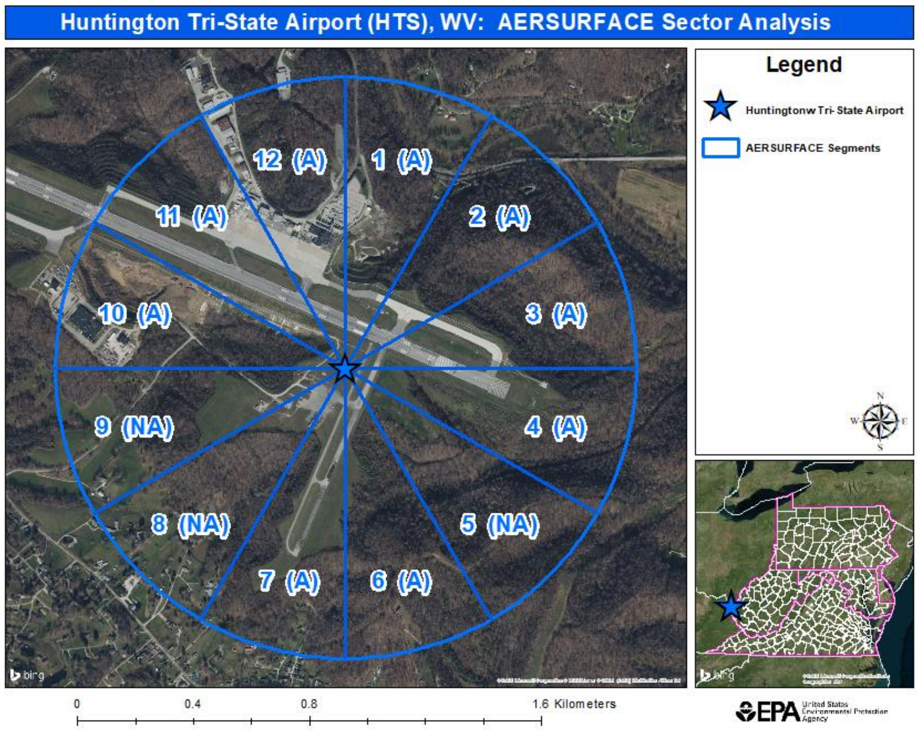
3.5.3 Increment Consuming Regional Sources

Comment 7: The list of sources shown in Table 3-1 almost certainly have had significant emission reductions since they were commissioned. A negative emission rate could be applicable in regards to NOx or SO_2 (if needed) for the increment analysis. Excluding the sources in the model increment analysis is probably conservative for these pollutants.

4.6 Meteorological Data

Comment 8: It appears that the final AERMET processed input files used average, no-snow conditions in AERSURFACE. Surface roughness values were determined for 12 equal 30-degree sectors out to 1-km. The AERSURFACE input file indicates Nucor defined 9 sectors as "Airport" and 3 sectors as "Non-Airport". EPA Figure 1 shows the 12 sectors surrounding the HTS ASOS tower location, which was verified, and the AERSURFACE sector definitions (A = airport, NA = non-airport). Visually, most of the sector definitions appear to be correctly assessed. Additional discussion on how to determine sector definitions (airport versus nonairport) can be found in EPA's AERSURFACE users guide sections 2.3.2, 2.4.1.3 and 3.2.10.

Figure 1. AERSURFACE Sectors for Huntington Tri-State Airport



Comment 9: It doesn't appear that an analysis of local snow cover near the proposed Nucor steel mill was completed. Nor does it appear that an analysis was made to determine possible variability in soil moisture over the 5-year meteorological period used in the modeling analysis. An analysis of 30-year precipitation data is mentioned in this section but it doesn't appear to have actually been completed. Instead, it appears average (soil moisture) conditions were set for the entire 5-year simulation period. Snow-cover and soil moisture have impacts on the final albedo and Bowen ratios that are part of the AERMET stage 3 processing step.

Please confirm EPA's findings. This comment was made in order to enhance the meteorological documentation summary for the 5-year modeling analysis.

Comment 10: The AERMINUTE input file lists the Huntington Tri-State Airport's (HTS) ice-free wind installation date as 4/19/2007. The actual date for HTS according to National Weather Service records appears to be 1/26/2007. EPA does not believe this error has any impact on the AERMINUTE processing.

Comment 11: Nucor's modeling analysis only processed HTS's 1-minute data in AERMINUTE. AERMINUTE is capable of processing both 1-minute and 5-minute data. There is 5-minute data available for HTS. Utilizing the 5-minute data in tandem with the 1-minute data would allow for additional filling of missing hours in the final AERMET produces meteorological files if both the hourly and 1-minute values are missing.

Comment 12: Huntington's 1-minute and 5-minute data appear to be missing from September of 2019 through March of 2020. Please confirm this for documentation purposes.

Comment 13: EPA reviewed the AERMET processing files provided by West Virginia. We have noted an issue with the Pittsburgh, PA upper air soundings for another application in Pennsylvania over the same 5-year simulation period Nucor processed. In some instances, Pittsburgh's upper air file does not contain a surface measurement line (labelled line 9 in the upper air file). Line 9 represents the surface measurement at the time the balloon is released Failure to collect surface measurements (line 9) prevents AERMET from processing the morning sounding data collected after the balloon is released. A warning flag is generated and posted to the AERMET stage 1 report file. EPA identified this warning line in the AERMET Stage 1 files included in the Nucor modeling files. The line in the Stage 1 report (for 2017) reads:

20160606 UPPERAIR W36 GETFSL : SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG # 321

EPA has reviewed the AERMET sfc (surface) files used in Nucor's modeling analysis using R[1], a language and environment for statistical computing, and identified all days where AERMET produced no convective mixing heights over the 5-year simulation period. There were a total of 32 days in the modeling analysis that had no convective mixing heights in the AERMET ".sfc" file. AERMOD will not calculate model concentrations for hours that have positive heat flux but no morning sounding information. The lack of (daytime) convective mixing heights on 32 days out of 1,827 modeled days leads to a significant number of hours where model concentrations are basically missing from Nucor's modeling simulation. For the short-term 1-hr NO_2 and SO_2 NAAQS, this means there is a possibility that daily highs that could be occuring during daylight hours are not simulated in AERMOD on any day the morning sounding is not processed (a missing line 9 occurrence for example).

EPA surveyed Nucor's AERMET stage 1 report files and the Pittsburgh FSL file to come up with a more complete picture of potential factors that contributed to the unprocessed hours over the 5-year model simulation. The table on the next page summarizes all of the days with missing convective mixing heights. Of the 32 total days, 10 days were identified as having no morning sounding from Pittsburgh, 20 days were flagged as having a (morning) sounding without a surface measurement (line 9) and 2 days (highlighted in yellow) appear to have some other reason that no convective mixing heights were calculated by AERMET. The lines in highlighted in pink identify soundings with missing surface measurement for evening or afternoon hours. AERMET only processes "morning" soundings, which are used to construct the daytime convective mixing heights used by AERMOD.

[1] R Core Team (2021). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/

Nucor, WV: Summary of AERMET Days with Missing Convective Mixing Heights 2016-20

Date	PIT Morning Sounding	Convective Mixing Heights (Zic)	Stage 1 Report, W36	Hour Sounding Missing Line 9
2016-06-06		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2016-06-19		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2016-08-26		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2016-09-04		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2016-10-06			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	0
2016-10-24			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	0
2016-11-12		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2016-12-27		No Convective Mixing Heights		
2017-01-11		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2017-04-04			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	0
2017-04-21			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	0
2017-05-07			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	0
2017-07-24			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	0
2017-07-27		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2017-09-07		No Convective Mixing Heights		
2017-09-18			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	18
2017-10-27		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2017-11-03		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2017-11-09		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2018-01-04		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2018-03-15			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	0
2018-05-16			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	0
2018-08-19	No 12z Sounding	No Convective Mixing Heights		
2018-12-21	No 12z Sounding	No Convective Mixing Heights		
2018-12-29		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2019-01-16			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	0
2019-02-13			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	0
2019-03-24		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2019-04-01	No 12z Sounding	No Convective Mixing Heights		
2019-04-02	No 12z Sounding	No Convective Mixing Heights		
2019-04-20	No 12z Sounding	No Convective Mixing Heights		
2019-04-21	No 12z Sounding	No Convective Mixing Heights		
2019-04-22	No 12z Sounding	No Convective Mixing Heights		
2019-04-23	No 12z Sounding	No Convective Mixing Heights		
2019-04-28		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2019-05-05		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2019-05-20		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2019-06-28		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2019-07-22			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	0
2019-09-02			SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	18
2019-10-29		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2019-11-06		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2019-12-16		No Convective Mixing Heights	SDG SKIPPED: 1st LEVEL NOT TYPE 9, SDG	12
2020-11-26	No 12z Sounding	No Convective Mixing Heights		
2020-11-27	No 12z Sounding	No Convective Mixing Heights		

EPA suggests a more complete accounting of the "missing" morning soundings be constructed as well as some type of assessment if the days without convective mixing heights would have any impact on the final model concentrations. EPA will provide a "corrected" upper air file with an additional 20 days of upper air morning soundings. A substituted 12z surface measurement using the Pittsburgh ASOS site was inserted into the file to ensure the remainder of the sounding was processed by AERMET.

4.8 Receptor Grids

Comment 14: EPA disagrees that the rail line that traverses through the western portion of Nucor's proposed facility does not constitute ambient air. The rail line appears to terminate at the M&G Polymers facility on the north side of the proposed Nucor steel plant. It's EPA's opinion that the rail line is not under control of Nucor. Furthermore, the personnel operating the locomotives that travel along this section of rail are not employed by Nucor. EPA would therefore counter that the area along the rail line constitutes ambient air and should be assessed for compliance with the NAAQS and PSD increments.

Comment 15: EPA is concerned that Nucor's modeled ambient air boundary may be improperly delineated. Nucor's operations will cover an extensive area. The facility's boundary along the Ohio River is approximately 2.2 km and the total perimeter is probably on the order of 7 km for the portion of the plant on the west side of WV Route 2 and 3 km and 4 km for the portions of the plant on the east side of WV Route 2. This is an extensive area to preclude public access via a physical boundary, such as a fence

To ensure the ambient air boundary is properly controlled (outside of the rail line mentioned in our previous comment), it would be helpful if Nucor could provide additional explanation and documentation regarding some points on Figure 4-3 of Trinity's March 2022 *PSD Air Permit Application Modeling Report*. EPA is specifically concerned about possible public access along the property's frontage with WV Route 2, at the railroad access points (labeled C and D on Figure 4-3), the barge access points (labeled A and B on Figure 4-3) and the extensive fence line along the Ohio River boundary. This barrier, if improperly installed, may be subject to possible flooding damage. EPA notes there is about a 3-6 m increase in elevation from the normal pool elevation of the Ohio River to points inland along the eastern shore of the river. It's unclear if the fence should be within the Ohio River flood plain or if would be more prudent to place a barrier like this along the higher banks along east shore of the river.

6.2 Class II NAAQS Analysis

Comment 16: Nucor's 1-hour SO_2 NAAQS modeling analysis does not appear to include several large coal-fired power plants in Gallia County, OH. These include the General J M Gavin

(Gavin) and Kyger Creek coal-fired power plants in Gallia County, OH. These power plants are significant SO_2 sources. Nucor selected a background monitor that was not impacted by these sources, *"[G]iven that the Gavin Power Plant is included in the regional inventory …"* Instead, Nucor selected a more "regional" background site to avoid "double-counting"; explicitly modeling a source that is already accounted for in the background monitor concentration.

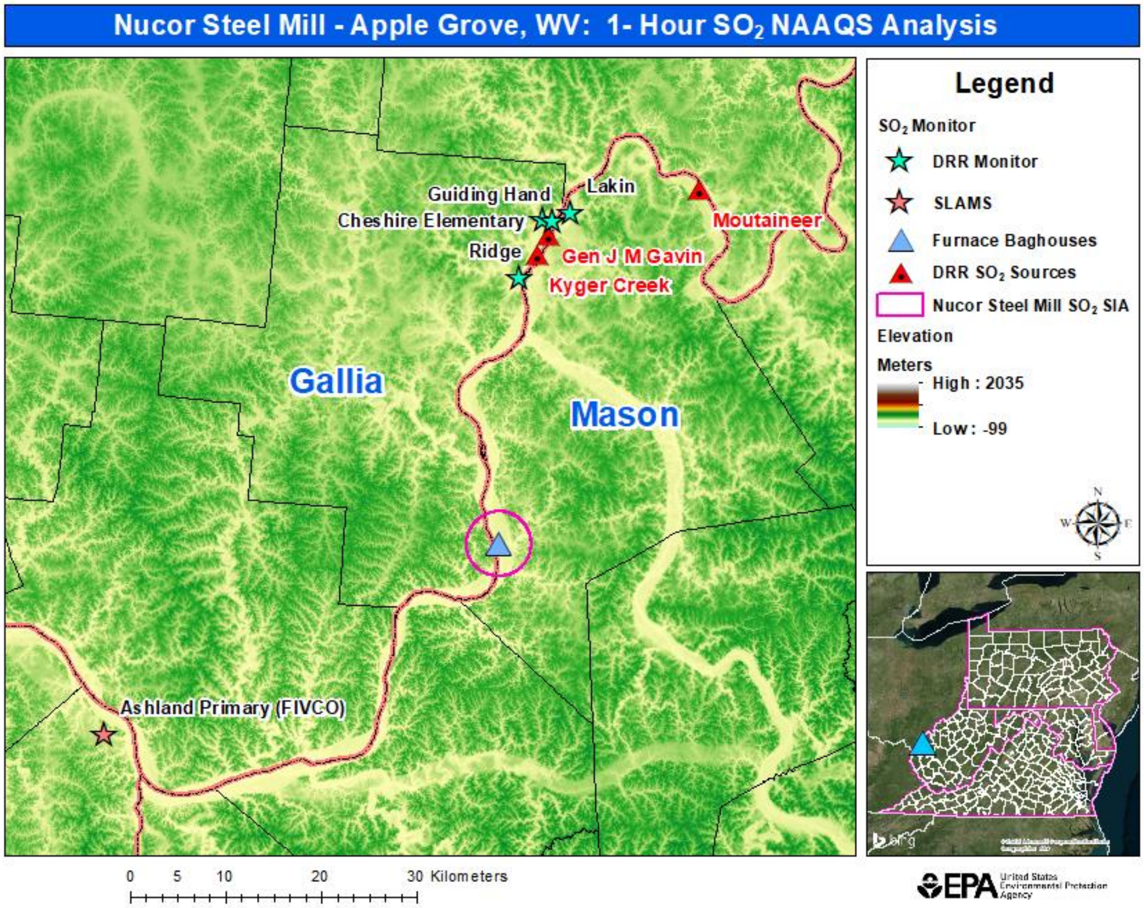
Nucor's 1-hr SO_2 NAAQS model input file does not include Gavin, Kyger Creek or Mountaineer, another coal-fired power plant in northern Mason County, WV. Nucor's 1-hr NO_2 analysis, however, does include the Gallia County, OH sources (and John Amos in Putnam County, WV). Annual 2021 SO_2 emissions reported to EPA's Clean Air Market Division (CAMD) were 25,792.6, 3,813.1 and 3,117.6 tons for Gavin, Kyger Creek and Mountaineer respectively. Figure 2 shows the location of Nucor's largest SO_2 sources, the Furnace Baghouses, Nucor's modeled 1-hr SO_2 significant impact area (SIA), the large Data Requirement Rule (DRR) sources in Gallia and Mason counties, the DRR SO_2 monitoring sites near Gavin and Kyger Creek and the SLAMS background monitor used for the 1-hr SO_2 NAAQS modeling analysis (Ashland Primary FIVCO).

Nucor's 1-hr SO_2 modeling analysis did not include the potential impacts of these large SO_2 DRR sources within the Nucor Steel Mill's modeled significant impact area (SIA). The DRR sources are neither explicitly modeled nor included in the model background concentration. In EPA's opinion, the potential impact of these sources is not properly accounted for in the 1-hr SO_2 NAAQS analysis and the analysis is therefore deficient.

To gauge the impact of the large DRR sources north of the Nucor steel mill in Gallia and Mason counties, EPA reran Nucor's 1-hr SO_2 NAAQS analysis using a 1-hr season by hour of day background concentration for the Lakin, WV (54-053-0001) DRR monitor. This monitor should provide a very conservative background concentration since it is located much closer to the Gavin and Kyger Creek DRR sources than the Nucor steel mill is. Table 1 shows the EPA constructed season by hour of day background SO_2 concentrations for the Lakin, WV monitor. Hour 1 values are probably missing due to that hour being used for daily calibration and maintenance activities. Modeled background concentrations for this hour were interpolated based on the hour 24 and hour 2 values.

Background concentrations are higher during the daytime hours and the spring, summer and fall seasons. Gavin and Kyger Creek's primary stacks are very high, over 200 meters based on the model input files, so vertical mixing must take place to bring stack emissions to ground level where the monitor is located. This accounts for daytime and the seasonal trends in the background concentrations. Vertical mixing is generally greatest during the daytime hours and outside of the cooler winter months when morning inversions are stronger and can limit daytime mixing depths.

Figure 2. Nucor 1-Hour SO_2 Modeling Analysis Overview



EPA used Nucor's receptor grid, which is limited to portions of the plant's SIA (where its emissions could exceed the 1-hr SO_2 significant impact levels) and extends roughly 3.4 km from the steel mill. Additionally, EPA reprocessed the AERMET input files to use the filled in Pittsburgh, PA upper air soundings as described in Comment 13. This reduced the number of "missing" hours summarized in the AERMOD output file from 919 hours to 766 hours.

Table 2 summarizes EPA's final revised modeling results using the Lakin, WV monitor background concentration along with the reprocessed meteorological data. Revised modeling showed modeled 1-hour SO_2 concentrations within the Nucor steel mill's SIA were below the NAAQS.

Table 1. EPA Constructed Season by Hour of Day SO_2 Background Concentrations

Lakin, WV (54-053-0001): 2018-20 Background SO2 Concentrations (ppb) by Season/Hour of Day												
	Winter			Spring			Summer			Fall		
Hour	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours
1		271	271		276	276		276	276		273	273
2	1.7	10	271	1.2	3	276	0.5	0	276	0.8	2	273
3	1.0	11	271	0.8	3	276	0.2	0	276	0.9	2	273
4	1.8	14	271	1.1	3	276	0.2	0	276	0.7	2	273
5	1.3	15	271	1.1	4	276	0.2	0	276	0.6	2	273
6	1.0	15	271	1.0	3	276	0.2	0	276	0.7	2	273
7	1.1	15	271	1.0	4	276	0.8	1	276	0.3	2	273
8	1.1	16	271	1.3	5	276	1.6	1	276	0.8	2	273
9	1.2	15	271	2.6	5	276	5.0	1	276	1.6	3	273
10	3.3	11	271	15.5	6	276	8.1	3	276	6.5	3	273
11	5.8	9	271	18.4	10	276	23.6	8	276	13.5	4	273
12	8.1	13	271	20.3	16	276	30.8	10	276	28.3	10	273
13	8.8	18	271	26.4	14	276	44.1	7	276	30.2	12	273
14	9.5	12	271	22.4	6	276	35.4	3	276	35.2	6	273
15	16.2	7	271	27.1	4	276	35.0	3	276	24.9	7	273
16	7.1	7	271	21.4	3	276	22.6	3	276	25.4	5	273
17	5.9	8	271	21.7	3	276	11.3	3	276	17.0	3	273
18	2.8	7	271	9.5	3	276	6.6	4	276	9.1	3	273
19	1.6	9	271	5.2	3	276	3.9	1	276	3.0	3	273
20	1.3	9	271	3.3	3	276	1.7	1	276	1.9	2	273
21	1.1	11	271	2.2	3	276	1.1	0	276	1.5	2	273
22	1.8	12	271	1.4	3	276	0.2	0	276	1.7	2	273
23	2.5	12	271	1.0	3	276	0.2	0	276	1.2	2	273
24	2.5	11	271	0.8	3	276	0.2	0	276	1.2	2	273

The peak model concentration for EPA's revised analysis is 46.5 ppb; this value was determined using EPA's accepted conversion factor of 196.4 μg/m^3 equaling 75 ppb. The summary table is based on results from the AERMOD MAXDCON file, which breaks down source group contributions to the final peak model concentration. Nucor's total contribution is about 5% of the peak model concentration with the background being the largest contributor to the peak model concentration. The background is conservative since it represents ambient concentrations near the Gallia County, OH DRR sources. Impacts from these sources should be much lower near the Nucor steel mill since it is located nearly 30 km from the Lakin, WV monitor.

Table 2. EPA's Revised 1-hr SO_2 NAAQS Analysis with Lankin, WV Background

Revised 1-hr SO2 Model Concentrations using Lakin, WV Background Concentration in Part per Billion (ppb)								
UTM Easting (m)	UTM Northing (m)	Elevation (m)	Furnace Baghouses (ppb)	Met Shop Fugitives (ppb)	Other Nucor (ppb)	Off-Site (ppb)	Background (ppb)	Peak Model (ppb)
398802.4	4278308.6	178.95	0.843	1.642	0.011	< 0.001	44.051	46.546

Comment 17: Model background concentrations from the Ashland, KY monitor were included in Nucor's1-hr NO_2 NAAQS analysis. The final modeling report did not contain a breakdown of the season by hour of day background concentrations included in the modeling analysis.

EPA downloaded the 2018 through 2020 1-hour NOx concentrations for the Ashland, KY monitor (21-019-0017) and calculated the season by hour of day NOx concentrations in accordance with EPA's March 1, 2011 clarification memorandum[2]; we used the average of the 3rd highest hourly values by hour of day and season for each year (2018 through 2020). Table 3 shows the EPA calculated background NOx concentrations that could be used in the AERMOD 1-hr NO_2 NAAQS analysis. Our values do not appear to match the values in the BACKGRND source section lines in the provided AERMOD input file. We ask that the AERMOD background concentrations be reexamined to ensure the correct values were modeled.

EPA notes that Nucor's 1-hr NO_2 modeling analysis is probably conservative given the background site appears to be significantly impacted by mobile source emissions. The model background monitor is located in a much more urban setting than the proposed Nucor steel mill. Given this setting, background (NO_2) values would probably be significantly lower than the actual modeled values if a more similar rural monitoring site, which would more closely resemble conditions near the Nucor steel mill, was used. Regardless, Nucor's modeling analysis shows modeled 1-hr NO_2 concentrations are below the NAAQS.

[2] *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour N02 ,National Ambient Air Quality Standard*, EPA SCRAM: https://www.epa.gov/scram/air-quality-models-clarification-memos-dispersion-models see pages 18-20 for additional details on calculating background calculations, page 19 specifically for calculating season by hour of day 1-hour NO_2 background calculations.

Table 3. EPA Constructed Season by Hour of Day NOx Background Concentrations

Askland Primary (FIVCO), KY (21-019-0017): 2018-20 Background NOx Concentrations (ppb) by Season/Hour of Day												
	Winter			Spring			Summer			Fall		
Hour	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours	Background	Missing	Total Hours
1	57.3	0	270	28.0	0	276	14.0	1	276	33.3	0	273
2	54.0	211	270	29.0	184	276	8.0	184	276	9.0	256	273
3	60.0	148	270	26.0	184	276	13.0	184	276	37.0	135	273
4	60.0	0	270	34.0	1	276	15.3	0	276	35.0	0	273
5	64.0	0	270	38.7	0	276	15.3	1	276	37.0	0	273
6	68.7	18	270	43.3	21	276	15.3	20	276	38.3	20	273
7	72.0	18	270	51.3	22	276	17.0	19	276	39.0	21	273
8	72.3	0	270	61.0	8	276	18.7	5	276	47.3	4	273
9	76.0	5	270	46.3	8	276	16.7	7	276	59.3	5	273
10	76.3	6	270	28.7	11	276	11.7	10	276	44.0	5	273
11	52.0	5	271	12.7	11	276	8.0	9	276	35.0	6	273
12	41.3	4	271	8.0	12	276	5.3	11	276	20.0	6	273
13	17.3	5	271	7.0	14	276	3.7	11	276	12.3	5	273
14	17.0	6	271	6.0	9	276	3.0	9	276	10.7	2	273
15	14.7	7	271	5.3	6	276	2.0	8	276	8.7	0	273
16	16.3	5	271	6.3	4	276	2.7	5	276	9.3	1	273
17	22.3	5	270	6.0	3	276	3.3	4	276	11.3	1	273
18	29.7	2	270	6.7	2	276	3.0	3	276	16.0	0	273
19	45.3	0	270	8.7	0	276	4.3	0	276	22.0	0	273
20	44.7	0	270	13.3	0	276	5.0	1	276	28.7	1	273
21	44.0	0	270	19.3	0	276	6.3	1	276	29.7	0	273
22	45.7	0	270	21.0	0	276	8.0	1	276	29.7	0	273
23	43.7	0	270	21.0	0	276	9.7	1	276	29.7	0	273
24	49.0	0	270	25.0	0	276	13.7	1	276	33.0	0	273

Kessler, Joseph R <joseph.r.kessler@wv.gov>

Re: Nucor Slag Processing Area

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Fri, Apr 22, 2022 at 1:13 PM
To: "Supplee, Gwendolyn" <Supplee.Gwendolyn@epa.gov>
Cc: "Leary, Justin" <Leary.Justin@epa.gov>, "Wejrowski, Mark" <Wejrowski.Mark@epa.gov>

The slag processing area is outside, and PE = Partial Enclosure (that got left out of the footnote I will add it). These will be sheet metal enclosures around the transfer points/drop points to mitigate some of the wind exposure of these points. But I would agree with what I wrote that keeping the material wet would be the primary control for slag.

Also, after a little more research, I do believe steel slag is an appropriate, if not preferred, material to use for unpaved roads (especially instead of landfilling it). I found in the application where they stated it would be shipped off-site for use in road construction, I still need to find out if they intend to use it on site.

Thanks

Joe

On Fri, Apr 22, 2022 at 11:35 AM Supplee, Gwendolyn <Supplee.Gwendolyn@epa.gov> wrote:

> Hi Joe –
>
> Quick question for you. Do you know whether the slag processing area is located inside a building or is it done outside? Also in Table 1 of the draft permit for Emission Units, for slag processing, there are two control devices listed for some of the sources "PE, WS". From footnote 1 of that table, WS = Water Sprays/Wet Suppression; what does PE = ? The Fact Sheet references water sprays as the primary control for particulates from slag processing, but no other controls.
>
> Thanks Joe, and have a good weekend.
>
> -gwen
>
> **Gwendolyn K. Supplee**
>
> Life Scientist
>
> U.S. Environmental Protection Agency, Region 3
>
> Air and Radiation Division
>
> Permits Branch (3AD10)
>
> Supplee.Gwendolyn@epa.gov
>
> 215-814-2763

Public Meeting

concerning

Nucor Steel West Virginia LLC

West Virginia Steel Mill

April 7, 2022

West Virginia Division of Air Quality
Virtual Public Meeting

Presentation Outline

- Introduction
- Permitting Process
- Project Overview
- DAQ Documents
- What Happens Next?
- Summary and Contact Information

National Air Quality Strategy:
Permitting in Context

Clean Air Act: EPA Mandate to Protect Public Health and Welfare

Science

National Ambient Air Quality Standards (NAAQS)

State & Federal Rulemaking

State (SIP) and Federal Air Quality Rules

New Source Permitting Process

Specific Facility Requirements (NSR Air Permit)

Inspections

Compliance with Permit and Air Quality Rules

NAAQS

NAAQS: National Ambient Air Quality Standards

- ***Primary Standards***
  - **Protect Public Health**
- ***Secondary Standards***
  - **Protect Public Welfare**
- **Criteria Pollutants: Carbon Monoxide (CO), Lead, Nitrogen Dioxide (NO_x), Ozone, Particulate Matter (PM_{10} and $PM_{2.5}$) and Sulfur Dioxide (SO_2)**
- **Hazardous Air Pollutants (HAPs) do not have any national standards**
  - **Regulated under 45 CFR 61 and 63 (NESHAP and MACT programs)**
- **Counties designated by EPA as meeting (attainment) or not meeting (non-attainment) these standards based on ambient air monitoring network and computer modeling.**
- **Mason County classified as in attainment with each of the above criteria pollutants.**

Permitting Programs

- "Pre-construction" Permits
  - Minor Source Program (45CSR13)
  - Major Source in Attainment Areas (45CSR14)
    - "Prevention of Significant Deterioration" (PSD)
  - Major Source in Non-Attainment Areas (45CSR19)
- Post-Construction Operating Permit Program
  - Title V Process
    - Major Source (Permit) vs. Minor Source (No Permit)
    - 45CSR30

PSD Permitting Program

What is it?

- Goal: Allow industrial growth *while*…
  - Protecting current levels of air quality while allowing for some “deterioration” of ambient within a defined range called an “increment.”
  - Preventing any deterioration to ever exceed the NAAQS in an area.
  - Protecting sensitive ecological areas such as wilderness areas and national parks.

- 45CSR14 Permitting Process: What it does do:
  - Determine/enforce compliance with state/federal air quality rules and regulations
  - Determine/enforce compliance with facility’s air emissions
  - Provide framework of public notification/participation
  - Requires application of Best Available Control Technology (BACT)
  - Requires Air Dispersion Modeling (NAAQS/Increment Compliance)
  - Requires an Additional Impacts Analysis

PSD Permitting Program

What is it not?

- 45CSR14 Permitting Process: What it does <u>not</u> do:
  - Require the lowest achievable emission rates (LAER).
  - Does not require a full Environmental Impact Statement (EIS) – i.e, consider other environmental issues.
  - Does not take into consideration any other important but non-air quality benefits/impacts such as jobs, property values, traffic, zoning, national energy issues, economics of project, infrastructure, archeology, etc.

BACT

BACT – "Best *Available* Control Technology"

- **An emission limitation based on an emissions control technology or an emissions mitigation strategy.**
- **Control technology must be technically feasible.**
- **BACT does not consider redesign of the source/emission unit.**
- **Selection takes into account energy, environmental, and economic impacts.**
- **Recent BACT determinations assist in setting a final emission limit.**
- **The above is accomplished using a "top-down" selection process.**

Air Dispersion Modeling

- Uses complex computer modeling software (EPA approved) to determine the air impacts of the proposed facility on the environment.
- Uses real-world meteorological data, ambient air monitoring data, elevation data, land-use data, emission unit stack characteristics, and facility building sizes/shapes to model the impacts from a source.
- The output of the model is used to determine compliance with increment consumption.
- The output of the model is used to determine compliance with the NAAQS.

Nucor Project Overview

- WV Steel Mill: Sheet Steel Mill
  - Used in automotives, appliances, HVAC applications, agriculture and transportation industries, construction related markets, etc.

- Scrap Steel/Iron/Additives → Molten Steel → Finished Sheet Steel
  - Two 171 tons/hr Electric Arc Furnaces (EAFs)
  - EAFs use extremely high current to melt scrap/iron into molten steel
  - Plant Maximum Capacity of 3,000,000 tons/year of molten steel
  - Hot and Cold Mills: Cutting, Shaping, Treating (Annealing, Galvanizing)
  - Over 500 mmBTu/hr of Natural Gas-Fired Combustion
  - Material Handling, Storage Tanks, Cooling Towers, Emergency Generators

- Facility Emissions Controls
  - Particulate Matter (including Lead & Fluorides): Baghouses/Scrubbers & Fugitive Emissions Mitigation (enclosures, water suppression)
  - NO_x: Low-NO_x Burners
  - CO/VOCs: Good Combustion Practices
  - SO_2: Low Sulfur Fuel (Natural Gas)
  - GHGs: Plant-Wide and Unit Heat Loss/Energy Efficiency Requirements

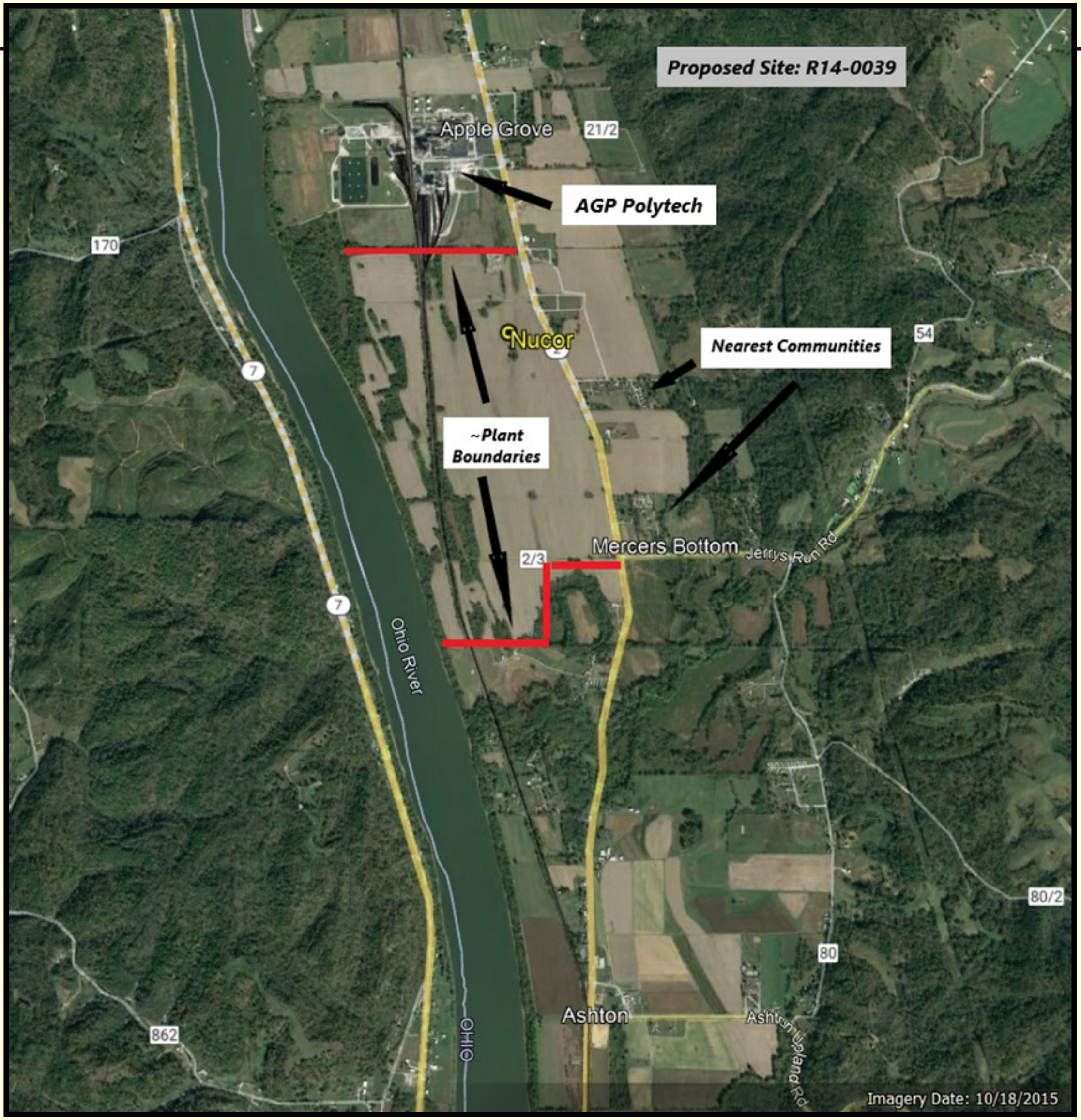
Nucor Project Overview

Continued

- Compliance Demonstrations
  - Continuous Emission Monitoring Systems (CEMS) for real-time monitoring of CO, NO_x, and SO_2 emissions from the main EAF stacks.
  - Visible emissions monitoring (Subpart AAa, Permit Required)
  - Monitor & Record Material Usage/Steel Production
  - Subpart YYYYY: Scrap Management Plans
  - Performance Testing on various Sources/Pollutants
  - Monitoring on Control Devices to determine if operating properly
  - Emergency Generators Limited to 100 Hours/Year
  - Extensive Record-keeping and Reporting of the above.
  - Periodic Inspections from Compliance/Enforcement Section to review the above

- Detailed information in the Permit Application and Preliminary Determination

Nucor Plant Location



Applicable Air Quality Rules

- **WV Legislative Rules**
  - 45CSR2: Indirect Heat Exchangers (Fuel Burning Units – Particulate Matter)
  - 45CSR6: Combustion of Refuse (Flares/Incinerators – Particulate Matter)
  - 45CSR7: Manufacturing Process Operations (Particulate Matter/HCl Acid Mist)
  - 45CSR10: Sulfur Dioxides Emissions (Boilers and Other Sources of SO_2)
  - 45CSR13: Minor Source Permitting Rule
  - 45CSR14: Major Source Permitting Rule (PSD)
  - 45CSR30: Operating Permits (Title V)

- **Federal Air Quality Regulations**
  - 40 CFR 60, Subpart Dc: Steam Generating Units
  - 40 CFR 60, Subpart AAa: Steel Plants
  - 40 CFR 60, Subpart IIII: Natural Gas-Fired Engines
  - 40 CFR 63, Subpart ZZZZ: Engines (RICE)
  - 40 CFR 63, Subpart YYYYY: Ferroalloys Production Facilities
  - 40 CFR 63, Subpart CCCCCC: Gasoline Dispensing Facilities

Summary of DAQ Review

- **Nucor Application (R14-0039) Submitted: January 21, 2022 (Original); March 23, 2022 (Revised)**
- **Application Submitted as a major source (45CSR14) subject to PSD Permitting Requirements.**
- **Nucor Legal Advertisement: January 27, 2022 (*Point Pleasant Register*)**
- **DAQ Public Advertisement: March 30, 2022 (*Point Pleasant Register*)**
  - **Preliminary Review Complete: Draft Permit/Fact Sheet Available**
  - **Preliminary Determination**
  - **30-Day Comment Period**
- **Key Points of Preliminary Determination**
  - **Proposed Facility in compliance with all applicable rules and regulations**
  - **Does not exceed "increment" under PSD**
  - **Does not cause or contribute to a NAAQS exceedance**
  - **Nucor has proposed the use of BACT on emission sources**

WVDAQ Documents

- Engineering Evaluation/Fact Sheet
  - Rationale document for Preliminary Determination.
- Draft Permit
  - Includes operating restrictions, emission limitations and monitoring, recordkeeping and reporting requirements.
  - Enforces the potential-to-emit (PTE) upon which we based our Preliminary Determination to approve.

What Happens Next?

- Comment period scheduled to conclude at 5:00 PM on Friday, April 29, 2022.
- Prior to a final determination, the DAQ will evaluate and respond to timely comments that are relevant to air quality issues.
- DAQ will make a Final Determination pursuant to the requirements §45-13-5.7 and §45-14-17.7.
- Final Determination will be available in same locations as Engineering Evaluation/Fact Sheet and Draft Permit.

Summary

- Nucor is proposing to build a Sheet Steel Mill in Mason County.
- DAQ has made a preliminary determination that the proposed construction will meet all applicable state rules and federal air quality regulations.
- Engineering Evaluation/Fact Sheet and Draft Permit have been available for review since publication of the legal advertisement (March 30, 2022).
- DAQ will continue to accept public comments until 5:00 PM on Friday, April 29, 2022.
- DAQ will evaluate and respond to all timely public air quality-related comments.
- DAQ will make a final determination on this permitting action and make this determination and any related documents available at that time.

Contact Information

West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304

Phone: (304) 926-0499, extension 41271

Attention: Joe Kessler
joseph.r.kessler@wv.gov

https://dep.wv.gov/daq/permitting/Pages/NSR-Permit-Applications.aspx

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Highlights

- 18:28 ✅: (Terry A Fletcher) Issuing, its determination on this proposed permit. It responds to Comments document will be drafted and provided to all those who provided comments. In the comment, period, will close at 5 pm on Friday. April 29th. Also, in the meeting chat, I included a link to the application on our website, as well as where you can submit your comments either by email or regular mail, And a reminder of when the comment period closes, which again is Friday, April 29th at 5 pm.
- 19:57 💡: (spaces/N_NyUYV1DywB/devices/07f8c8ec-5a7d-411a-b5be-554ba6f2f58f � Cspaces/N_NyUYV1DywB/recordings/6cc89315-2948-42a4-847e-b6d7f39e0748) And also be giving you a little bit of an idea of what documents we have. And where, what the significance are of those documents that we produce in this permitting process. And then we'll talk a little bit about what happens next, you know, and with a summary and then provide some contact information.
- 20:18 ✅: (spaces/N_NyUYV1DywB/devices/07f8c8ec-5a7d-411a-b5be-554ba6f2f58f � Cspaces/N_NyUYV1DywB/recordings/6cc89315-2948-42a4-847e-b6d7f39e0748) you want to continue if you want to ask them additional questions, Or or submit comments. So, I want to begin by talking about this. National Air Quality Strategy.
- 28:30 🎯: (Stephanie E Hammonds) So let's dive a little deeper into the PSD permitting program. Very importantly, the goal of the program is to protect the ambient air quality in these areas designated as attainment.
- 28:45 🎯: (Stephanie E Hammonds) But also allowing for growth in these areas industrial growth. That may cause some deterioration of that ambient air. But that deterioration is only allowed within a defined range that is referred to as the increment. and no matter where that increment, may fall that that defined range in at no time. Is that ambient air allowed to exceed the knacks in that area? So that's really the main goal is to allow this industrial growth while still protecting the ambient air quality in that area.
- 29:29 🎯: (Stephanie E Hammonds) It also is designed to protect other sensitive areas that are maybe near the source that are defined in the rule. So, it really has that secondary goal as well. and as, with other, News source, permitting processes. The PSD process. The
- 30:30 💡: (Stephanie E Hammonds) And most importantly, it requires air dispersion modeling and complicated computer, model of the emissions of a proposed source to make sure. That the impacts of the source do not. Exceed that increment. I just talked about or the next are not exceeded in the particular area. It also requires what's called an additional impacts analysis which looks at potential adversity impacts to soils visibility vegetation and so on. So those are very specific to the PSD permitting program.
- 31:11 💡: (Stephanie E Hammonds) Before we move on, I think it's important to also discuss what the PSD permitting program does not do.
- 32:04 💡: (Stephanie E Hammonds) PSD is also does not require a full environmental impact statement. So under the, under our review, we don't look at waste issues or water issues. And, and put everything together in a full eis. In the PSD program, just looks at the air quality issues that are defined within the rule itself. And finally, PSD program does not take into consideration. All these other important. Impacts and benefits of a facility but that are not related. To the air quality.

- [32:48](#) 💡: (Stephanie E Hammonds) Such as jobs property values increased traffic. Zoning. National Energy issues Does the facility fit within? National energy or even global energy issues. We don't look at the economics at the project or the infrastructure can support it. Or even other. Important issues like the archeology of the site. We are limited to look at what the PSD program covers. Which are air quality related or
- [35:57](#) 🎯: (Stephanie E Hammonds) Elimination process is selected back and in and then a, an admission limitation based on that control technology is selected based on other recent. Determinations back for the same type of source. The next key provision that I want to quickly talk about in the PSD permitting program is again, this air dispersion modeling, So again, the goal of this air dispersion modeling, is to determine what the air impacts will be on the area surrounding the source.
- [36:43](#) 🎯: (Stephanie E Hammonds) So we can check that those impacts
- [36:46](#) ✅: (Stephanie E Hammonds) against the increment in the next to make sure the proposed source meets the goals of the PSD program. These models are very complex, their EPA approved. And they use real-world data real world meteorological data. Elevation data. Land use data from around the proposed facility. The proposed STAT characteristics. All of this data is entered into these models and they run sometimes for days to determine what individual impacts are. In a large area around the facility. The applicant.
- [37:34](#) ✅: (Stephanie E Hammonds) Does this modeling, and they submit the data to us. We then replicate the model to make sure it was done correctly and we take those impacts and in the, the data generated by the models, again, to make sure That the proposed source is in compliance.
- [38:17](#) ✅: (Terry A Fletcher) Dustin: According to our state code, the primary purpose for holding a public meeting is to provide information and accept public comments on an agency action. We take comments first to ensure that all attendees have an opportunity to comment. The comment period is open until April 29th and all parties can submit additional comments, if they choose.
- [43:21](#) 💡: (Stephanie E Hammonds) So having these Monitoring systems that we call SIMS on these stacks is very important. We're particulate matter both.
- [47:42](#) 💡: (Stephanie E Hammonds) It would take a long time to go through all the different requirements but I do discuss each of these within the preliminary determination but this just gives you the idea of how regulated a source of this size is and I've highlighted in red. Several of the key rules. We've already talked about the PSD rules. And the federal regulations, the two that are that are probably the most important is what we call an Nsps rule double AA. That's specific to steel plants.
- [48:48](#) 💡: (Stephanie E Hammonds) So please refer to that to that document to see in more detail, how these, how these rules do apply All right, so now we're just going to go through a summary of the Daq's Review so far of this proposed. Facility, The application was
- [52:37](#) 💡: (Stephanie E Hammonds) All the limitations and standards spelled out in there. The control technology requirements, the requirements with the The continuous emissions monitories, that monitors that we talked about Performance testing how to performance test to. Obviously the draft permit is is really the, you know, what this process is designed to produce. And it's important to note that that draft permit is indeed draft. It's a preliminary determination, as produced a draft permit.
- [53:10](#) 💡: (Stephanie E Hammonds) It is subject to change based on
- [53:51](#) ✅: (Stephanie E Hammonds) We will evaluate and respond to if they are relevant

to air quality issues. And at the conclusion of review and and responding to those comments, we will make a final determination. Pursuant to the requirements of Rule, 13 and Rule 14. and then that, that final determination on whether to Issue. Or deny the permit will be available.

- [54:21]() 💡: (Stephanie E Hammonds) In the same location as the engineering evaluation in the draft permit. Which is online on our website and on our database. So one final summary to sort of wrap up everything we've we've gone over in the presentation. New Core is proposing to build a three million tons per year sheet, steel mill, near Apple Grove, and Mason County.
- [55:39]() ✅: (Stephanie E Hammonds) And at the end of that period, we will make a final determination on the permitting action. And make the determination and any other related documents available. available. At that time. Now, on the screen is, is the contact information you can submit comments to the best way to submit a comment is to my email. And put in the subject line.
- [59:06]() 🎯: (Terry A Fletcher) Thank you, Stephanie. We will now be moving. If there are no more commenters. We'll now move to the question and answer portion. So, we'll take questions one at a time questions, which we can't answer tonight. Will be addressed in our Response to Comments document.

Transcript

00:00 Joseph R Kessler: Why is John so happy?
10:49 Terry A Fletcher: Good evening, everyone. We're gonna give it until about 6:05 to let anyone that might be running late have a chance to join. So just bear with us for a few more minutes and we'll get started hearing about five minutes. Thank you.
13:22 Terry A Fletcher: For folks that just joined on. We're gonna get started here about 605 that. Just to let, give us some time to let folks. Join them by becoming a little bit late. So, just bear with us a few more minutes. Thank you.
16:20 Terry A Fletcher: Okay, good evening everyone. I've got 605 on my clock here, so we're going to go ahead and get started with the meeting. Appreciate, everyone's patience. So good evening again. My name is Terry Fletcher and I'm the chief communications officer with the West Virginia Department of Environmental Protection. Welcome to the Public Meeting for Air Permit. Application. R 140039 for New Course, Steel West, Virginia, LLC with me, this evening, our members of the Dep's Division of Air Quality, Including Joe Kessler, the reviewing engineer Beverly McCune, the NSR permitting program manager or a Crowder director of the Division of Air Quality.
17:03 Terry A Fletcher: Sandra Adkins from the Director's office and Stephanie Hammonds, Environmental Resources specialist with the Compliance and Enforcement section, This public meeting is being held regarding new course, deals. Application for a permit to construct a steel mill. Located near Apple Grove in Mason County West, Virginia. And this public meeting is being held virtually to help limit the spread of covid-19. Everyone has pre-registered for this public meeting so that we have an accurate record of the meeting participants, and I'll comments, we will become part of the public record for this permitting action.
17:38 Terry A Fletcher: We will begin the meeting with the presentation by Joe Kessler which lays out the permanent process and what has been proposed by new course deal. After Joe's presentation, we will take comments from those who pre-registered and then take questions. We will be monitoring the chat during the duration of the public meeting to assist with technical

issues or questions. I'll chat communications. Also become part of the public record.
18:04 Terry A Fletcher: We ask that everyone be respectful and consider of each other. By refraining from using foul language name, calling or interrupting others, while they are speaking, and we ask that you keep your comments to air quality issues only I want to everyone to keep in mind that a decision will not be made this evening. I'll comments that are submitted during the open comment period. We'll be reviewed and considered by the staff, prior to the agency.
18:28 Terry A Fletcher: Issuing, its determination on this proposed permit. It responds to Comments document will be drafted and provided to all those who provided comments. In the comment, period, will close at 5 pm on Friday. April 29th. Also, in the meeting chat, I included a link to the application on our website, as well as where you can submit your comments either by email or regular mail, And a reminder of when the comment period closes, which again is Friday, April 29th at 5 pm.
19:01 Terry A Fletcher (chat): The draft permit application is available here: https://dep.wv.gov/daq/permitting/Pages/NSR-Permit-Applications.aspx Click the Popular Searches tab and scroll down to Permit No. 14-0039 – Nucor Steel West Virginia LLC Comments can be submitted via email to Joseph.R.Kessler@wv.gov or regular mail to: Joseph Kessler, WV Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304. All comments must be received by 5 p.m. on Friday, April 29, 2022.
19:02 Terry A Fletcher: So that is all in the meeting chat there. Now that the introductory remarks have been made, I'm turning this over to reviewing engineer Joe Kessler, Joe.
19:16 spaces/N_NyUYV1DywB/devices/07f8c8ec-5a7d-411a-b5be-554ba6f2f58f � Cspaces/N_NyUYV1DywB/recordings/6cc89315-2948-42a4-847e-b6d7f39e0748: Okay, as Dari mentioned, this is Joe Kessler up. I was the reviewing engineer on the proposed. Nucor steel mill, located near. Apple Grove in Mason County. And I'm going to be giving a presentation, this evening relatively brief, but what I want to do is, is not only give you some information on the proposed, new core project itself. But also give you some information on the permitting process as a whole and and where it fits in to the larger. National Air Quality Strategy.
19:57 spaces/N_NyUYV1DywB/devices/07f8c8ec-5a7d-411a-b5be-554ba6f2f58f � Cspaces/N_NyUYV1DywB/recordings/6cc89315-2948-42a4-847e-b6d7f39e0748: And also be giving you a little bit of an idea of what documents we have. And where, what the significance are of those documents that we produce in this permitting process. And then we'll talk a little bit about what happens next, you know, and with a summary and then provide some contact information.
20:18 spaces/N_NyUYV1DywB/devices/07f8c8ec-5a7d-411a-b5be-554ba6f2f58f � Cspaces/N_NyUYV1DywB/recordings/6cc89315-2948-42a4-847e-b6d7f39e0748: you want to continue if you want to ask them additional questions, Or or submit comments. So, I want to begin by talking about this. National Air Quality Strategy.
20:35 Stephanie E Hammonds: So that I can place the permitting process within its proper role within the strategy. The strategy. Is based on the regulatory authority given under the Clean Air Act. Which provides EPA with a mandate to protect the public health and welfare. Through the regulation of air quality issues. The strategy. Is based on EPA's creation of the National Ambient, Air Quality Standards and we'll talk more about those in a minute.
21:18 Stephanie E Hammonds: But basically, those are concentrations of various pollutants. Which EPA has determined through, science are acceptable to protect.
21:27 Dustin White (chat): Again, I an left to wonder why WVDEP has Q&A *after* comments when Q&A can help public make their comments.
21:29 Stephanie E Hammonds: Public Health and and Welfare. Again for specific pollutants. Achieving the Ambient air quality standards. He's done through a web of state and federal

rulemaking included. Therein is Permitting requirements for specific facilities and relevant to the new core. Facility requirements for new sources. So that's it's within that. That permitting process within within the scope of that rulemaking is is what we're talking about today. and then, finally, The strategy doesn't end with permitting.
22:20 Stephanie E Hammonds: because even after a permit is issued, There aren't there, an inspector. There are inspectors that go out. And make sure that these facilities are in compliance with the permits in in the other air quality rules that that apply to particular facility. So hopefully with this slide, you can see that that permitting is just one part of this much larger strategy. But but you can see where it sort of fits in within the context of this strategy.
22:55 Stephanie E Hammonds: So now let's talk a little bit more about these ambient air quality standards and I'll just refer to them as the knacks From now on, they're actually broken up into two sets of standards. The primary standards which are designed to protect public health. In the secondary standards, which are generally less strict. That are designed to protect public welfare. And then that means protection of visibility protection against damage to animals crops vegetation even buildings. EPA is only set.
23:38 Stephanie E Hammonds: Next, for certain pollutants that are referred to as criteria pollutants and those are listed on the slide. Importantly, perhaps or hazardous air pollutants? Do not have any national standards instead. They are regulated under specific rulemaking but there are no standards which you can compare ambient concentrations to to determine whether or not a source is in compliance, only those pollutants listed. As criteria pollutants. Have those standards. Also, there were no standards for greenhouse gases. EPA determines.
24:20 Stephanie E Hammonds: whether an area is meeting or not meeting the next by using a Very broad based ambient air monitoring network. And where they don't have monitors for. At all, or specific pollutant monitors. They can then use modeling computer modeling to determine if that area. is or is not in compliance with the next And an area that is in compliance with the next is, is referred to as being entertainment.
24:55 Stephanie E Hammonds: an area that is not in compliance with the next is referred to as being a non-attainment with these standards importantly, for today's discussion, Mason County is classified as entertainment. With the knacks for each of those pollutants listed above. Okay, let's move on to permitting programs. So first, we can break permitting programs into two major divisions. Those which apply to propose new sources. And those that are required for existing sources.
25:43 Stephanie E Hammonds: The permitting process we are talking about today is a new source permitting process. and many times a source has to go through both a new source and A post-construction operating permit program as well. but today, we're talking about a pre-construction or new source permit, For new source, permitting. there are really three different permitting programs, that a new source can be subject to if the source is defined as a minor source, it would go through the minor source program.
26:26 Stephanie E Hammonds: The sources determined to be a major source. Then there are two different paths that source can go down as well. With respect to permitting. depending upon whether or not the area is being constructed in has been determined to be entertainment or non-attainment with the knacks that we just talked about on the previous slide. The proposed new core steel mill. Is in an area is proposed for an area that is classified as entertainment. And it is defined as a major source.
27:09 Stephanie E Hammonds: So, the driving permitting program for this proposed source. Is as a major source in an attainment area. Which is. Administered under our state Rule 45 CSR 14. And this rule is often called the PSD rule. And that just stands for the prevention of significant deterioration. the PSD rule is Much stricter, and it's a more difficult permit to get.

Than one under the minor source program. But it's not as strict or as difficult. To get as.
27:56 Stephanie E Hammonds: Getting a major source permit in a non attainment area. So we're going to be discussing a little bit about the PSD rule. And we won't be really be talking about the Title 5 process which is the Permitting program for existing sources today, Although, if constructed this, this steel mill will eventually be required to get that Title 5 permit, but they will have their own notice period at that time.
28:30 Stephanie E Hammonds: So let's dive a little deeper into the PSD permitting program. Very importantly, the goal of the program is to protect the ambient air quality in these areas designated as attainment.
28:45 Stephanie E Hammonds: But also allowing for growth in these areas industrial growth. That may cause some deterioration of that ambient air. But that deterioration is only allowed within a defined range that is referred to as the increment. and no matter where that increment, may fall that that defined range in at no time. Is that ambient air allowed to exceed the knacks in that area? So that's really the main goal is to allow this industrial growth while still protecting the ambient air quality in that area.
29:29 Stephanie E Hammonds: It also is designed to protect other sensitive areas that are maybe near the source that are defined in the rule. So, it really has that secondary goal as well. and as, with other, News source, permitting processes. The PSD process. The
29:54 Stephanie E Hammonds: Is designed to make sure that a proposed facility is in compliance with all state and federal air quality rules and regulations. It provides a framework for public notification or participation such as we're involved in today. It determines and enforces compliance with the Facilities Air Missions, but beyond the specific to PSD it requires application of what's called the best available control technology on admission sources at the proposed facility.
30:30 Stephanie E Hammonds: And most importantly, it requires air dispersion modeling and complicated computer, model of the emissions of a proposed source to make sure. That the impacts of the source do not. Exceed that increment. I just talked about or the next are not exceeded in the particular area. It also requires what's called an additional impacts analysis which looks at potential adversity impacts to soils visibility vegetation and so on. So those are very specific to the PSD permitting program.
31:11 Stephanie E Hammonds: Before we move on, I think it's important to also discuss what the PSD permitting program does not do.
31:19 Stephanie E Hammonds: First, it does not require the absolute lowest achievable emission rate from every emission unit. this is in contrast to a major source located in a non-attainment area, which does require layer or the lowest achievable mission rate for Each and every mission unit. The emission limits determined under the PSD permitting program or determined through the back process or the best available control technology. Process. Which has a different set of metrics to determine the control technologies and the emission rates.
32:04 Stephanie E Hammonds: PSD is also does not require a full environmental impact statement. So under the, under our review, we don't look at waste issues or water issues. And, and put everything together in a full eis. In the PSD program, just looks at the air quality issues that are defined within the rule itself. And finally, PSD program does not take into consideration. All these other important. Impacts and benefits of a facility but that are not related. To the air quality.
32:48 Stephanie E Hammonds: Such as jobs property values increased traffic. Zoning. National Energy issues Does the facility fit within? National energy or even global energy issues. We don't look at the economics at the project or the infrastructure can support it. Or even other. Important issues like the archeology of the site. We are limited to look at what the PSD program

covers. Which are air quality related or

33:26 Stephanie E Hammonds: impacted by air quality issues. One of the key provisions of the PSD permitting program is the requirement to apply the best available control technology to all the applicable sources at the facility. We refer this refer to this as backed. And what that is, is an emission limitation that's based on a control technology or a control mitigation strategy. That is feasible that is achievable in that is in line with other recent back determinations.

34:08 Stephanie E Hammonds: And importantly, like I mentioned in an earlier slide. PSD doesn't require the absolute lowest emission rate that can be achieved. It requires under back the most the best. Available technology in the mission limit. That's achievable while still taking into account, other energy environmental and economic impacts of That particular control technology. So for a particular source, if if the control technology has secondary energy impacts, you know, it would use a lot more energy and achieve very little gain that could be one reason why back wouldn't be selected. Or most. Commonly. Backed.

35:06 Stephanie E Hammonds: Is not selected a certain technology or mission limit is not selected because it would be prohibitively expensive for that particular source. And this is often evaluated on a dollar per ton controlled. Metric. Back is ultimately selected by using a top-down selection process. The source, the applicant lists all the available. Technologies. And then can eliminate certain technologies if they're not feasible for that particular source. again, if they have large secondary energy, or environmental impacts or are prohibitively expensive, And then what's left after this.

35:57 Stephanie E Hammonds: Elimination process is selected back and in and then a, an admission limitation based on that control technology is selected based on other recent. Determinations back for the same type of source. The next key provision that I want to quickly talk about in the PSD permitting program is again, this air dispersion modeling, So again, the goal of this air dispersion modeling, is to determine what the air impacts will be on the area surrounding the source.

36:43 Stephanie E Hammonds: So we can check that those impacts

36:46 Stephanie E Hammonds: against the increment in the next to make sure the proposed source meets the goals of the PSD program. These models are very complex, their EPA approved. And they use real-world data real world meteorological data. Elevation data. Land use data from around the proposed facility. The proposed STAT characteristics. All of this data is entered into these models and they run sometimes for days to determine what individual impacts are. In a large area around the facility. The applicant.

37:34 Stephanie E Hammonds: Does this modeling, and they submit the data to us. We then replicate the model to make sure it was done correctly and we take those impacts and in the, the data generated by the models, again, to make sure That the proposed source is in compliance.

37:53 Stephanie E Hammonds: With that increment consumption in does not cause or contribute to any max violations. All right. I think we are now At a point where we have discussed the national air quality strategy. We discussed the permitting programs and the specific Permitting program relevant to this particular.

38:17 Terry A Fletcher: Dustin: According to our state code, the primary purpose for holding a public meeting is to provide information and accept public comments on an agency action. We take comments first to ensure that all attendees have an opportunity to comment. The comment period is open until April 29th and all parties can submit additional comments, if they choose.

38:17 Stephanie E Hammonds: Source Proposed Source. So let's move on to talk about the project itself. So New Core has proposed the construction of a sheet steel mill. The. The steel from this mill would be used. In cars, appliances, HVAC applications. Many different industries.

This type steel production can be compared to other types. when you may have a rebar producing steel mill or one that produces, Giant beams for buildings this one. This one is proposed to produce. Sheet steel. Specifically.
39:13 Stephanie E Hammonds: The process of producing steel at this proposed. Facility is relatively simple. Scrap steel. Iron other additives are brought together in a furnace. Melted. and from that molten steel, through some other finishing process, you get
39:37 Dustin White (chat): I understand that, doesn't mean it's a good policy
39:37 Stephanie E Hammonds: Steel. That is then rolled into finished sheets. The heart of this steel mill are the electric arc furnaces. These are very large. pots, you might think of where the scrap is melted, instead of using melted. What you may think of an old steel mill blast furnace instead? These easley high current to melt this scrap and iron into the molten steel. Instead of the old blast furnaces that, that would use coke.
40:15 Stephanie E Hammonds: The facility has a capacity to make three million tons a year of this molten steel, which is then cut shape treated and finished into the sheet steel. There are also. Material handling. Processes at the facility storage tanks, cooling towers. Emergency generators. The usual other ancillary operations at an industrial facility. As a major source that is required to apply back the facility. Has a very strict suite of emission controls.
40:56 Stephanie E Hammonds: On these various emissions sources primarily on the particular matter sources. We have bag houses and scrubbers A very efficient at removing particular matter from exhaust streams. And then other fugitive emissions sources we for the material handling or enclosures other bag houses and even water suppression. For the Knox sources, all all the natural gas combustion is required, to have these low knocks burners on them. And then the use of natural gas itself.
41:30 Stephanie E Hammonds: Is considered a low sulfur fuel as opposed to coal or coke. And that is in and of itself. A, a pollution prevention measure for SO2 emissions Ghg's Greenhouse Gases, There are plant-wide and specific. Energy. Efficiency requirements. So there's a, there's a very strict control regimen on these proposed emission sources at the facility, So there. Are various methods of showing compliance with all the requirements
42:07 Lew McDaniel (chat): What is the >500BTU/hr Natural gas used for
42:08 Stephanie E Hammonds: in the permit. Very importantly. new Core has proposed the use of continuous emissions, monitoring systems for the real-time monitoring of CO Knox and SO2 from the main EAF stacks, Now this type of monitoring is not to be confused with the ambient air quality monitoring that I talked about both. On a regional. Basis for determining whether or not individual areas. Or in compliance with the knacks or even.
42:46 Stephanie E Hammonds: fence line monitoring that is not required as part of a PSD permit that also monitors the ambient air, these monitors Specifically. Pull samples from the EAF stack so that you know what the emission rates are of these pollutants from these stacks. So you can determine real-time continuous compliance with these emission limits. From those emission points. So obviously the EAF stacks are the or the the primary mission points of the facility.
43:21 Stephanie E Hammonds: So having these Monitoring systems that we call SIMS on these stacks is very important. We're particulate matter both.
43:32 Stephanie E Hammonds: From those stacks, and from various other. Emission sources at the facility. Compliance is based on visual emissions monitoring and that actually requires somebody who's trained to go out and read the stacks to see if they can see any soot. We might call smoke coming from the stacks and if they do that can be indicative. That there is a that that particular stack has problem in is out of compliance with the emission limit.
44:09 Stephanie E Hammonds: Beyond beyond those two primary ways of determining

compliance. There are many other requirements in the permit that require monitoring record-keeping of material usage of of the production of steel. There's performance testing requirements. There's limitations on certain equipment and how much they can be used like the emergency generators. Like the There's monitoring requirements on the control devices to make sure they are operating correctly. Their statutory requirements such as a rule requires that the scrap be managed in such a way, as, to limit the amount of pollutants that can be emitted from from the scrap that that's melted in the furnaces.
44:55 Stephanie E Hammonds: So there's just a lot in the permit that that is used to demonstrate compliance with all the emission limits within the permit and detailed information about this whole project. whole project. The facility itself, the compliance demonstrations, the emissions. The real detailed information is in the permit application in a synthesized, in the preliminary determination, which we'll talk a little bit about in a minute. On this slide is shown the proposed location of new core steel mill.
45:31 Stephanie E Hammonds: it will be located just south of the Agp, politic polymer facility, that
45:36 Terry A Fletcher (chat): Lew: Thank you for your question. We can address that when we get to the Q&A portion.
45:37 Stephanie E Hammonds: is an existing facility that's just across the community of Apple, Grove and Mason County So slightly south of that is where they have proposed. To locate this steel mill. This site is bounded on the north and south roughly by. The red lines on this slide. The western boundary is the Ohio River. And they will have some barge access to bring in. Some of the scrap that they'll be using in in the steel mill. In barges along the Ohio River.
46:19 Stephanie E Hammonds: While most facility is contained between Route to and the Ohio River. Their plot plans, have shown that some area on the other side of Route, 2 will be utilized for some various ancillary operations, including the air separation plant, which will be located about right here. but most of the facility, the, the furnaces The Cold Mill and the In the Hot Mill we'll be located in this area between the Ohio River and State Route 2.
46:58 Stephanie E Hammonds: And as the slide shows, there are some there are some communities located on the West Virginia side of the Ohio River. But mostly the area is rural in nature and on the Ohio side, there are very few residential areas in immediate vicinity of the facility. so I wanted to provide just a slide that shows you some of the rules that apply to the proposed steel mill. You know, facility of this size and complexity is going to have Many state and federal rules and regulations that apply. So I'm not going to go through these.
47:42 Stephanie E Hammonds: It would take a long time to go through all the different requirements but I do discuss each of these within the preliminary determination but this just gives you the idea of how regulated a source of this size is and I've highlighted in red. Several of the key rules. We've already talked about the PSD rules. And the federal regulations, the two that are that are probably the most important is what we call an Nsps rule double AA. That's specific to steel plants.
48:16 Stephanie E Hammonds: That's specific to And then a five Y, which is a federal, what we call a Mac rule. That applies to farrow alloys production. So these facilities have a lot of requirement or a lot of requirements in these specific rules have a lot of requirements. They're very, very tightly regulates these facilities and like I said, I will, or I do discuss these in-depth within the within the preliminary determination.
48:48 Stephanie E Hammonds: So please refer to that to that document to see in more detail, how these, how these rules do apply All right, so now we're just going to go through a summary of the Daq's Review so far of this proposed. Facility, The application was
49:09 Stephanie E Hammonds: submitted in January. The original application. It was revised in

March with some changes. It was submitted as a major source. We've talked about the significance of that. New Core placed their legal advertisement in the Point Pleasant register in January. We play stars. A few weeks ago. On March 30th, also in Point Pleasant. And at that time, we made available to draft permit. A fact sheet that that we call the preliminary determination.
49:51 Stephanie E Hammonds: And that date started the 30-day comment period within which we are in right now. Continuing to take comments. Including those, we may receive the evening. quickly, the key points of the preliminary determination Are that the proposed facility is in compliance with all the applicable rules and regulations, including those. I showed on the previous slide. It does not exceed the increment under PSD and it does not cause or contribute to enact exceedance.
50:28 Stephanie E Hammonds: That was determined using that air dispersion modeling that we also discussed. And new Core has proposed the use of fact on the emission sources. And in the preliminary determination that proposed back was Accepted. So there are two primary documents that the division of air quality produces when we go to public notice. One of which is the engineering evaluation sometimes, called the fact sheet and specifically called the preliminary determination. When reviewing a major source. We also produce the draft permit.
51:14 Stephanie E Hammonds: So going over each of these a little bit, the engineering evaluation really is the rationale document for that preliminary determination and it's got all the information in its summarized from the the permit application and additional specific review that that we do. I mean includes administrative information descriptions of the facility discussion of the calculations and the methodology of how the calculations were done. You know, quantifies the emissions.
51:53 Stephanie E Hammonds: It talks about the applicability with the federal. state and State and Federal Rules and Regulations It discusses the monitoring, the testing the record, keeping And importantly for for this facility, this proposed source, it discusses, those PSD components, the back analysis, the air dispersion modeling in the additional impacts review. In the draft, permit is self-explanatory. It has all the facility wide requirements. The specific unit requirements to keep that proposed facility in compliance. It has the compliance demonstrations.
52:37 Stephanie E Hammonds: All the limitations and standards spelled out in there. The control technology requirements, the requirements with the The continuous emissions monitories, that monitors that we talked about Performance testing how to performance test to. Obviously the draft permit is is really the, you know, what this process is designed to produce. And it's important to note that that draft permit is indeed draft. It's a preliminary determination, as produced a draft permit.
53:10 Stephanie E Hammonds: It is subject to change based on
53:12 Stephanie E Hammonds: comments. Or continued review before a final determination is made. So it's good to keep in mind that that is draft. And that, you know, it could be affected by requirements that that we received during the the comment period. So what happens next after the public meeting? Well, the comment period is scheduled to conclude at five o'clock on Friday, April 29th. Any comments we received by that time.
53:51 Stephanie E Hammonds: We will evaluate and respond to if they are relevant to air quality issues. And at the conclusion of review and and responding to those comments, we will make a final determination. Pursuant to the requirements of Rule, 13 and Rule 14. and then that, that final determination on whether to Issue. Or deny the permit will be available.
54:21 Stephanie E Hammonds: In the same location as the engineering evaluation in the draft permit. Which is online on our website and on our database. So one final summary to sort of wrap up everything we've we've gone over in the presentation. New Core is proposing to build a

three million tons per year sheet, steel mill, near Apple Grove, and Mason County.
54:54 Stephanie E Hammonds: The DAQ has made a preliminary determination. that this proposed facility will meet all applicable state rules and federal air quality regulations. We have prepared and made public an engineering evaluation in a draft permit. Since we ran our legal ad on March 30th, that that legal ad began a 30-day comment, period. Which will run until 5 o'clock on Friday, April 29th. We will evaluate and respond to all the timely. Air quality related comments.
55:39 Stephanie E Hammonds: And at the end of that period, we will make a final determination on the permitting action. And make the determination and any other related documents available. available. At that time. Now, on the screen is, is the contact information you can submit comments to the best way to submit a comment is to my email. And put in the subject line.
56:12 Stephanie E Hammonds: New New Core Public comment. All comments do become part of the public record. The best place to get additional information is the link at the bottom and you'll find the permit application. The preliminary determination, the draft permit and other documents. At that location. Thank you very much.
56:44 Terry A Fletcher: Thank you, Joe. Appreciate that. During this period, we would now like to give you the opportunity to comment on the record if you have questions. We're gonna ask that you please hold those until all comments have been made. Each commenter will be given five minutes. Anyone who pre-registered a comment will now be called upon by Stephanie Hammonds. Stephanie
57:15 Stephanie E Hammonds: Hold on, just one second. Let me get this corn. Okay, so, thanks, Terry. And good evening, everyone. Anyone who pre-registered to comment will be called upon in the order. They registered when caught up on, please, unmove yourself and go ahead with your comment and please stay clearly your name and indicate, if you are representing any groups or organizations, The only person who pre-registered is Dustin White, so Dustin.
57:45 Stephanie E Hammonds: If you'd like to unmute yourself and Give us your comments.
57:52 Dustin White: Yeah, I like to hold my comments until after hearing the Q&A. Thanks.
57:57 Stephanie E Hammonds: Okay. So, if there's anyone online with us now, who did not pre-register to comment and would like to make a comment on the record, please use the Raise your hand feature, and we will call upon you. again, please state, clearly your name and indicate if you are representing any group or organization
58:37 Stephanie E Hammonds: If you are joining us by telephone and would like to make a comment, you can unmute by pressing Star 6. Okay, Terry, I do not see anyone else.
59:06 Terry A Fletcher: Thank you, Stephanie. We will now be moving. If there are no more commenters. We'll now move to the question and answer portion. So, we'll take questions one at a time questions, which we can't answer tonight. Will be addressed in our Response to Comments document.
59:23 Terry A Fletcher: If you have a question, we ask that you use the Raise Hand feature and we will call upon you as they appear on our screen. Again, We just ask that you please state your name before asking your question. Oh okay. I believe there was Okay. Before I forget, we're gonna go ahead and Go with the Lou McDaniel's. Question that was posted in the meeting chat and then Dustin will get to you after we address a lose question.
59:59 Terry A Fletcher: So Joe if you want to Respond to that.
01:00:04 Joseph R Kessler: Yeah, so the question was, what is
01:00:04 Terry A Fletcher: Yes.
01:00:07 Joseph R Kessler: the natural grat natural gas

01:00:07 Terry A Fletcher: What?
01:00:10 Joseph R Kessler: combustion used for? At the facility. Specifically, the over 500. Million btu per hour, well table three in the preliminary determination actually lays out shows all the different natural, gas combustion devices. And they're really spread out throughout the facility in in various processes. Used to warm the the steel after it's, after it's casted, or to keep it warm or to reheat it. For the various processes. For instance, in the galvanizing section of the facility, the annealing section. The.
01:00:57 Joseph R Kessler: The steel needs to be heated again for those processes to occur also within the melt shop itself. Transporting, the The, the molten steel. Natural gas, combustion. Devices are used to keep that, keep that molten steel hot enough to continue to be casted and into flow and to move. So it's used in a variety of places and in total spread throughout the facility. There is over, 500 547.4 to be exact million BT per hour of natural gas combustion.
01:01:38 Joseph R Kessler: So, to answer questions, use for a lot of different things list all of it heating in the various processes of the facility.
01:01:53 Terry A Fletcher: Thank you, Joe. I believe. Dustin White has the Sandra. So Dustin if you want to go ahead with your question, please.
01:02:03 Dustin White: Yeah, sure. Thanks. My first question, I'm wondering if the DEP is actually ever Googled this company. Because if you would do a simple Google search, you would find that. This company has a notorious history of permit violations. It poisoned a Louisiana community for nearly a decade. Is the DP going to take anything like that into consideration? They also rank on S&P 500's list for partaking an environmental racism, is any of that information considered in granting this a permit?
01:02:42 Joseph R Kessler: We do not take into consideration. Past violations, especially out of state violations. When we are permitting particular facility in our state, it's not part of the review as outlined under the PSD rule. And it's not something that's expressly part of what the real grants for permit denial. So, it is not, it is not considered when when we do our review under The PSD rule.
01:03:19 Lew McDaniel (chat): What agency deals with noise pollution?
01:03:29 Terry A Fletcher: Justin, did you have additional question?
01:03:32 Dustin White: Yeah, to follow up to that one. What makes the West Virginia dep think that new core is going to function any differently here in the state. You can choose to answer that one if you wish and then I have one more question.
01:03:49 Joseph R Kessler: You know, again, we review these facilities on a case-by-case basis, specific to the proposal we get in the permit application. and we just don't have the authority to consider violations that are issued in specifically in other states and in some cases In other EPA regions. So I mean, it's not like, we're not aware. So, I don't know that, that just Googling it is something that that we need to do.
01:04:23 Joseph R Kessler: We're certainly aware of Of these issues, but they're not, they're just not. Part of the, of the review process under. Under the PSD rule under 14 and in West Virginia.
01:04:41 Dustin White: Okay, then my final question was What is going to be the source of energy for this plant? Is it going to have a power plant? What is it gonna be natural gas? What is it gonna be natural gas?
01:04:54 Joseph R Kessler: The power provided to the eafs, the
01:04:54 Terry A Fletcher: The.
01:04:57 Joseph R Kessler: electric arc furnaces that. That draw the power off the grid. Will will be coming from the grid. So as you know, the way PJM works where specific power comes from

to a specific facility changes based on You know, almost a day-to-day basis on the on the price of electricity and all that. So, Even if that was within our authority to, you know, to look at that and regulate I don't know. That you can actually specify.
01:05:33 Joseph R Kessler: That 46% comes from the Gavin Power plan. So much comes from a natural gas, power plant. So we know they're going to get it off the grid. They do not have their own Power Generation facility as part of this deal plant. So they'll be they'll be taking it off the grid. Beyond that, like I said, is It's not really our authority, and I can't say for certain where the exact power will be coming from for those eas.
01:06:12 Terry A Fletcher: I believe we have another question from Lou McDaniel. Jerry, do you want to take that in the chat? Yes.
01:06:19 Joseph R Kessler: Yeah. So Lou has asked what agency deals with noise pollution? I'm not sure that any Agency. Certainly not. A dep. Agents or dep division would have anything to do with noise pollution. so, I think EPA, Would be. Someone who might deal with the noise pollution, maybe. Yeah, yeah, I think that beyond EPA, I think local zoning laws might come into play here and I'm sorry, I'm trying to think off the cuff here, I can say for certain that the daq is not regulating noise.
01:07:10 Joseph R Kessler: Pollution certainly not within 14. So to go beyond that. I don't want to, I don't want to talk too much out of turn, but I guess I would probably say start local and you know, with with City County in zoning and so forth. But But I can't specifically say with certainly not within. Within the division.
01:07:38 Terry A Fletcher: Okay, thank you, Mr. McDaniel, are there any other questions? Feel free to unmute yourself and call them out. Okay, I'm not seeing any other questions or hands raised. So I'm gonna give it one one last call for questions. Okay, if there are no more questions. Then we will. Wrap up the public meeting here. So again, I want to reiterate that a decision will not be made this evening.
01:08:40 Terry A Fletcher: I'll comments submitted during the open. Comment period will be reviewed and considered by the staff. Prior to the, I'm sorry. Okay. No, miss that. Apologies. I think I may have jumped again there. Dustin White, will you indicated you wanted to comment later on in the proceedings?
01:09:13 Dustin White: No, sorry. I'll do a written comment instead.
01:09:17 Terry A Fletcher: Okay, thank you. Okay. So again As I stated earlier, we will not be making a decision this evening. All the comments that we received during the open, comment period will be reviewed and considered by a staff prior to the agency. Issuing its determination on this proposed permit, a response to Comments document will be drafted and provided to all those who provided comments. Again the comment period ends at 5pm on Friday, April 29th.
01:09:49 Terry A Fletcher: And written comments can be emailed to Joe Kessler at Joseph Dot R Dot Kessler at Wv.gov. Please put new course, steel West, Virginia comments in the subject line. You can also mail them to Mr. Kessler at At the deps Division of Air Quality at 601 57th Street. Southeast Charleston West Virginia 25304. Again, that information is all in the meeting chat for those that want to copy it down, or write it down.
01:10:19 Terry A Fletcher: And we want to thank everyone for your interests and for taking the time to attend this public meeting. Wish everyone a good evening. Thank you.

Timestamp	First name	Last name	Email address	Organization (if not affiliated with a group, type "Self")	Street address	City, state and zip code	Do you wish to provide oral comments?
3/29/2022 15:48:15	Beverly	McKeone	beverly.d.mckeone@wv.gov	WVDEP/DAQ	601 57th Street	Charleston, WV 25304	No
3/30/2022 11:00:49	Jon	McClung	jon.d.mcclung@wv.gov	WVDEP	601 57th Street SE	Charleston, WV 25304	No
3/30/2022 22:32:35	Mike	Tony	mtony@hdmediallc.com	Charleston Gazette-Mail	1001 Virginia St. E	Charleston, WV 25301	No
4/1/2022 9:28:21	William	Bruscino	bbruscino@trinityconsultants.com	Trinity Consultants	110 Polaris Pkwy, Suite 2	Westerville, OH 43082	No
4/1/2022 15:16:29	David	Yaussy	daveyaussy@gmail.com	self	2243 Smith Road	Charleston	No
4/4/2022 11:04:22	Joe	Kessler	joseph.r.kessler@wv.gov	WVDEP	607 50th Street, SE	Charleston, WV, 25304	No
4/5/2022 10:43:16	Fred	Pace	fpace@hdmediallc.com	HD Media LLC	5192 Braley Road	Huntington	No
4/5/2022 15:57:56	Rex	Compston	rex.e.compston@wv.gov	WV DEP	601 57th St Se	Charleston, WV 25304	No
4/6/2022 0:58:14	Sean	Alteri	Sean.alteri@nucor.com	Nucor	1915 Redford Road	28211	No
4/6/2022 8:40:51	Dennis	Stottlemyer	dennis.o.stottlemyer@wv.gov	WVDEP	601 57th St SE	Charleston, WV 25309	No
4/6/2022 9:37:11	GWENDOLYN	SUPPLEE	supplee.gwendolyn@epa.gov	US EPA Region 3	1650 Arch St	Philadelphia	No
4/6/2022 11:27:52	Jeff	Jenkins	jjenkins@wvradio.com	MetroNews	Virginia Street	Charleston, WV	No
4/6/2022 12:53:33	Lew	McDaniel	lewmcd@gmail.com	Self	2113 Surrey Drive	Morgantown, WV 26505	No
4/6/2022 16:18:06	Alex	Cole	alex.cole@sierraclub.org	Sierra Club	6230 Dunlavy Rd	Pliny	No
4/7/2022 11:25:19	Dustin	White	mountain.patriot@gmail.com	self	800 Willow Dr	South Charleston	Yes
4/7/2022 15:04:13	Mamie	Buoy	mbuoy@sbgtv.com	WCHS TV	1301 Piedmont Road	Charleston, WV 25301	No

Lew

Kessler, Joseph R <joseph.r.kessler@wv.gov>

Nucor Steel Comments

Patricia Wears <pwears1948@gmail.com> Sun, Apr 10, 2022 at 3:06 PM
To: Joseph.r.kessler@wv.gov

Sir, I think it is a darn shame that Mason County and the WV Goverment has gotten the Greed so bad . No one is thinking of the people of Apple Grove even the people. They are just seeing dollar signs. I just read the article in the Herald Dispatch. I Pray the whole mess just goes away. AEP an Nucor. What will this community be like after they get here. They will get no one to work and the illegals Will be brought in. You cannot look at their other states' violations. That is a line of bull. The way this world is now I pray God does step in and save us all. Greed has stepped in, power hungary people.

AFFP

Affidavit of Publication

STATE OF WEST VIRGINIA } SS
COUNTY OF MASON }

Brenda Davis, being duly sworn, says:

That she is Customer Service of the POINT PLEASANT REGISTER, a daily newspaper of general circulation, printed and published in POINT PLEASANT, MASON County, WEST VIRGINIA; that the publication, a copy of which is attached hereto, was published in the said newspaper on the following dates:

Mar 30,2022

That said newspaper was regularly issued and circulated on those dates.

SIGNED:

Brenda Davis

Subscribed to and sworn to me this 30th day of Mar 2022

Patricia Y. Wamsley

Patricia Y. Wamsley, MASON County, WEST VIRGINIA

My commission expires: Feb. 17, 2025

$ 113.94

00150131 90146026 304-926-0499

372-Wv Dept. Of Environmental Protection
Stephanie Mink
601 57Th St. Se

Charleston, WV 25304

RECEIVED
APR 01 2022
WV DEP / DIV OF AIR QUALITY

AIR QUALITY PERMIT NOTICE
Notice of Intent to Approve

On January 21, 2022, Nucor Steel West Virginia LLC (Nucor) applied to the WV Department of Environmental Protection (DEP), Division of Air Quality (DAQ) for a permit to construct a steel mill located near Apple Grove, Mason County, WV at latitude 38.65536 and longitude -82.16853. A preliminary evaluation has determined that all State and Federal air quality requirements will be met by the proposed facility. The DAQ is providing notice to the public of its preliminary determination to issue the permit as R14-0039.

The following potential emissions will be authorized by this permit action: Particulate Matter less than 2.5 microns, 570.10 tons per year (TPY); Particulate Matter less than 10 microns, 617.54 TPY; (total) Particulate Matter, 690.89 TPY; Sulfur Dioxide, 361.48 TPY; Oxides of Nitrogen, 701.59 TPY; Carbon Monoxide, 3,263 TPY; Volatile Organic Compounds, 178.36 TPY; Total Hazardous Air Pollutants, 7.48 TPY, Greenhouse Gases (CO2e), 673,848 TPY.

The purpose of the DAQ's permitting process is to make a preliminary determination if the proposed facility, which is defined as a major stationary source under 45CSR14, meets all state and federal air quality requirements. DEP rules and U.S. EPA regulations require that all pollutants at a major stationary source that will be emitted in "significant" amounts (as defined within 45CSR14) shall:

(1) be controlled by application of "best available control technology" (as defined within 45CSR14);

(2) not cause or contribute to violations of either the primary or secondary national ambient air quality standards (NAAQS) nor any Class 1 or Class 2 air quality increments applicable in the area where the source is located or elsewhere; and, (3) not adversely impact upon soils, vegetation, and visibility in the vicinity of the plant site. A preliminary evaluation by the DAQ of the information submitted by Nucor indicates that the proposed facility will meet the emission limitations and conditions set forth in the draft permit and will comply with all currently applicable state and federal air quality rules and regulations (including 45CSR14, the WV Legislative Rule implementing the Prevention of Significant Deterioration program that includes the requirements listed above). Nucor has anticipated a facility start-up date in January 2024.

The following are the results of the Class1 and Class 2 ambient air quality increment analysis:

Class 1 Increment Analysis: The Class 1 increment analysis produced the following results: screening and modeling analysis showed that potential impacts in the following Class 1 areas were "insignificant" as defined by 45CSR14: Otter Creek Wilderness Area and the Dolly Sods Wilderness Area in West Virginia and the Shenandoah National Park and the James River Face Wilderness Area in Virginia. This finding of "insignificant impacts" precluded a required full multi-source Class I increment analysis.

Class 2 Increment Analysis: The Class 2 increment analysis produced the following results (location of maximum impact): 93% at 8.34 µg/m3 of PM2.5 on a 24-hour basis; 73% at 2.90 µg/m3 of PM2.5 on an annual basis; 93% at 28.0 µg/m3 of PM10 on a 24-hour basis; 33% at 5.59 µg/m3 of PM10 on an annual basis; 22% at 5.45 µg/m3 of NO2 on an annual basis, and 4.4% at 3.96 µg/m3 of SO2 on an annual basis.

AFFP

Affidavit of Publication

STATE OF WEST VIRGINIA } SS
COUNTY OF MASON }

Brenda Davis, being duly sworn, says:

That she is Customer Service of the POINT PLEASANT REGISTER, a daily newspaper of general circulation, printed and published in POINT PLEASANT, MASON County, WEST VIRGINIA; that the publication, a copy of which is attached hereto, was published in the said newspaper on the following dates:

Mar 30,2022

That said newspaper was regularly issued and circulated on those dates.

SIGNED:

Brenda Davis

Subscribed to and sworn to me this 30th day of Mar 2022

Patricia Y. Wamsley

Patricia Y. Wamsley, MASON County, WEST VIRGINIA

My commission expires: Feb. 17, 2025

$ 113.94

00150131 90146026 304-926-0499

372-Wv Dept. Of Environmental Protection
Stephanie Mink
601 57Th St. Se

Charleston, WV 25304

The DAQ has scheduled a public meeting for 6:00 p.m. on Thursday, April 7, 2022. The public meeting will be held virtually to prevent the spread of COVID-19. Instructions for providing written comments and for providing oral comments at the virtual public meeting are provided below.

The purpose of the public review process is to accept public comments on air quality issues relevant to this determination. Only written comments or comments presented orally at the scheduled public meeting will be considered prior to final action on the permit. All such comments will become part of the public record.

Written comments must be received by 5:00 p.m. on Friday, April 29, 2022:

Email written comments to Joseph.R.Kessler@wv.gov with "Nucor Steel West Virginia Comments" in the subject line, or Mail hard copy comments to Mr. Joseph Kessler, WV Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304.

Public meeting participation:

To participate online or by telephone, registration is required by 5:00 p.m. on Thursday, April 7, 2022. To register, please complete the registration form at: https://forms.gle/kfQMFrrhfRXDMWQw7.

To provide oral comments, please check "yes" in the appropriate box on the registration form. Oral comments shall be limited to 5 minutes. After registration, a confirmation e-mail will be sent with information on how to join the public meeting. Registration for the online meeting is required to fulfill the state's obligation under federal air quality regulations to include a list of participants. If you do not have internet access and want to register to participate via telephone, please contact Stephanie Hammonds at (304) 926-0499 x41263. If participating virtually, video demonstrations and screen sharing by commenters is not permitted.

Additional information, including copies of the draft permit, application, and all other supporting materials relevant to the permit decision may be obtained by contacting the engineer listed below or downloaded at:

https://dep.wv.gov/daq/permitting/Pages/NSR-Permit-Applications.aspx.

Joe Kessler, PE
Engineer
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 41271
Email: joseph.r.kessler@wv.gov

3/30/22

Kessler, Joseph R <joseph.r.kessler@wv.gov>

WV Draft Permit R14-0039 for Nucor Steel West Virginia, LLC; West Virginia Steel Mill

1 message

Mink, Stephanie R <stephanie.r.mink@wv.gov> Wed, Mar 30, 2022 at 7:27 AM
To: "Supplee, Gwendolyn" <supplee.gwendolyn@epa.gov>, Weinelt.Eva@epa.gov, leary.justin@epa.gov, sean.alteri@nucor.com, BBruscino@trinityconsultants.com
Cc: "Crowder, Laura M" <Laura.M.Crowder@wv.gov>, "McKeone, Beverly D" <Beverly.D.Mckeone@wv.gov>, "McCumbers, Carrie" <Carrie.McCumbers@wv.gov>, "Hammonds, Stephanie E" <Stephanie.E.Hammonds@wv.gov>, "Kessler, Joseph R" <Joseph.R.Kessler@wv.gov>, "Johnson, Rebecca H" <Rebecca.H.Johnson@wv.gov>, Alexia.Prosperi@usda.gov, Andrea_Stacy <andrea_stacy@nps.gov>

Please find attached the Draft Permit R14-0039, Preliminary Determination and Public Notice for Nucor Steel West Virginia, LLC's West Virginia Steel Mill located in Mason County.

The public notice will be published in the Point Pleasant Register on Wednesday, March 30, 2022 and the thirty day comment period will end on Friday, April 29, 2022.

Should you have any questions or comments, please contact the permit writer, Joe Kessler, at 304-926-0499 ext. 41271 or joseph.r.kessler@wv.gov.

--

Stephanie Mink

Environmental Resources Associate

West Virginia Department of Environmental Protection

Division of Air Quality, Title V Permitting

601 57th Street SE

Charleston, WV 25304

Phone: 304-926-0499 x41281

3 attachments

- **R14-0039 Draft Permit (w Appendix A).pdf**
  903K
- **R14-0039 Preliminary Determination (signed).pdf**
  13427K
- **R14-0039 Public Notice.pdf**
  54K

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone 304/926-0475

Harold D. Ward, Cabinet Secretary
dep.wv.gov

Pursuant to §45-14-17.2, the Division of Air Quality presents the

PRELIMINARY DETERMINATION/FACT SHEET

for the

CONSTRUCTION

of

Nucor Steel West Virginia LLC
West Virginia Steel Mill

proposed to be located near

Apple Grove, Mason County, WV.

Permit Number: R14-0039
Facility Identification Number: 053-00085

Date: March 29, 2022

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BACKGROUND INFORMATION

Application No.:	R14-0039
Plant ID No.:	053-00085
Applicant:	Nucor Steel West Virginia LLC
Facility Name:	West Virginia Steel Mill
Location:	Near Apple Grove, Mason County
SIC/NAICS Code:	3312/331110
Application Type:	Major Source Construction
Received Date:	January 21, 2022
Engineer Assigned:	Joseph R. Kessler, PE
Fee Amount:	$14,500
Date Received:	January 24, 2022
Complete Date:	March 23, 2022
Due Date:	September 19, 2022
Applicant Ad Dates:	January 27, 2022
Newspaper:	*Point Pleasant Register*
UTM's:	Easting: 398.20 km • Northing: 4,278.87 km • Zone: 17
Latitude/Longitude:	38.65536/-82.16853
Description:	Construction of a 3,000,000 tons per year sheet steel mill.

On January 21, 2022, Nucor Steel West Virginia LLC (Nucor), a subsidiary of Nucor Corporation, submitted a permit application to construct a new sheet steel mill near Apple Grove, Mason County, WV. The proposed facility is, pursuant to 45CSR14, Section 2.43, defined as a "major stationary source" and is, therefore, required to undergo Prevention of Significant Deterioration (PSD) review according to the requirements of 45CSR14. Based on DAQ procedure, the permit application will also be concurrently reviewed under the WV minor source program administered under 45CSR13.

The following document will outline the DAQ's preliminary determination that the construction of Nucor's West Virginia Steel Mill will meet the emission limitations and conditions set forth in the DRAFT permit and will comply with all currently applicable state and federal air quality rules and standards.

PUBLIC REVIEW PROCEDURES

The public review procedures for a new major construction application dual-reviewed under 45CSR13 and 45CSR14 require action items at the time of application submission and at the time a preliminary determination/draft permit is prepared by the DAQ. The following details compliance with the applicable rules and accepted procedures for public notification with respect to Permit Application R14-0039.

Actions Taken at Application Submission

Pursuant to §45-13-8.3 and §45-14-17.1, Nucor placed a Class I legal advertisement in the following newspaper on the specified date notifying the public of the submission of a permit application:

- *Point Pleasant Register* (January 27, 2022).

The DAQ sent a notice of the application submission and a link to the electronic version of the permit application to the following parties:

- The U.S. Environmental Protection Agency (USEPA) Region 3 [§45-14-13.1] - (January 24, 2022);

- The National Park Service [§45-14-13.2] - (January 24, 2022); and

- The US Forest Service [§45-14-13.2] - (January 24, 2022).

The permit application was also made available for review on DAQ's website and on DAQ's publically available database (AX).

Actions Taken at Completion of Preliminary Determination

Pursuant to §45-13-8.4 and §45-14-17.4, upon completion (and approval) of the preliminary determination and draft permit, a Class 1 legal advertisement will be placed in the following newspaper stating the DAQ's preliminary determination regarding R14-0039:

- *Point Pleasant Register*.

Pursuant to §45-13-8.7 and §45-14-13.3, a copy of the preliminary determination, draft permit, and public notice shall be forwarded to USEPA Region 3, the National Park Service (NPS) and the US Forest Service (USFS). A copy of the application, complete file, preliminary determination and draft permit will be available on DAQ's website and on DAQ's publically available database (if unable to review online, the documents will also, by request to the DAQ, be made available at one location in the region in which the source is proposed to be located or be provided within a reasonable time-frame). Additionally, pursuant to §45-14-17.5, a copy of the public notice will be sent to the County Clerk of Mason County, WV, and the Ohio Environmental Protection Agency (OHEPA). All other requests for information by interested parties for documents related to Permit Application R14-0039 shall be provided upon request.

Actions Taken at Completion of Final Determination

Pursuant to §45-14-17.7, and 17.8, upon reaching a final determination concerning R14-0039, the DAQ shall prepare a "Final Determination" document and make such determination available for review on the DAQ's website and on DAQ's publically available database (and available to any party upon request).

DESCRIPTION OF PROPOSED FACILITY

Facility Overview

Nucor has submitted a permit application for the new construction of a sheet steel mill to be located near Apple Grove, Mason County, WV. The proposed facility will have the capacity to produce up to 3,000,000 tons of steel per year and the production process can be broken down into the following six (6) major components: Material Handling, Melt Shop, Hot Mill, Cold Mill, Slag Processing, and Auxiliary Processes/Equipment.

The basic steel producing process involves the melting of scrap steel (with other raw materials) in two (2) Electric Arc Furnaces (EAFs). The molten steel is then further refined in several additional processes prior to being sent to the casting area where the molten steel is formed into a continuous ribbon of steel and sent to the Hot Mill for sizing. In the Hot Mill, the ribbon of steel is cut and rolled (while heated) to achieve the desired size and thickness per customer specifications. As required, product refining can continue in the Cold Mill, where the cooled steel can be further sized, cleaned, annealed, and galvanized to meet additional customer specifications. Material handling and slag processing are needed at the facility to unload, store, and process feedstock materials and slag, respectively. Auxiliary operations and equipment include the use of storage tanks, cooling towers, an air separation unit, and emergency engines. The proposed steel mill will have a facility-wide potential-to-emit (PTE) as given in the following table:

Table 1: Facility-Wide Annual PTE

Pollutant	PTE (TPY)
CO	3,262.61
NO_x	701.59
$PM_{2.5(1)}$	570.10
$PM_{10(1)}$	617.54
$PM^{(2)}$	395.74
$PM^{(3)}$	690.89
SO_2	361.48
VOCs	178.36
Total HAPs	7.48
CO_{2e}	673,848

(1) Including condensables.
(2) Filterable Only.
(3) Total Particulate Matter including filterable and condensables.

Process Description

The following is a summary of a detailed process description given from Section 2.1 through Section 2.3 (pp 12 - 19) of the permit application.

Raw Material Storage and Handling

The proposed facility will use various feedstocks in the steel making process: scrap steel, direct reduced iron (DRI), carbons, alloys, and lime. The purpose of each is give in the following:

- Scrap Steel is the primary iron feedstock used in the steel making process and can include sheet metal, rectangular scrap bundles, shredded scrap, plate scrap, structural scrap, pig iron, and miscellaneous scrap metal. It is melted in the EAFs and combined with certain purifying and strengthening additives as noted to produce the molten steel that is finally shaped into sheet steel.

- DRI is a secondary source of iron used in the steel making process and its purpose is to augment the scrap steel with residual-free iron to produce advanced grades of steel and control the alloy chemistry (Fines Content - 3%, Moisture Content - 0.30%).

- The carbons (coal, petroleum coke, powdered graphite, etc.) are materials added to the melting process as a fluxing agent to remove impurities from the steel through the formation of slag (Fines Content - 100%, Moisture Content - 0.20%).

- Alloys (manganese, nickel, chromium, molybdenum, vanadium, silicon, and boron, etc.) are added to improve specific properties such as strength, wear, and corrosion resistance and are used to vary the chemical composition of the steel to specific customer specifications (Fines Content - 100%, Moisture Content - 2.20%).

- Lime is added to the melting process as a fluxing agent to remove impurities from the steel through the formation of slag (Fines Content - 100%, Moisture Content - 0.20%).

The above materials will be brought to the facility via truck, railcar, and barge (see Table 2 below) and, depending on the material, will be stored in open stockpiles or in silos. Scrap steel will be direct loaded onto three (3) open storage piles (SCRPSKP1 through 3) each with a maximum area of 81,809 ft^2. Fugitive emissions from the open piles will be controlled by wetting the piles as necessary.

Each of the other material unloading processes have three (3) sources of potential emissions: (1) fugitive emissions from the dumping of the material into a hopper/bin, controlled emission points from (2) air evacuated from the enclosed conveying system, and from the (3) bin vents displaced air to exit the associated storage silos.

The DRI will be unloaded from barges via a clamshell crane located on the dock and transferred to a receiving hopper. The hopper will be equipped with side ventilation to capture particulate matter emissions and controlled by a dust collector (DRI-DOCK-BH). From the bottom of the hopper, the DRI will be conveyed to storage silos (DRI1 through 4). The conveying system will be enclosed and evacuated to a baghouse that controls the conveyers for each silo (DRI1-BH through DRI4-BH). Each silo will additionally have a bin vent (DRI1-BV through DRI4-BV) to capture particulate matter in air displaced from the silo while filling.

Lime, carbon, and alloy feedstocks are delivered by truck and unloaded through dump bins directly into fully enclosed conveyer systems and stored in storage silos (collectively given the Emission Unit ID of "LCB"). The conveying system for each material will be enclosed and emissions evacuated to an individual baghouse (LIME-BH, CARBON-BH, and ALLOY-BH). All the bin vents for the LCB silos are collectively exhausted to a single baghouse (LCB-BH).

Table 2: Feedstock Unloading & Storage

Material	Transport Method	Unloading Method	Unloading Emission Unit IDs	Annual Throuhphut (TPY)	Storage Method
Scrap Steel	Barge	Clamshell/Magnetic Crane	SCRAP-DOCK	1,443,750	Open Storage Piles
	Rail	Magnetic Crane	SCRAP-RAIL	192,500	
	Trucks	Direct Dump	SCRAP-BULK38	288,750	
DRI[1]	Barge	Clamshell Crane ➜ Hopper ➜ Conveyer	DRI-DOCK	557,500	Silos
Carbon	Truck	Truck Dump ➜ Enclosed Conveyer or Direct Pneumatic Transfer	CARBON-DUMP	35,000	Silos
Alloys	Truck	Truck Dump ➜ Enclosed Conveyer	ALLOY-HANDLE	62,000	Silos
Lime	Truck	Truck Dump ➜ Enclosed Conveyer or Direct Pneumatic Transfer	LIME-DUMP	70,000	Silos

(1) DRI may include the following scrap substitutes: pig iron and hot briquetted Iron (HBI).

From the open storage piles, scrap steel will be dropped onto conveyers (SCRAP-BULK35, 37, and 39) and transported to the (enclosed) Melt Shop where it is transferred into charge buckets for delivery into the EAFs (SCRAP-BULK40). Overhead cranes then will maneuver the charge bucket into position over the EAF. Once in position, the charge bucket bottom opens, allowing scrap to fill the EAF.

DRI will be conveyed from the bottom of the storage silos to two (2) DRI Day Bins (DRI-DB1 and 2) located near the Melt Shop. From DRI Day Bins, the DRI will be transferred to the Melt Shop via conveyors where it will be added to the EAF charge through the roof of the EAF. The DRI conveying system (DRI-CONV) will be an enclosed system and controlled with a baghouse (DRI-CONV-BH), with the bins under a nitrogen purge "blanket" to minimize oxidation and to maintain the material's quality before charging. Air displaced from the day bins will be captured by each bin's baghouse (DRI-DB1-BH and DRI-DB2-BH). The DRI handling system will also include emergency bypass chutes located on DRI storage silos (DRI-EMG-1) and at the end of DRI conveyors (DRI-EMG-2). The emergency bypass chutes will be used to remove DRI from the system that cannot be fed to the furnaces (e.g., if the material is too wet) or if there is an emergency with the nitrogen purging system. Normal operation of the DRI Handling System will be shutdown if the emergency bypass chutes are needed to be used.

Carbons, lime, and Alloys are transported from their respective silos and into the Ladle Metallurgy Furnaces (LMF) and (Vacuum Degassers as well for the Alloys) as needed using an enclosed conveying system.

Melt Shop

The primary material processing (the melting of scrap steel and DRI) occurs in the Melt Shop. The Melt Shop contains two (2) 342,000 lbs/hr (171 TPH) Single Shell 123 mW DC Electric Arc Furnaces (EAF-1 and EAF-2) that will be charged with scrap steel and DRI (or with other scrap substitutes as may be needed) to each produce up to a maximum of 1,500,000 tons/year of steel. Electric arc steelmaking uses high-current electric arcs to melt steel scrap and DRI and convert it into liquid steel of a specified chemical composition and temperature (as opposed to using coke-fired blast furnaces).

During a cold startup, the steel will be preheated in each EAF through the use of a 22.18 mmBtu/hr natural gas-fired oxyfuel burner. In the oxyfuel burners, a pure or enriched oxygen stream is used instead of air for combustion. These burners result in more efficient combustion and lower emissions of NO_x. Once preheated, the furnace electrodes will be lowered into the charged material. Electrical power will be provided to induce arcing that will increase the temperature of the scrap to beyond the steel melting point of approximately 3,000 degrees Fahrenheit (°F). The oxyfuel burners will continue to operate after the electrodes are lowered to promote the post combustion of gases in the furnace vapor space and to introduce oxygen into the furnace for use in exothermic reactions within the molten steel.

EAF emissions are generated during charging, melting, and tapping. Pursuant to requirements in 40 CFR Subpart AAa, Nucor has proposed the use of a direct-shell evacuation control system (DEC system) for control of particulate matter emissions from the EAFs/LMFs. A DEC system is one that maintains a negative pressure within the EAF above the slag or metal and ducts emissions to the control device - in this case an pulse jet fabric filter baghouse for each EAF/LMF stack (EAF-1-BH and EAF-2-BH). The DEC is designed to achieve a minimum capture efficiency of 95% of all potential particulate matter emissions when the furnace roof is closed. During EAF charging (estimated to be a maximum of 4% of the time), when the furnace roof is open, particulate matter emissions are controlled by a canopy hood over the EAFs that is designed to capture a minimum of 95% potential particulate matter emitted by the units (and the LMFs and casting units as well). The canopy hood also evacuates the captured particulate matter to the EAF baghouses. Emissions that are not captured by the DEC system or the canopy hood are potentially released as fugitives from the Melt Shop building openings. The enclosed Melt Shop building, when openings are properly mitigated, is able to capture another 90% of the potential fugitive emissions. These emissions are considered to fall out inside the building.

When the steel melting in the EAF is complete, the contents of the furnace will be poured (tapped) into a refractory-lined chamber (ladle) which will transport the molten steel to the ladle metallurgy furnaces (LMF1 and LMF2) for further refining. After most tappings, a heel of molten steel is left in the furnace in order to assist in the melting of the subsequent scrap steel charges and to prevent damage to the furnace from thermal and mechanical shock during the next charge. The molten heel is, however, periodically also tapped out of the furnace so that the refractory lining can be inspected and repaired if needed. After this occurs, a cold startup is required.

As stated, the ladles of molten steel are transferred from the EAFs to the LMFs for final steel refining. During transportation, the ladle uses a 15.00 mmBtu/hr natural gas-fired Ladle Dryer (LD) and seven (7) 15.00 mmBtu/hr natural gas-fired Horizontal or Vertical Ladle Preheaters (LPHTR1 through 7). Each LMF will consist of a combined furnace and stirring station. The introduction of additional materials, such as carbons, metal alloys, or lime, will occur in the LMFs in order to produce steel to meet specific customer requirements.

EAF dust collected in the Melt Shop baghouses will be pneumatically transferred to two (2) storage silos (EAFVF1 and 2), each of which will be equipped with a fabric filter bin vent (EAFVF1-BV and EAFVF2-BV). The dust will be loaded into trucks or railcars beneath the silo to be transported to off-site disposal or reclamation facilities.

A portion of the steel will be further refined in the Vacuum Tank Degassing Operations (VTD) to reduce/eliminate dissolved gases (especially hydrogen, nitrogen, and carbon). Chosen ladles are placed directly into the VTD for processing. During the degassing process, material additions are made for deoxidation and alloying. These materials will be supplied to the VTGs by the Alloy Handling System. Once the ladle is enclosed in the VTD, mechanical pumps will be used to draw a vacuum on the ladle. The gas from the VTD is captured and first directed through a particulate filter to protect the mechanical pumps from particulate matter. The degassing process primarily generates CO emissions due to the release of carbon from the steel and partial oxidation to CO. A12.37 mmBtu/hr Flare (Vacuum Tank Degasser Flares 1 and 2) is used to control the excess CO emissions, but will also provide control for any VOC emissions generated in the VTG process. The Flare will have a minimum destruction and removal efficiency (DRE) of 98% for CO.

Once the molten steel achieves the desired properties in the LMF and/or VTD, the ladle will be removed and transported by overhead crane to a continuous casting machine. In the caster, steel will flow via a bottom slide gate from the ladle into another refractory-lined chamber (tundish). From the tundish, the molten steel will flow through a specially designed tundish nozzle into a thin slab caster. A 6.00 mmBtu/hr natural gas-fired Tundish Dryer (TD) and two (2) 9.00 mmBtu/hr Tundish Preheaters (TPHTR1/2) are used in the process. As the steel travels through the Caster, it will be cooled with process water and formed into a continuous ribbon of steel.

The natural gas combustion emissions from the Ladle Preheaters and the Tundish Dryer and Preheaters all vent inside the Melt Shop building and are conservatively assumed to be emitted from openings in the Melt Shop building.

Hot Mill

As noted, the purpose of the Hot Mill is to take the steel coming from the Casters in the Melt Shop and size it for further processing in the Cold Mill. Therefore, after initial cooling, the ribbon of steel from the Casters is sheared to length to form individual slabs and sent to the 150 mmBtu/hr natural gas-fired Tunnel Furnace (TF1). In the Tunnel Furnace, the slabs are heated to achieve a consistent temperature prior to feeding to the 171 tons/hour Hot Rolling Mill (RM). In the Hot Rolling Mill, each slab thickness is reduced using great pressure to meet customer thickness specifications. Particulate matter emissions from the Hot Rolling Mill are controlled by a baghouse (RM-BH). The rolled steel is then cooled and coiled for further processing.

Cold Mill

The Cold Mill will receive steel coils from the Hot Mill and, as necessary, they will be sent first to the 342 tons/hour Scale Breaker (PKLSB), where a tension leveler type scale breaker will apply pressure to the steel slabs, elongating the slab to correct surface defects and breaking the iron oxide layer on the slab surface in order to prepare the slab for pickling. Particulate matter emissions generated from the scale breaking of the steel are controlled by a baghouse (PKLSB-BH).

After receiving steel from the Scale Breaker or directly from the Hot Mill, coils are chemically cleaned on the continuous pickling line using hydrochloric acid (HCl). The Pickling Line (PKL-1) cleans steel for shipment or further processing by removing scale and other deposits from the steel surface which may develop during the manufacturing process. Steel Coils received from the Melt Shop or the Scale Breaker will first be uncoiled and sent through a series of HCl baths that remove the oxides. The steel sheet is then rinsed and dried. A wet scrubber (PKL1-SCR) is used on the pickling line to control any potential HCl and particulate matter emissions generated from the process.

Pickled coils can be shipped to customers as finished product, or further processed in the 342 tons/hour Tandem Cold Mill (TCM) to further reduce the thickness of the coil. The Tandem Cold Mill uses an oiler that applies surface oiling electrostatically to both sides of the strips simultaneously to facilitate processing in the mill. This oiler can apply multiple grades of rolling oil with minimum transition times between oil types. Particulate matter emissions generated in the Tandem Cold Mill are controlled by a mist eliminator (TCM-ME).

Steel coils can also, per customer specifications, be sent to the galvanized lines for treatment. Galvanizing is the process of applying a protective coating to steel or iron. The coating is usually made from zinc and is used to halt the formation of rust. First, the steel will be uncoiled and go through a cleaning section (CGL1 and CGL2) that removes rolling oils and metal fines from the surface of the steel. Particulate matter emissions from the Galvanizing Cleaning Section are controlled by scrubbers (CGL-SCR1 - 4). The steel is then dipped into a molten zinc bath, resulting in the formation of zinc-iron alloy layers that combat corrosion. The final product is galvanized or "galvannealed" cold rolled steel intended for automotive applications. Two (2) 64.00 mmBtu/hr natural gas-fired Galvanizing Furnaces (GALVFN1 and GALVFN2) are used to provide heat to the galvanizing section.

The Cold Mill will also include an annealing section. Annealing is a heat treatment process which alters the micro-structure of the steel to reduce hardness, increase ductility, and help eliminate internal stresses. The heat for the process is supplied by twenty-two (22) 5.00 mmBtu/hr natural gas-fired Box Annealing Furnaces (BOXANN1 through BOXANN22).

Finally, the Cold Mill includes a 342 tons/hour Standalone Temper Mill (STM) and two (2) 114 tons/hour Skin Pass Mills (SPM1/2). These mills are cold-rolling mills which improve the surface finish on steel products. A variety of surface finishes are used to impart the desired finish to the product. Skin pass mills improve the final strip quality, including strip surface defects and roughness formed on the processing line. The Standalone Temper Mill utilizes a mist eliminator (STM-ME) and the Skin Pass Mills each utilize a dedicated baghouse (SPM1-BH and SPM2-BH) to control particulate matter emissions.

Slag Processing

As mentioned in the Melt Shop process discussion, a material called slag (a hard, stony material) is formed as lime and carbon is added to the molten steel bath to remove phosphorous and sulfur. This slag formation will occur in both the EAFs and in the LMFs when additional impurities are removed from the molten steel. The slag formed in the EAF falls to the bottom of the furnace and will be periodically emptied into slag pots beneath the furnace. After the slag pot is filled, it is taken to the slag dump station where it will be quenched using process water. After quenching, the slag is taken to the slag processing area.

The slag formed in the LMF will be emptied from the ladle after the LMF refining operation is complete and then will also be transported to the slag processing area after quenching. Slag processing equipment will be required to load, convey, crush, and screen the slag prior to use either on site as a road grading material or removal from the site as a saleable material. This area will include potential particulate matter emissions from truck dumps, conveyer transfer points, slag crushing, and slag screening (SCRAP-BULK1 through SCRAP-BULK33) operations. After sizing, the processed slag will be stored in four (4) open storage piles (SLGSKP1/4) each with a maximum area of 32,541 ft^2. Particulate matter emissions from the slag processing area will be mitigated primarily by using water sprays to keep the material wet enough to minimize emissions.

Natural Gas Combustion Units

The proposed facility includes various natural gas-fired combustion units providing direct process heat and indirect heat in many areas of the plant. As noted, some of the units emit directly inside the Melt Shop where the emissions then both get pulled into the canopy hood and emitted from the EAF Baghouses and are also emitted from the Melt Shop building openings (thus classified as fugitive emissions and identified as MSFUG). The following table identifies all the proposed natural gas combustion devices (with the exception of the oxyfuel burners within the EAFs and the Emergency Engines):

Table 3: Natural Gas Combustion Devices

Emission Unit ID(s)	Emission Point ID(s)	Number of Units	Unit Description	MDHI[1] (mmBtu/hr)
LD	MSFUG[2]	1	Ladle Dryer	15.00
LPHTR1-5	MSFUG[2]	5	Horizontal Ladle Preheaters	15.00
LPHTR6-7	MSFUG[2]	2	Vertical Ladle Preheaters	15.00
TD	MSFUG[2]	1	Tundish Dryer	6.00
TPHTR1-2	MSFUG[2]	2	Tundish Preheaters	9.00
SENPHTR1-2	MSFUG[2]	2	Tundish Preheaters	1.00
GALVFN1-2	GALVFN(1-2)-ST	2	Galvanizing Furnaces	64.00
GALFUG	BOXANN1-22	22	Box Annealing Furnaces	5.00
TF1	TFST-1	1	Hot Mill Tunnel Furnaces	150.00

Emission Unit ID(s)	Emission Point ID(s)	Number of Units	Unit Description	MDHI(1) (mmBtu/hr)
SLAG-CUT	SLAG-CUT-NG	1	Slag Cutting Torch	2.40
ASP	ASP-1	1	Water Bath Vaporizer	11.00

(1) Individual unit MDHI. Aggregate MDHI of all units = 547.40 mmBtu/hr.
(2) Direct process heat: exhaust vents inside the Melt Shop.

Auxiliary Processes/Equipment

Air Separation Unit

The proposed facility will include an air separation plant to supply process gases, such as nitrogen and oxygen, to various facility operations. The air separation plant will include a 11.00 mmBtu/hr natural gas-fired Water Bath Vaporizer (ASP), an emergency generator, and a cooling tower (CT8). The Water Bath Vaporizer is a backup unit employed when the air separation plant is down, or the nitrogen or oxygen demand is more than the air separation plant is generating. During these events, liquefied gas maintained in storage tanks is passed through the Water Bath Vaporizer to vaporize the liquefied gas prior to distributing the gas to the process operations.

Storage Tanks

Nucor has proposed the use of twenty-four (24) fixed roof storage tanks 1,000 gallons or larger and five (5) open degreasing tanks as shown in the following table:

Table 4: Storage Tanks Information(1)

Tank ID(s)	Material Stored	Tank Size (gallons)	Throughput (gallons/yr)	Pollutant	BACT	Subpart Kb?(2)
T1	Diesel	5,000	365,000	VOCs	Submerged Fill White Shell(3)	N
T2 - T4	Diesel	1,000	365,000	VOCs		N
T5 - T6	Diesel	2,000	365,000	VOCs		N
T7	Gasoline	1,000	365,000	VOCs		N
T8 - T9	Hydraulic Oil	5,000	365,000	VOCs		N
T10 - T15	HCl	26,400	1,200,000	HCl	n/a	N
T16 - T23	Spent Pickle Liquid	26,400	900,000	HCl	n/a	N
T24	Used Oil	5,000	365,000	VOCs	Submerged Fill White Shell(3)	N
T25 - T29(4)	Cold Degreaser	80	n/a	VOCs	Work Practice Standards	N

(1) The Tank Size and throughput are given on a per-tank basis where multiple tanks are grouped together.
(2) Shows if the requirements of 40 CFR 60, Subpart Kb are applicable to the storage tank.
(3) A white shell improves the heat radiation off the tanks from the sun thereby keeping the tanks cooler, lessening the volatilization of the stored material.
(4) These tanks are inside and open. Work Practice standards are given under 4.1.7(f) of the draft permit.

Emergency Engines

Nucor has proposed the use of six (6) 2,000 horsepower (hp) natural gas-fired Emergency Engines (EMGEN1 through EMGEN6) to generate backup power at the facility in the event of a power disruption. The specific make and model of these engines has not yet been determined, but will not exceed 2,000 hp and will be fired by pipeline-quality natural gas (PNG).

Cooling Towers

Nucor has proposed the use of eight (8) Cooling Towers (CT1 though CT8) that will provide contact and non-contact cooling water to various processes throughout the mill. A cooling tower extracts waste heat into the atmosphere through the evaporative cooling of a water stream to a lower temperature. A direct contact (or open-circuit) cooling tower (DCW) operates by having the cooling water come into direct contact with the material being cooled. A non-contact (or closed-circuit) cooling tower (ICW) operates without the cooling water coming into direct contact with the material being cooled. Emissions are possible with cooling towers as particulate matter may become entrained with the water droplets of the vapor cloud as it released into the ambient air. Each of the Cooling Towers will be constructed with a high efficiency drift eliminator (rated to limit the vapor escape of only 0.0005% of the total water vapor) to mitigate the drift of the entrained droplets (BACT control technology). The Cooling Towers proposed for the facility are shown in the following table:

Table 5: Cooling Tower Information

Emission ID No.	Description	Max Design Capacity Water Circulation Pump (gal/min)
CT1	Melt Shop ICW Cooling Tower	52,000
CT2	Melt Shop DCW Cooling Tower	5,900
CT3	Rolling Mill ICW Cooling Tower	8,500
CT4	Rolling Mill DCW Cooling Tower	22,750
CT5	Rolling Mill/Quench/ACC Cooling Tower	90,000
CT6	Light Plate DCW Cooling Tower	8,000
CT7	Heavy Plate DCW Cooling Tower	3,000
CT8	Air Separation Plant Cooling Tower	14,000

Haulroads

The proposed facility will include paved and unpaved haulroads and mobile work areas. The paved roads are calculated to be an aggregate of 3.21 miles as broken up into ten (10) sections. The unpaved roads are calculated to be an aggregate of 1.24 miles as broken up into nine (9) sections. The roads will be vacuum swept (paved) and watered (paved and unpaved) as needed to mitigate the emissions of road dust from their use.

SITE INSPECTION

On February 10, 2022, the writer conducted an inspection of the proposed location of Nucor's West Virginia Steel Mill. The proposed site is located along the Kanawha River near the unincorporated community of Apple Grove, Mason County, WV approximately 13.5 miles south of Point Pleasant, Mason County, WV. The writer was accompanied on the inspection by Mr. Jon McClung and Rex Compston of the WVDAQ. Observations from the inspection include:

- The proposed location of the facility is just south of APG Polytech, LLC's Apple Grove Plant between the Ohio River to the west and WV State Route (SR) 2 to the east. South of the proposed location the Ohio River and SR 2 come close together to pinch off the site. At this point there is located the small unincorporated community of Ashton, WV;

- The Apple Grove location is a well-known 1,370 acre site owned by America Electric Power (AEP) long promoted for proposed development. More information concerning the site can be found on the Mason County Economic Development Authority website:

  http://properties.masoncounty.org/site.php?site_id=2;

- As noted, the small communities of Apple Grove (25502), Mercer's Bottom (25502), and Ashton (25503) are the three (3) nearest residential areas to the proposed location with Apple Grove generally east, Mercer's Bottom southeast, and Ashton generally south-southeast of the location. The Ashton Elementary School is located approximately 1.5 miles south-southeast of the southern end of the proposed location;

- The topography of the proposed location is typical of Ohio River bottomland (with an approximate elevation of about 570 feet above sea-level) with the river to the west flowing from the north-northwest to south-southeast. The proposed location is generally flat between the river to the west and SR 2 to the east. Beyond SR 2, low hills begin rising to the east (the elevation of these hills generally don't exceed 850 feet above sea level within several miles of the location). Due to the river's gentle turn to the south east at this point, there is very little bottomland across the river in Ohio with low hills rising almost immediately (the elevation of these hills generally don't exceed 900 feet above sea level within several miles of the location);

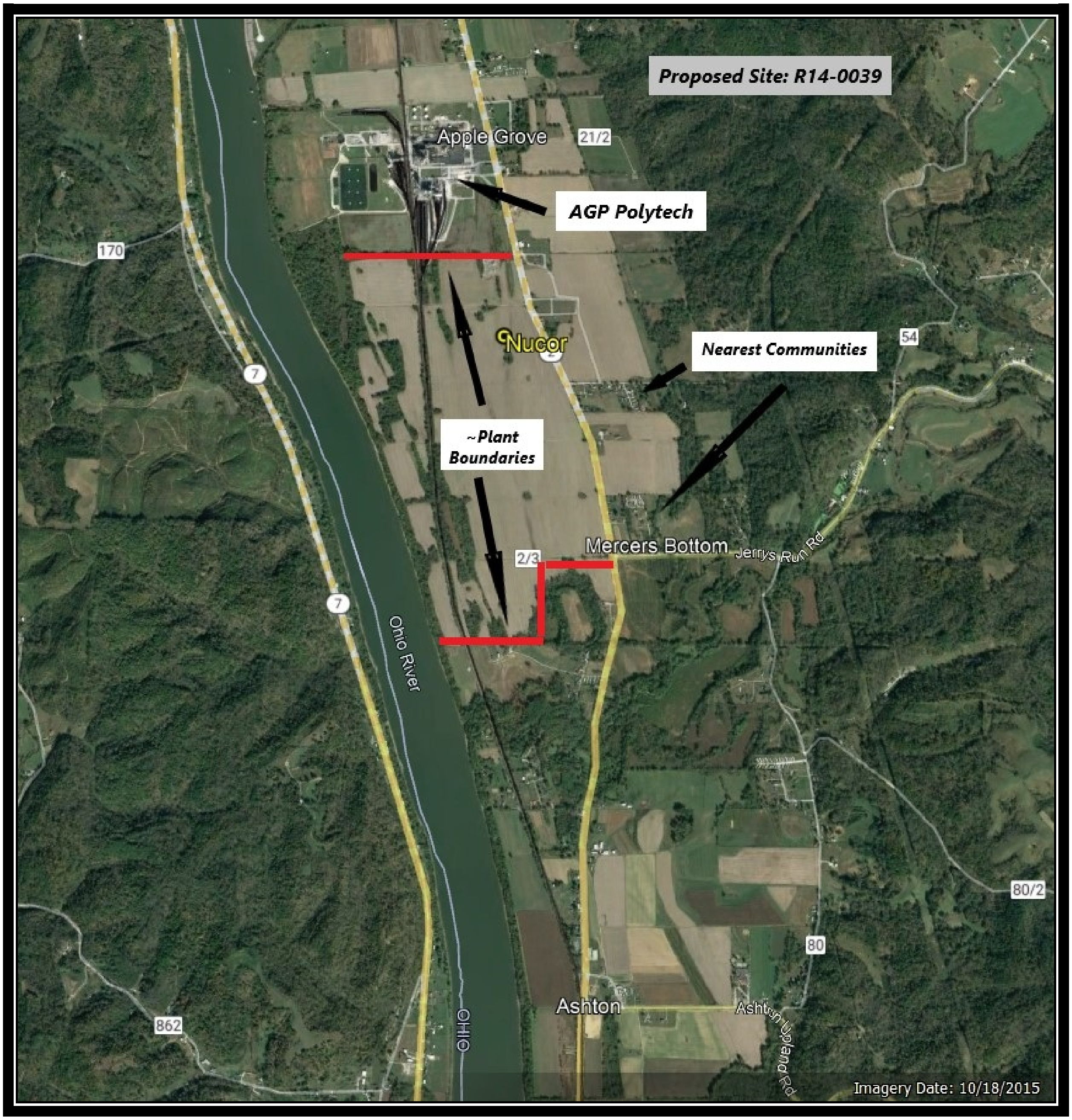
- As noted, immediately north of the proposed site is APG Polytech, LLC's Apple Grove Plant (053-00054). This facility manufactures polyester resin and, according to the most recent Title V permit application, has a PTE of all pollutants of less than 100 TPY;

- The area around the proposed site is generally rural in nature with an industrial presence as noted just north of the proposed site and another industrial facility - ICL-IP America Inc's Gallopolis Ferry Facility - located approximately 8.21 miles north of the site;

- At the time of the inspection, a small drilling rig was on site presumably extracting samples for subsurface investigations. No construction of any permanent foundation work or similar activity was seen; and

- The nearest occupied residences will be directly east of the proposed facility across SR 2 along Hereford Lane (County Route 24).

The following is labeled satellite imagery of the proposed site of the West Virginia Steel Mill:



Directions: [Latitude/Longitude: 38.65536/-82.16853] From the junction of WV SR 35 and SR 2 just south of Point Pleasant, travel approximately 14.2 miles south on SR 2 and the proposed location will be on the right.

AIR EMISSIONS AND CALCULATION METHODOLOGIES

Nucor included as Attachment N in the permit application (pp 171-237) detailed air emissions calculations for the proposed West Virginia Steel Mill. The following will summarize the calculation methodologies used by Nucor to calculate the PTE of the proposed facility. See Attachment N in the permit application for the complete and detailed PTE calculations.

Material Handling

Emissions of particulate matter may occur from the unloading, transporting, conveying, screening, crushing, and storing of raw materials, collected baghouse material, and slag from the steel manufacturing process. Where emission sources (silos, enclosed conveyer transfer points, crushing, etc.) are controlled by fabric filters/baghouses/bin vents, the filterable particulate matter emission estimate for the controlled source was based on the maximum outlet concentration of the filter. For uncontrolled emission sources, or where controlled through the use of enclosures or wet suppression, emissions were calculated using the appropriate section of AP-42 (AP-42 is a database of emission factors maintained by USEPA) or from other acceptable guidance. Controlled emissions were then calculated using a reasonable control efficiency based on the type of enclosure or other mitigating factor. See the following table for the source of various material handling emission factors used by Nucor:

Table 6: Material Handling PM Emission Factor Sources

Emission Source	Material	Emission Factors Source	Notes
Truck Dumps Conveyer Transfer Points & Other Drops Not Evacuated to a Filter	Various	AP-42, Section 13.2.4 (11/06)	Emission factor calculation includes material moisture content and average wind speed.(1)
Slag Loader/Truck Drops	Slag	AP-42, Table 12.5-4 (10/86)	Low-Silt Slag (1)
Slag Conveyer Drops	Slag	AP-42, Table 11.19.2-2 (8/04)	Uncontrolled Conveyer Transfer Point(2)
Slag Crushing	Slag	AP-42, Table 11.19.2-2 (8/04)	Tertiary Factor + Drop(2)
Slag Screening			Uncontrolled Factor + Drop(2)
Open Storage	Scrap Slag	TCEQ Draft RG 058 Rock Crushing Plants, Section 5.	Considered Active Piles 365 days/yr (1)
Paved Haulroads & Mobile Work Areas	n/a	AP-42 Section 13.2.1 (1/11)	Based on average truck weights, surface material silt content, and number of precipitation days. A control percentage of 90% was used for sweeping/watering.
Unpaved Haulroads & Mobile Work Areas	n/a	AP-42 Section 13.2.2 (11/06)	Based on average truck weights, surface material silt content, and number of precipitation days. A control percentage of 90% was used for watering.
Sources Controlled by Baghouses/Fabric Filters	All	Maximum Outlet Loading Concentration(1)	Calculated with maximum outward airflow.

(1) Uses control percentages from TCEQ Draft RG 058 Rock Crushing Plants, Table 7.
(2) Uses uncontrolled emission factors and applies control percentage for wetted material as provided for in AP-42, Section 11.19.2.
(3) As based on vendor information or vendor guarantees.

For sources not controlled by a fabric filter/baghouse/bin vent, maximum hourly emissions were based on the worst-case hourly throughput (either as limited by the bottlenecked process or by the capacity of the unit) and, unless otherwise noted, annual emissions were based on a reasonable worst-case estimate of annual throughput. Maximum hourly emissions from the fabric filters/baghouses were based on the maximum expected airflow through the units (in dcfm) and annual emissions were based on 8,760 hours a year of operation. Where appropriate, Nucor adjusted the emission rates of PM_{10} and $PM_{2.5}$ as based on appropriate particle size distribution.

EAFs/LMFs/Casters

Particulate Matter Emissions

As noted above, EAFs/LMFs particulate matter emissions are generated during charging, melting, and tapping processes. Pursuant to requirements in 40 CFR Subpart AAa, Nucor has proposed the use of a direct-shell evacuation control system (DEC system) for control of particulate matter emissions from the EAFs/LMFs. A DEC system is one that maintains a negative pressure within the EAF/LMF above the slag or molten metal and ducts emissions to the control device - in this case an pulse jet fabric filter baghouse for each EAF/LMF combo stack (EAF-1-BH and EAF-2-BH). The DEC is designed to achieve a minimum capture efficiency of 95% of all potential particulate matter emissions when the furnace roof is closed.

The Melt Shop also includes a negative pressure canopy hood inside the Melt Shop that is located over the EAFs/LMFs to capture any particulate matter that is not captured by the DEC. The canopy hood is designed to capture a minimum of 95% of the potential particulate matter emitted by the units and not captured by the DEC or during times of charging when the furnace roof is open (estimated to be a maximum of 4% of the time). The canopy hood also evacuates the captured particulate matter to the EAF baghouses.

Particulate matter that is not captured by the DEC system or the canopy hood is potentially released as fugitives from the Melt Shop building openings. The enclosed Melt Shop building, when openings are properly mitigated, is able to capture another 90% of the potential fugitive emissions. These emissions are considered to fall out inside the building. Therefore, of the total uncontrolled particulate matter emissions generated in the EAFs/LMS, 0.025% is calculated to be emitted as fugitive emissions from the Melt Shop building openings when the furnace roof is closed and 0.50% when during furnace charging.

The Casters also generate potential emissions inside the Melt Shop but are not connected to the DEC. However, the Casters do benefit from the 95% collection efficiency of the canopy hood and the 90% collection efficiency of the Melt Shop building enclosure. Therefore, of the total uncontrolled particulate matter emissions generated in the Casters, 0.50% is calculated to be emitted as fugitive emissions from the Melt Shop building openings.

Based on the configuration of the Melt Shop as described above, there are three emission points: EAF Baghouses (BHST-1/2) and the Melt Shop building openings (various points). The particulate matter emissions from the EAF Baghouses are based on the outlet grain loading of the control devices (PM - 0.0018 gr/dscf, $PM_{2.5}/PM_{10}$ - 0.0052 gr/dscf). These limits are based on vendor guarantees in turn based on the emission limits given in 40 CFR 60, Subpart AAa and 40 CFR 63, Subpart YYYYY. Maximum hourly emissions from these emission points are then based on the volumetric flow rates being pulled through each of the baghouses when the EAFs are being operated at the normal maximum production rate of 171 tons-steel/hr. The annual emissions from these emission points are then conservatively based on the operation of the EAFs at that volumetric flow rate for 8,760 hours/yr.

The amount of fugitive emissions from the Melt Shop building openings are based on the total uncontrolled particulate matter generated in the EAFs/LMFs (MSFUG) and Casters (CASTFUG) with the control percentages applied as described above. The uncontrolled particulate matter emission factors (PM - 11.3 lbs/ton-steel, $PM_{2.5}/PM_{10}$ - 6.55 lbs/ton-steel) for the EAFs/LMFs are based on the Energy and Environmental Profile of the U.S. Iron and Steel Industry, U.S. Department of Energy (Aug. 2000), Table 5-3, for EAFs/LMFs (melting, refining, charging, tapping, and slagging alloy steel). The uncontrolled particulate matter emission factors for the Casters (PM - 0.12 lbs/ton-steel, $PM_{2.5}/PM_{10}$ - 0.12 lbs/ton-steel) are based on AP-42, Section 12.5.1 (04/2009) - "Steel Minimills," Table 12.5.1-2, for uncontrolled ladle heating and transfer and continuous casting.

Both the maximum hourly MSFUG and CASTFUG emissions are calculated based on a maximum processing rate of 342 tons-steel/hour and the maximum annual emissions are based on a maximum processing rate of 3,000,000 tons-steel/year.

Metals and Fluoride

The emissions of Lead (Pb) and Fluoride (F) from the EAFs/LMFs Baghouses are based on emission factors (0.00045 lb-Pb/ton-steel and 0.00350 lb-F/ton-steel, respectively) that are in turn based on the BACT determination for these pollutants. The emissions of other potential metal pollutants: Arsenic (Ar), Beryllium (Be), Cadmium (Cd), Chromium (Cr), Mercury (Hg), Manganese (Mn), and Nickel (N), are based on emission factors taken from AP-42, Section 12.5.1 (04/2009) - "Steel Minimills"- Table 12.5.1-9. The maximum hourly emissions of Metals and Fluoride from the individual EAFs Baghouses are calculated based on a maximum production rate of 171 tons-steel/hour and the maximum annual emissions are based on a maximum production rate of 1,500,000 tons-steel/year. The fugitive emissions of Metals and Fluoride are conservatively based on a 5% escape of these pollutants with no credit taken for additional control from the canopy hood and the building enclosure.

Non-Particulate Pollutants (not GHGs)

Like the particulate matter emissions, the emissions of non-particulate pollutants (CO, NO_x, SO_2, VOCs, and GHGs) from the EAFs/LMFs (the Casters do not have any non-particulate matter emissions) are emitted from three (3) sources: both EAF Baghouses (BHST-1/2) and the Melt Shop building openings (various points). Different than the particulate matter emissions, however, the non-particulate pollutants do not benefit from any control efficiency based on capture and ducting to the baghouse. The uncontrolled emission factors for each of the listed pollutants, except for

GHGs, are based on the selected aggregate (EAF and LMF) BACT emission rates (CO - 2.02 lb-CO/ton-steel, NO_x - 0.35 lb-NO_x/ton-steel, SO_2 - 0.24 lb-SO_2/ton-steel, VOCs 0.098 lb-VOC/ton-steel) for each pollutant. A capture efficiency of 95% was used to calculate the amount of the emissions that were directed by the DEC to the Baghouse stacks. The remaining 5% were assumed to escape from the DEC and conservatively not captured by the canopy hood and released from the building openings as fugitive emissions (MSFUG).

The maximum hourly emissions from each Baghouse stack was based on a steel production rate of 171 tons-steel/hr in each EAF and the maximum annual emissions were based on an annual production rate in each EAF of 1,500,000 tons-steel/year.

GHGs

Greenhouse gases (GHGs) is collectively the air pollutant defined in 40 CFR 86, Section §86.1818-12(a)(1) as the aggregate group of six greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6). GHGs are quantified by determining the CO_2 equivalent emissions (CO_2e) and are computed by multiplying the mass amount of emissions for each of the six greenhouse gases by the gas's associated global warming potential published at Table A-1 of 40 CFR 98, Subpart A - “Global Warming Potentials.”

The emissions of GHGs from the EAFs/LMFs, as calculated using CO_2e, is based on two sources of emissions in the EAFs: (1) natural gas-combustion in the EAF’s 22.00 mmBtu/hr oxyfuel burners and (2) carbon atoms that are released from various materials present in the furnace during melting operations that are subsequently oxidized and emitted as CO_2.

Emission factors (CO_2 - 116.98 lb/mmBtu, CH_4 - 0.0022 lb/mmBtu, N_2O - 0.00022 lb/mmBtu) for the combustion of natural gas in the oxyfuel burners are taken from Tables C-1 (“Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel”) and C-2 (“Default CH_4 and N_2O Emission Factors for Various Types of Fuel”) of 40 CFR Part 98 - “Mandatory Greenhouse Gas Reporting.” The maximum hourly emissions from the oxyfuel burners were based on the MDHI of the units and the maximum annual emissions were based conservatively on the units operating 8,760 hours/year. As with the other non-particulate pollutants, a capture efficiency of 95% was used to calculate the amount of the CO_2e emissions that were directed by the DEC to the Baghouse stacks. The remaining 5% were assumed to escape from the DEC and conservatively not captured by the canopy hood and released from the building openings as fugitive emissions (MSFUG).

Oxidized carbon emissions (CO_2) from the various materials present in the EAFs/LMFs during melting operations are based on the weight fraction of carbon in each of the materials (DRI, Scrap, Fluxing Agents, the electrodes, carbon agents, the molten steel itself, slag, and residue material) used and maximum hourly and annual throughput of the materials. The maximum hourly emissions are then based on all of the carbon oxidizing to CO_2. As with the GHGs produced from natural gas combustion in the oxyfuel burners, a capture efficiency of 95% was used to calculate the amount of the CO_2e emissions that were directed by the DEC to the Baghouse stacks. The remaining 5% were assumed to escape from the DEC and conservatively not captured by the canopy hood and released from the building openings as fugitive emissions (MSFUG).

Finally, the CO_2e emissions from the EAF Baghouse stacks (BHST-1/2) and as emitted from the Melt Shop building openings (MSFUG) were a combination of the emissions from the two sources: the oxyfuel burners and the carbon released and oxidized from the charged materials.

Vacuum Tank Degassers

As discussed above, a portion of the steel will be further refined in the VTD operations to reduce/eliminate dissolved gases (especially hydrogen, nitrogen, and carbon). The offgases from each VTD is captured and first directed through a particulate matter filter (with a maximum outlet grain loading of 0.0083 gr/dscf) to protect the mechanical pumps from particulate matter prior to combustion in a 12.37 mmBtu/hr flare. The flare is used primarily to control CO, as the degassing process primarily generates CO emissions due to the release of carbon from the steel and partial oxidation to CO. Each flare will have a minimum DRE of 98% for CO. Additional NO_x and GHG emissions are generated from the products of combustion from each flare's combustion of the offgases and the use of natural gas in the flare's burners. Trace amounts of SO_2 and VOCs also may be emitted from the use of natural gas in the flare's burners. Emission factors for these pollutants are based on AP-42, Section 13.5 - "Industrial Flares," Table 13.5-1 (NO_x - 0.068 lb/mmBtu, VOCs - 0.14 lb/mmBtu), AP-42 Section 1.4. - "Natural Gas Combustion," Table 1.4-2 (SO_2 - 0.6 lb/mmscf), and and 40 CFR Part 98 - "Mandatory Greenhouse Gas Reporting," Tables C-1 and C-2 (CO_2 - 116.98 lb/mmBtu, CH_4 - 0.0022 lb/mmBtu, N_2O - 0.00022 lb/mmBtu).

Natural Gas Combustion Exhaust Emissions

The proposed facility contains various natural gas-fired combustion devices (not including the Emergency Engines that will be discussed below) that provide direct and indirect process heat to the facility. With the exception of the NO_x emissions from the Box Annealing Furnaces, Galvanizing Furnaces, and the Hot Mill Tunnel Furnace, the emission factors for all units were based on the emission factors provided for natural gas combustion as given in AP-42 Section 1.4. - "Natural Gas Combustion," Tables 1.4-1/2 (CO - 84 lbs/mmscf, NO_x - 100 lbs/mmscf, $PM_{2.5}/PM_{10}$ (including condensables)- 7.6 lbs/mmscf, PM (filterable only)- 1.9 lbs/mmscf, SO_2 - 0.6 lb/mmscf, VOCs - 5.5 lb/mmscf, HAPs - various by speciated HAP), and 40 CFR Part 98 - "Mandatory Greenhouse Gas Reporting," Tables C-1 and C-2 (CO_2 - 116.98 lb/mmBtu, CH_4 - 0.0022 lb/mmBtu, N_2O - 0.00022 lb/mmBtu).

The AP-42 Section 1.4. emission factors were converted to lb/mmBtu using a natural gas heat content of 1,020 Btu/scf. A NO_x emission factor of 0.05 lb/mmBtu was used for the Box Annealing Furnaces and Galvanizing Furnaces and 0.07 lb/mmBtu was used for the Hot Mill Tunnel Furnace. These emission factors were based on the BACT emission limit for the units. Maximum hourly emissions for all units were based on the MDHI of the units and annual emissions were based on operation of 8,760 hours per year. All units utilize Low-NO_x Burner technology to limit NO_x emissions.

As noted, some of the units (see Table 3) emit directly inside the Melt Shop and are emitted from the Melt Shop building openings (identified as MSFUG) and are therefore classified as fugitive emissions. To be conservative, all combust exhaust emissions from units that emit directly inside the Melt Shop are considered to be emitted as fugitive emissions from the Melt Shop openings.

Hot and Cold Milling

Particulate matter emissions generated from the Rolling Mill (RM-BH), Tandem Cold Mill (TCMST), Standalone Temper Mill (STMST), and Skin Pass Mills (SPMST1/2) are captured by the associated baghouse or mist eliminator/scrubber prior to release. No other pollutants are emitted from these units. The controlled emissions from each unit were based on the BACT determinations for each unit set at the appropriate outlet grain loading rate. The outlet grain loading rates for each control device can be seen in Table A-4 of Appendix A attached to the draft permit. Maximum hourly emissions from these emission points are then based on the volumetric flow rates being pulled through each of the control devices when the associated mills are being operated at the maximum production rates. The annual emissions from these emission points are then conservatively based on the operation at that volumetric flow rate for 8,760 hours/yr.

Cleaning, Pickling and Galvanizing

Particulate matter emissions generated from the Pickling Line (PLST-1), Pickling Line Scale Breaker (PKLSB), the Cleaning Sections (CGL(1/2)-ST1), and the Passivation Sections (CGL(1/2)-ST2) are all captured by the associated baghouse or scrubber prior to release. The controlled emissions from each unit were based on the BACT determinations for each unit set at the appropriate outlet grain loading rate. The outlet grain loading rates for each control device can be seen in Table A-4 of Appendix A attached to the draft permit. Maximum hourly emissions from these emission points are then based on the volumetric flow rates being pulled through each of the control devices when the associated lines are being operated at the maximum production rates. The annual emissions from these emission points are then conservatively based on the operation at that volumetric flow rate for 8,760 hours/yr.

The emissions of HCl from the Pickling Line (PLST-1), as controlled and emitted after the Pickling Line Scrubber (PKL1-SCR), were based on a vendor guaranteed HCl outlet concentration in the scrubber that would not exceed 6 ppm_v. The maximum hourly HCl emission rate was again based on the volumetric flow rate being pulled through the Pickling Line Scrubber while being operated at the maximum production rate. The annual emissions from this emission point was then conservatively based on that volumetric flow rate for 8,760 hours/yr.

Slag Cutting

Larger pieces of slag may need to be cut prior to processing. This is done with the use of a 2.4 mmBtu/hr natural gas-fired slag torch (SLAG-CUT-NG). The combustion exhaust emissions generated by this torch are calculated using the methodology as described under Natural Gas Combustion Exhaust Emissions above. Particulate matter emissions generated from the Slag Cutting (SLAG-CUT-BH) are captured by a baghouse prior to release. The controlled emissions from Slag Cutting was based on an outlet grain loading limit of 0.001 gr/dscfm (all emissions considered $PM_{2.5}$ or less). This limit was based on the BACT determination and will be guaranteed by the vendor. Maximum hourly emissions from the Slag Cutting was then based on the volumetric flow rate being pulled through each the baghouse while cutting is being performed. The annual emissions from this emission point was then very conservatively based on operation at that volumetric flow rate for 8,760 hours/yr.

Storage Tanks

Nucor provided an estimate of the emissions of VOCs (Tanks T1-T9 and Tanks T24-T29) or HCl (Tanks T10 - T23) produced from each storage tank proposed for the facility. The emissions for all fixed roof tanks, excluding the open topped indoor Cold Degreaser tanks (T25-T29), were calculated using the methodology and equations for fixed roof tanks taken from AP-42, Section 7.1 - "Organic Liquid Storage Tanks." The total "routine" emissions from each fixed roof storage tank are the combination of the calculated "standing loss" and "working loss." The standing loss refers to the loss of vapors as a result of tank vapor space breathing (resulting from temperature and pressure differences) that occurs continuously when the tank is storing liquid. The working loss refers to the loss of vapors as a result of tank filling or emptying operations. Standing losses are independent of storage tank throughput while working losses are dependent on throughput. The equations use many variables based on the size and construction of the tank, the vapor pressure of the material that is stored, the throughput of that material (see Table 4), and the temperature data at the site of the tank.

The emissions of VOCs from the open topped Cold Degreaser tanks (T25-T29) are based on the equations from taken from the EPA document "Methods for Estimating Air Emissions from Chemical Manufacturing Facilities," Volume II, Chapter 16, Section 3.7.1 - "Evaporation from an Open Top Vessel or a Spill." The equations use the area of open material storage (in this case 3.14 ft^2 for each tank), the vapor pressure of the material being stored (0.019 lb/in^2), and temperature data to determine the evaporation rate of the liquid being stored. The maximum evaporation rate is used to calculate the maximum hourly emission rate of each tank and the annual emissions are based on each tank emitting at this rate for 8,760 hours/year.

Cooling Towers

Nucor has proposed the use of eight (8) Cooling Towers (CT1 though CT8) that will provide contact and non-contact cooling water to various processes throughout the mill. Emissions are possible with cooling towers as particulate matter may become entrained within the water droplets of the vapor cloud as it released into the ambient air. Nucor calculated the potential emissions from the cooling towers based on the expected worst-case total dissolved solids (TDS - 1,500 ppm_w) in the cooling water, the maximum flow rate of water used in the cooling towers (varies by cooling tower, see Table 5), and the estimated maximum drift rate (0.0005% based on the use of the high-efficiency drift eliminators as BACT) of the plume. Annual emissions from the cooling towers are based on operations of 8,760 hours per year.

*Emergency Engine*s

Potential emissions from the proposed six (6) 2,000 horsepower (hp) natural gas-fired Emergency Engines (EMGEN1 through EMGEN6) were based on the applicable limits as given under 40 CFR 60, Subpart JJJJ (CO - 2.0 g/hp-hr, NO_x - 4.0 g/hp-hr, and VOCs - 1.0 g/hp-hr), worst-case emission factors obtained from AP-42, Section 3.2 - "Natural Gas-fired Reciprocating Engines", Tables 3.2-1/2 (SO_2 - 0.000588 lb/mmBtu, $PM_{2.5}$/PM_{10}/PM - 0.0483 lb/mmBtu, speciated HAPs - varies by HAP), and 40 CFR Part 98 - "Mandatory Greenhouse Gas Reporting," Tables C-1 and C-2 (CO_2 - 116.98 lb/mmBtu, CH_4 - 0.0022 lb/mmBtu, N_2O - 0.00022 lb/mmBtu).

The maximum hourly emissions were based on the rated horsepower of the engines and the MDHI of the engines (14.00 mmBtu/hr as based on a brake-specific fuel consumption of 7,000 Btu/hp-hr). Annual emissions were based on 100 hours per year of non-emergency operation.

Emissions Summary

Based on the above estimation methodology as submitted in Appendix A of the permit application, the facility-wide PTE of the proposed West Virginia Steel Mill is given below in Table 7. A more detailed facility-wide PTE is given in Attachment N of the permit application (p 180).

Table 7: West Virginia Steel Mill Annual PTE

Sources	PTE (ton/year)									
	CO	NO_x	$PM_{2.5}$(1)	PM_{10}(1)	PM(2)	PM(3)	SO_2	VOC	HAPs(4)	GHGs
Material Handling(5)	0.00	0.00	16.34	30.59	74.98	74.98	0.00	0.00	0.000	0
Melt Shop	3,030.00	525.00	435.92	435.92	157.16	438.90	360.00	147.00	1.600	377,594
PNG Combustion	193.48	161.84	17.51	17.51	4.38	17.51	1.38	12.67	3.410	275,114
Hot & Cold Mill	29.87	7.38	96.42	129.61	155.58	155.58	0.06	15.19	1.290	15,007
Cooling Towers	0.00	0.00	3.36	3.36	3.36	3.36	0.00	0.00	0.000	0
Emergency Engines	5.29	2.65	0.20	0.23	0.20	0.20	0.003	1.32	0.340	492
Storage Tanks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92	0.120	0
Other	3.97	4.72	0.36	0.36	0.09	0.36	0.06	0.26	0.090	5,642
Total(5)	***3,262.61***	***701.59***	***570.11***	***617.58***	***395.75***	***690.89***	***361.50***	***178.36***	***6.850***	***673,849***

(1) Includes condensables where applicable.
(2) Filterable only.
(3) Includes filterable and condensable.
(4) As the PTE of all individual HAPs are less than 10 TPY (the highest individual HAP emission rate is 4.43 TPY for n-Hexane) and the PTE of total HAPs is less than 25 TPY, the proposed WV Steel Mill is defined as a minor (area) source of HAPs for purposes of 45CSR30, 40 CFR 61, and 40 CFR 63.
(5) Includes particulate emissions from the Slag Cutting operations.
(6) Some small difference in total emissions may occur in comparison with those in the permit application due to rounding.

REGULATORY APPLICABILITY

The proposed West Virginia Steel Mill is subject to substantive requirements in the following state and federal air quality rules and regulations:

Table 8: Applicable State and Federal Air Quality Rules

State Air Quality Rules	
Emissions Standards	
45CSR2	To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers
45CSR6	To Prevent and Control Particulate Air Pollution from Combustion of Refuse
45CSR7	To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations
45CSR10	To Prevent and Control Air Pollution from the Emission of Sulfur Oxides
Permitting Programs and Administrative Rules	
45CSR13	Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation
45CSR14	Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration
45CSR30	Requirements for Operating Permits
Federal Air Quality Rules	
New Source Performance Standards (NSPS) - 40 CFR 60	
Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
Subpart AAa	Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983
Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
Maximum Achievable Control Technology (MACT) - 40 CFR 63	
Subpart ZZZZ	National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
Subpart YYYYY	National Emission Standards for Hazardous Air Pollutants for Area Sources: Ferroalloys Production Facilities
Subpart CCCCCC	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities

Each applicable rule (and any rule with questionable non-applicability) and Nucor's proposed compliance therewith will be summarized below. Nucor submitted a detailed regulatory applicability discussion as Section 3.0 in the permit application (p 20).

WV State Air Quality Rules

45CSR2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

45CSR2 "*establishes emission limitations for smoke and particulate matter which are discharged from fuel burning units*." A fuel burning unit is defined under 45CSR2 as any "*furnace, boiler apparatus, device, mechanism, stack or structure used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer.*" Additionally, the definition of "indirect heat exchanger" specifically excludes process heaters, which are defined as "*a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst.*" Based on these definitions, 45CSR2 will apply only to the 11 mmBtu/hr Water Bath Vaporizer (ASP). The other combustion units at the proposed facility do not use indirect heat transfer and are, therefore, not defined as fuel burning units under 45CSR2.

45CSR2 Opacity Standard - Section 3.1

Pursuant to 45CSR2, Section 3.1, the Water Bath Vaporizer are subject to an opacity limit of 10%. Proper maintenance and operation of the units (and the use of natural gas as fuel) should keep the opacity of the units well below 10% during normal operations.

45CSR2 Weight Emission Standard - Section 4.1(b)

The facility-wide allowable particulate matter emission rate for the applicable fuel burning unit noted above, identified as a Type "b" fuel burning unit, per 45CSR2, Section 4.1(b), is the product of 0.09 and the total design heat input of the applicable unit in million Btu per hour.

The maximum aggregate design heat input (short-term) of the applicable unit will be 11.00 mmBtu/Hr. Using the above equation, the 45CSR2 particulate matter emission limit will be 0.99 lb/hr. This limit represents filterable particulate matter only and does not include condensable particulate matter. The exemption of condensable particulate matter is located within the 45CSR2 Appendix - which establishes compliance test procedures - by not requiring measurement of the condensable particulate matter. The maximum potential hourly particulate matter emissions during normal operations from the unit (*including* condensables) is estimated to be 0.08 lb/hr. This conservative emission rate is 8.08% of the 45CSR2 limit.

45CSR2 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8

Section 8 of 45CSR2 requires testing for initial compliance with the limits under Section 3 and 4, monitoring for continued compliance, and record-keeping of that compliance. The TMR&R requirements are clarified under 45CSR2A and discussed below.

45CSR2A Applicability - Section 3

Pursuant to 45CSR2, Section 3.1(b), the owner or operator of a "*fuel burning unit(s) which combusts only natural gas shall be exempt from sections 5 and 6.*" Therefore, there are no substantive performance testing or monitoring requirements under 45CSR2 for the proposed Water Bath Vaporizer.

45CSR2A Record-keeping and Reporting Requirements - Section 7

Section 7 sets out the record-keeping requirements that Nucor will have to meet under 45CSR2A for the Water Bath Vaporizer. For units that combust only natural gas, the record-keeping requirements (45CSR§2A-7.1(a)(1)) are limited to the date and time of start-up and shutdown, and the quantity of fuel consumed on a monthly basis.

45CSR6: To Prevent and Control Particulate Air Pollution from Combustion of Refuse

Nucor has proposed the use of a flare (Vacuum Tank Degasser Flares 1 and 2) for control of vapors pulled from each VTG during degassing operations. These flares each meet the definition of an "incinerator" under 45CSR6 and are, therefore, subject to the requirements therein. The substantive requirements applicable to the flare are discussed below.

45CSR6 Emission Standards for Incinerators - Section 4.1

Pursuant to §45-6-4.1, PM emissions from incinerators are limited to a value determined by the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

Nucor has stated that the maximum capacity of each flare is 397 lbs/hour (0.20 tons/hour). Using this value in the above equation produces a PM emission limit of 1.08 lbs/hour. Nucor has estimated that a maximum of 0.08 lbs/hour of particulate matter emissions will be emitted from each flare. This is easily in compliance with the 45CSR6 limit.

45CSR6 Opacity Limits for - Section 4.3, 4.4

Pursuant to §45-6-4.3, and subject to the exemptions under 4.4, the flares each will have a 20% limit on opacity during operation. Proper design and operation of the flares (in compliance with §60.18) should prevent any substantive opacity from the units.

45CSR7: To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations

45CSR7 has requirements to prevent and control particulate matter air pollution from manufacturing processes and associated operations. Pursuant to §45-7-2.20, a "manufacturing process" means "*any action, operation or treatment, embracing chemical, industrial or manufacturing efforts . . . that may emit smoke, particulate matter or gaseous matter.*" 45CSR7 has three substantive requirements potentially applicable to the particulate matter-emitting operations at the West Virginia Steel Mill. These are the opacity requirements under Section 3, the mass emission standards under Section 4, and the fugitive emission standards under Section 5. Each of these sections will be discussed below.

45CSR7 Opacity Standards - Section 3

§45-7-3.1 sets an opacity limit of 20% on all "process source operations." Pursuant to §45-6-2.38, a "source operation" means the "*last operation in a manufacturing process preceding the emission of air contaminants [in] which [the] operation results in the separation of air contaminants from the process materials or in the conversion of the process materials into air contaminants and is not an air pollution abatement operation.*" This language would define all particulate matter emitting sources (excluding natural gas combustion exhaust sources) as "source operations" under 45CSR7 and, therefore, these sources would be subject to the opacity limit (after any applicable control device). Based on the Nucor's proposed use of BACT-level particulate matter controls (such as baghouses, fabric filters, enclosures, water sprays, etc.), these measures shall, when maintained and operated correctly, allow the particulate matter emitting sources to operate in compliance with the 20% opacity limit.

45CSR7 Weight Emission Standards - Section 4

§45-7-4.1 requires that each manufacturing process source operation or duplicate source operation meet a maximum allowable "stack" particulate matter limit based on the weight of material processed through the source operation. As the limit is defined as a "stack" limit (under Table 45-7A), the only applicable emission units (defined as a type 'a' sources) are those that can be defined as non-fugitive in nature. Pursuant to §45-7-4.1, any manufacturing process that has "*a potential to emit less than one (1) pound per hour of particulate matter and an aggregate of less than one thousand (1000) pounds per year for all such sources of particulate matter located at the stationary source*" is exempt from Section 4.1.

For the purposes of Section 4.1, a source of particulate matter emissions that are solely the result of the combustion of natural gas is not considered a "source operation" as defined under §45-7-2.38. This is based on the definition that states a source operation is one that "*result in the separation of air contaminants from the process materials or in the conversion of the process materials into air contaminants.*" Natural gas when solely a fuel does not meet the reasonable definition of a process material. Additionally, the particulate matter limits given under 45CSR7 only address filterable particulate matter, which are only above 25% of total natural gas particulate matter emissions. This determination excludes all natural gas combustion (only) sources from 45CSR7 applicability. See the following table for the 45CSR7 compliance demonstration.

Table 9: 45CSR7 Section 4.1 Compliance[(1)]

Source Operation(s)	EP ID	Source Type	Aggregate PWR (lb/hr)	Table 45-7A Limit (lb/hr)	PTE (lb/hr)	Control Device
EAF/LMFs/Casters	BHST-1	B	684,000	34.78[(2)]	17.03	BH
EAF/LMFs/Casters	BHST-2	B		34.78[(2)]	17.03	BH
Rolling Machine	RM-BH	B	342,000	42.52	10.09	BH
VTG-1	VTGST1	B	684,000	34.78[(2)]	0.08	Filter
VTG-2	VTGST2	B		34.78[(2)]	0.08	Filter
Pickling Line 1	PLST-1	B	684,000	69.57	0.62	SCR
Skin Pass Mill 1	SPMST1	B	684,000	23.19[(2)]	2.11	BH
Skin Pass Mill 2	SPMST2	B		23.19[(2)]	2.11	BH
Pickle Line Scale Breaker	PKLSB	B	684,000	69.57	1.36	BH
Tandem Cold Mill	TCMST	B	684,000	69.57	17.33	BH
Standalone Temper Mill	STM-BH	B	684,000	69.57	0.96	BH
CGL1 - Cleaning Station	CGL1-ST1	B	684,000	34.78[(2)]	0.16	BH
CGL2 - Cleaning Station	CGL2-ST1	B		34.78[(2)]	0.16	BH
CGL1 - Passivation Station	CGL1-ST2	B	684,000	34.78[(2)]	0.24	BH
CGL2 - Passivation Station	CGL2-ST2	B		34.78[(2)]	0.24	BH
Slag Cutting	SLAG-CUT-BH	A	342,000	34.26	0.86	BH
All DRI Handling	Various	A	127,283	34.09	1.81	Various
Scrap Handling	Various	A	439,498	44.58	2.03	Various
Slag Processing	Various	A	716	0.86	0.86	Various
EAF Baghouse Dust Silo 1	EAFVF1	A	3,372	1.85[(2)]	0.09	Filter
EAF Baghouse Dust Silo 2	EAFVF1	A		1.85[(2)]	0.09	Filter
Lime/Carbon/Alloy Handling	Various	A	7,991	7.99	1.96	BHs
Cooling Towers	Various	A	1,501,200	50.00	0.77	DEs

(1) To be conservative, this analysis was done using "duplicate sources" under 45CSR7 and aggregating other sources. Nucor provided a 45CSR7 analysis using only individual sources, and there is a strong case to be made that duplicate source limits don't apply. But as all the sources have more stringent BACT limits below even the more conservative methodology, it is a moot point.

(2) These sources, for a conservative compliance demonstration, are considered "duplicate sources" as defined in 45CSR7. As such, the PWR of all duplicate sources are aggregated and the resulting limit is distributed to each emission point relative to each source's contribution to the total PWR.

(3) For simplicity, and to be extremely conservative, all identified sources (including some fugitive sources that otherwise would not be subject to Section 4.1) are included in this demonstration and only the lowest PWR of any source is used to determine the emission limit. This method is very conservative as 45CSR7 allows the use of the PWR on an emissions-unit basis to calculate the particulate matter limit for that specific emissions unit. As most processes are serial in nature, the aggregate limit (or a value near to it) would apply in most cases on an individual emission-unit basis and not on the aggregate emissions of a group of emission units. Therefore, using the smallest line PWR to determine an aggregate emission limit is considered a reasonable (and very conservative) methodology to determine §45-7-4.1 compliance with a large number of particulate matter sources.

As shown in Table 9, due to the large process weight-rates used in the production of steel and the BACT-level particulate matter controls on particulate matter-emitting units, most of the Table 45-7A limits will be easily met (even using the more conservative compliance demonstration methodology outline in the table).

§45-7-4.2 requires that mineral acids (including HCl) shall not be released from a manufacturing process source operation or duplicate source operation in excess of the quantity given in Table 45-7B. The Pickling Line has the potential to emit HCl from the controlling scrubber. The applicable limit under Table 45-7B for HCl is 210 mg/m^3. The maximum concentration of HCl in the scrubber exhaust was determined to be 6 ppm_v and the aggregate mass emission rate of HCl was 0.25 lbs/hr for the Pickling Line. Using the emission rate and the flow rate (7,185 dscfm), the calculated exhaust concentration is 9.29 mg/m^3. The proposed emission rate is in compliance with the Table 45-7B limits.

<u>45CSR7 Fugitive Emissions - Section 5</u>

Pursuant to §45-7-5.1 and 5.2, each manufacturing process or storage structure generating fugitive particulate matter must include a system to minimize the emissions of fugitive particulate matter. The use of various BACT-level controls (where reasonable) on material transfer points, the use of a vacuum sweeping and watering on the haulroads, and the wetting and management of on-storage pile activity is considered a reasonable system of minimizing the emissions of fugitive particulate matter at the proposed facility.

<u>45CSR7 Reporting and Testing - Section 8</u>

Pursuant to §45-7-8.1, performance testing is only required per the Director's request. The required initial and continuing performance testing required for the proposed facility is given under Section 4.3 of the draft permit. Some 45CSR7 sources are included in the required testing.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

The purpose of 45CSR10 is to "*prevent and control air pollution from the emission of sulfur oxides*." 45CSR10 has requirements limiting SO_2 emissions from "fuel burning units," limiting in-stack SO_2 concentrations of "manufacturing process source operations," and limiting H_2S concentrations in "process gas" streams that are combusted. Each substantive 45CSR10 requirement is discussed below.

45CSR10 Fuel Burning Units - Section 3

As noted under the discussion of 45CSR2 applicability, based on the same definitions therein, the proposed 11 mmBtu/hr Water Bath Vaporizer (ASP) is defined as a "fuel burning unit" and is subject to 45CSR10 under Section 3.

The allowable SO_2 emissions from the applicable fuel burning unit noted above, identified as a Type "b" fuel burning unit in a Priority III Region (which includes Mason County), per 45CSR10, Section 3.3(f), is the product of 3.2 and the total design heat input of all applicable units in million Btus per hour. The maximum aggregate design heat input (short-term) of the Water Bath Vaporizer will be 11.00 mmBtu/hr. Using the above equation results in a SO_2 limit of 35.20 pounds per hour. As the Water Bath Vaporizer is fueled by natural gas, the PTE of this fuel burning unit will be far below this limit at 0.03 lbs-SO_2/hr. This emission rate represents only a trace of the 45CSR10 limit.

45CSR10 Manufacturing Process Source Operations - Section 4.1

Section 4.1 of Rule 10 requires that no in-stack SO_2 concentration exceed 2,000 parts per million by volume (ppm_v) from any manufacturing process source operation except as provided in subdivisions 4.1(a) through 4.1(e). The only emission points with substantive in-stack SO_2 emissions are the EAF Baghouse stacks (BHST-1 and BHST-2). All other emission points with stack SO_2 emissions are on sources where the SO_2 is entirely the product of natural gas combustion. Due to the low sulfur content of pipeline-quality natural gas (PNG), SO_2 emissions from natural gas combustion sources are minimal. All natural gas combustion sources with the exception of the Hot Mill Tunnel Furnaces have SO_2 emissions less than the exemption threshold of 500 lbs/year pursuant to 45CSR§10-4.1(e). However, natural gas combustion exhaust is not considered a "source operation" under 45CSR10 as natural gas is not considered by itself as a "process material." Compliance with the limit for each of the identical EAF Baghouse stacks is given in the following table:

Table 10: 45CSR10, Section 4.1 Compliance Calculation (BHST-1/2)

Data Point	Value
Stack Emission Limit (lbs/hour)	40.36
Exit Gas Volumetric Flow (ACFM)	1,454,016
Exit Gas Temperature (°F)	225
Calculated Concentration (ppmv)	3.62
45CSR§10-4.1(e) Limit (ppmv)	2,000
% of Limit	0.18%

45CSR10 Combustion of Refinery Gas Streams - Section 5

Section 5.1 of Rule 10 prohibits the combustion of any "refinery process gas stream" that contains H_2S in excess of 50 grains for every 100 cubic feet of gas consumed. The offgases pulled from the Vacuum Tank Degasssers could be considered a "refinery process gas stream" under 45CSR10 and are combusted in the VTG Flares. However, based on information from Nucor, these offgases are not expected to contain any detectable amount of H_2S or any other sulfur compounds.

45CSR10 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8

Section 8 of Rule 10 requires performance testing for initial compliance with the limits therein, monitoring for continued compliance, and record-keeping of that compliance. The TMR&R requirements are clarified under 45CSR10A and discussed below.

45CSR10A Applicability - Section 3

Pursuant to §45-10A-3.1(b), for fuel burning units that combust "*natural gas, wood or distillate oil, alone or in combination,*" the units are not subject to the TMR&R Requirements under 45CSR10A. All the applicable fuel burning units under 45CSR10 combust natural gas and are, therefore, exempt from the TMR&R Requirements.

45CSR10A (Manufacturing Process Sources) - Sections 5.2 & 6.2

Pursuant to §45-10A-5.2(a), Nucor shall "*shall conduct or have conducted, compliance tests to determine the compliance of each manufacturing process source with the emission standards set forth in section 4 of 45CSR10.*" The SO_2 performance test required under 4.3.2 of the draft permit will satisfy this requirement.

Pursuant to §45-10A-6.2(a), Nucor shall "*submit, to the Secretary for approval, a monitoring plan for each manufacturing process source(s) that describes the method the owner or operator will use to monitor compliance with the applicable emission standard set forth in section 4 of 45CSR10.*" Nucor has proposed the use of SO_2 CEMS for the applicable BHST-1/2 emission points. Pursuant to §45-10A-6.2(a), use of CEMS shall "*be deemed to satisfy all of the requirements of an approved monitoring plan.*"

45CSR10A (Combustion Sources) - Sections 5.3, 6.3, & 7.1(b)

As stated, as the offgases pulled from VTGs are not expected to contain any detectable levels of H_2S, these sections do not apply.

45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation

The proposed construction of the West Virginia Steel Mill has the potential to emit a regulated pollutant in excess of six (6) lbs/hour and ten (10) TPY (see Attachment N of the permit application) and, therefore, pursuant to §45-13-2.24, the proposed facility is defined as a "stationary source" under 45CSR13. Pursuant to §45-13-5.1, "[n]o person shall cause, suffer, allow or permit the construction . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct." Therefore, Nucor is required to obtain a permit under 45CSR13 for the construction and operation of the proposed facility. It is noted that the proposed facility is also defined as a "major stationary source" under 45CSR14. Consistent with DAQ Policy, permitting actions reviewed under 45CR14 are concurrently reviewed under 45CSR13 and, where there is a additional or overlapping requirements, the DAQ will generally apply the stricter requirement.

As required under §45-13-8.3 ("Notice Level A"), Nucor placed a Class I legal advertisement in a "newspaper of *general circulation* in the area where the source is . . . located." The legal ad ran on January 27, 2022 in the *Point Pleasant Register*. Verification that the legal ad ran was provided on February 15, 2022.

45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration

45CSR14 sets the requirements for the new construction of a "major stationary source" (as defined under §45-14-2.43) of air pollution, on a pollutant-by-pollutant basis, in areas that are in attainment with the National Ambient Air Quality Standards (NAAQS). A proposed facility is defined as a "major stationary source" if, pursuant to §45-14-2.43,

(1) The source is listed as one of the source categories under §45-14-2.43(a) and has a PTE of any regulated pollutant in excess of 100 TPY (including fugitive emissions); or

(2) The source is not a source listed under §45-14-2.43(a) and has a PTE of any regulated pollutant in excess of 250 TPY (not including fugitive emissions).

Additionally, if a proposed source is determined to be a major stationary source under either (1) or (2) above for any single pollutant (with the exception of GHGs), pursuant to §45-14-8.2, Best Available Control Technology (BACT) applies to any additional pollutant proposed to be emitted in "significant" (as defined under §45-14-2.74) amounts. Further, as a result of the Supreme Court's decision in *Utility Air Regulatory Group v. Environmental Protection Agency*, GHGs may not trigger PSD alone, but are subject to PSD review if the emissions of CO_2e exceed a significance threshold of 75,000 TPY *and* if another pollutant triggers PSD review under (1) or (2) above (§45-14-2.80(d)).

The proposed West Virginia Steel Mill will be constructed in Mason County, WV, which is classified as in attainment with all NAAQS. As the proposed facility is listed as one of the source categories under §45-14-2.43(a) - "Iron and Steel Mill Plants" - the proposed facility is defined as a major stationary source based on the following pollutants exceeding a PTE of 100 TPY: Carbon Monoxide (CO), Oxides of Nitrogen (NO_x), Particulate Matter (PM_{10}, $PM_{2.5}$, and filterable particulate matter), Sulfur Dioxide (SO_2), and Volatile Organic Compounds (VOCs).

PSD review is additionally required for the pollutants of Greenhouse Gases (GHGs), Lead (Pb), and Fluorides (F) based on the individual significance thresholds for those pollutants (see Table 11 below). The substantive requirements of a PSD review includes a BACT analysis, an air dispersion modeling analysis (for applicable pollutants), a review of potential impacts on Federal Class 1 areas, and an additional impacts analysis. Each of these will be discussed in detail under the section PSD REVIEW REQUIREMENTS below.

Table 11: Pollutants Subject to PSD

Pollutant	Potential-To-Emit (TPY)	Significance Level (TPY)	PSD (Y/N)
CO	3,413	100	Y
NO_x	850	40	Y
$PM_{2.5}$	700	10	Y
PM_{10}	731	15	Y
Filterable PM	489	25	Y
SO_2	362	40	Y
VOCs	728	40	Y
GHGs (CO_2e)	859,430	75,000	Y
Lead	0.68	0.6	Y
Sulfuric Acid Mist	0.00	7	N
Flourides	5.25	3	Y
Vinyl Chroloride	0.00	1	N
Total Reduced Sulfur	0.00	10	N
Reduced Sulfur Compounds	0.00	10	N

45CSR30: Requirements for Operating Permits

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The proposed West Virginia Steel Mill will meet the definition of a "major source under §112 of the Clean Air Act" as outlined under §45-30-2.26 and clarified (fugitive policy) under 45CSR30b. The proposed facility-wide PTE (see Table 7) of a regulated pollutant exceeds100 TPY and, therefore, the source is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

<u>Federal Air Quality Rules</u>

40 CFR 60, Subpart Db: Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units - (Non-Applicable)

40 CFR 60, Subpart Db is the federal NSPS for industrial/commercial/institutional "steam generating units" (1) for which construction, modification, or reconstruction is commenced after June 19, 1984, (2) that have an MDHI greater than 100 mmBtu/hr, and (3) meet the definition of a "steam generating unit." Subpart Db contains within it emission standards, compliance methods,

monitoring requirements, and reporting and record-keeping procedures for affected facilities applicable to the rule. Subpart Db defines a "steam generating unit" as "*a device that combusts any fuel or byproduct/waste and produces steam or heats water or heats any heat transfer medium*." The definition also states that "*[t]his term does not include process heaters as they are defined in this subpart.*"

As noted under the 45CSR2 Regulatory Applicability discussion, only the 11 mmBtu/hr Water Bath Vaporizer (ASP) uses a heat transfer medium that would meet the definition of a "steam generating unit." However, the MDHI of this unit is below the applicability threshold for Subpart Db. The other combustion unit at the proposed facility that does have an MDHI above the applicability threshold (TF1) does not use a heat transfer medium and is, therefore, not defined as a "steam generating unit" under Subpart Db.

40 CFR 60, Subpart Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

40 CFR 60, Subpart Dc is the federal NSPS for small industrial/commercial/institutional "steam generating units" for which (1) construction, modification, or reconstruction is commenced after June 19, 1984, (2) that have a MDHI between 10 and 100 mmBtu/hr, and (3) meet the definition of a "steam generating unit." Subpart Dc contains within it emission standards, compliance methods, monitoring requirements, and reporting and record-keeping procedures for affected facilities applicable to the rule. Pursuant to §60.41(c), "steam generating unit" under Subpart Dc means "*a device that combusts any fuel and produces steam or heats water or heats any heat transfer medium. . . This term does not include process heaters as defined in this subpart.*" As noted under the 45CSR2 Regulatory Applicability discussion, only the 11 mmBtu/hr Water Bath Vaporizer (ASP) uses a heat transfer medium that would meet the definition of a "steam generating unit." Based on the MDHI of this unit, it is defined as an affected facility under Subpart Dc and is subject to the applicable requirements therein. The other combustion units at the proposed facility that have an MDHI that would potential subject the units to Subpart Dc do not use a heat transfer medium and are, therefore, not defined as a "steam generating unit" under Subpart Dc.

Subpart Dc does not, however, have any emission standards for units that combust only natural gas. Therefore, the proposed Water Bath Vaporizer is only subject to the nominal record-keeping and reporting requirements given under §60.48c.

40 CFR 60, Subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 - (Non-Applicable)

40 CFR 60, Subpart Kb is the federal NSPS for storage tanks containing Volatile Organic Liquids (VOLs) which construction commenced after July 23, 1984. The Subpart applies to storage vessels used to store volatile organic liquids with a capacity greater than or equal to 75 m^3 (19,813 gallons). However, storage tanks with a capacity greater than or equal to 151 m^3 (39,890 gallons) storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure less than 15.0 kPa are exempt from Subpart Kb.

The only storage tanks proposed by Nucor that are in excess of 19,813 gallons (see Table 4), identified as Storage Tanks T10 - T15 (HCl) and T16 - T23 (Spent Pickle Liquid), will not store a material that is defined as a VOL under Subpart Kb. Therefore, Subpart Kb will not apply to any tanks at the proposed steel mill.

40 CFR 60, Subpart AAa: Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983

40 CFR 60, Subpart AAa is the federal NSPS for steel plants that produce carbon, alloy, or specialty steels: electric arc furnaces, argon-oxygen de-carburization vessels, and dust-handling systems that commences construction, modification, or reconstruction after August 17, 1983. Nucor's proposed EAFs (EAF-1 and EAF-2) and associated dust-handling systems are defined as an "electric arc furnace" and therefore subject to the applicable provisions of Subpart AAa.

The substantive emission standards for EAFs are given under §60.272a and state that Nucor must not discharge or cause the discharge into the atmosphere from an EAF any gases which:

- Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf);
- Exit from a control device and exhibit 3 percent opacity or greater;
- Exit from a shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater; and
- Dust-handling systems prohibited from discharging any gases that exhibit 10 percent opacity or greater.

Nucor has proposed the use of a direct-shell evacuation control system (DEC system) for control of particulate matter emissions from the EAFs/LMFs combination stacks (EAF-1-BH and EAF-2-BH). A DEC system is one that maintains a negative pressure within the EAF above the slag or metal and ducts emissions to the control device - in this case an pulse jet fabric filter baghouse - for each EAF/LMF combo stack.

Nucor has proposed a combined (EAF/LMF) BACT emission rate for each unit as emitted from the associated controlling baghouse of the NSPS standard - 0.0052 gr/dscf. Initial compliance with this standard shall be based on the performance testing requirements given under §60.8. (and thereafter based on the periodic performance testing schedule given under 4.3.3 of the draft permit). Compliance with the opacity standard on the EAF/LMF combo stack may be achieved through the use of a continuous opacity monitoring system (COMS) or by performing daily Method 9 visible emissions testing pursuant to §60.273a(c) and installation and operation of a bag leak detection system pursuant to §60.273a(e) and (f). Nucor is proposing to meet this requirement by performing the Method 9 testing and is not proposing to install a COMS. As Nucor has proposed the use of a DEC, compliance with the opacity standard on the Melt Shop openings may be achieved through the use of a furnace static pressure monitoring device or by performing daily Method 9 visible emissions testing pursuant to §60.273a(d). Nucor will choose one of these compliance methods at a later date. Additional operational monitoring is required under §60.274a.

40 CFR 60 Subpart JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

40 CFR 60, Subpart JJJJ is the federal NSPS applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE). Nucor's proposed six (6) 2,000 horsepower (hp) natural gas-fired Emergency Engines (EMGEN1 through EMGEN6) are each defined under 40 CFR 60, Subpart JJJJ as a stationary spark-ignition internal combustion engines (SI ICE) and are, pursuant to §60.4230(a)(4)(i), subject to the applicable provisions of the rule.

Pursuant to §60.4233(e): "*Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE.*" Therefore, as a new engine that is greater than 100 hp, each proposed engine must comply with the emission standards under Table 1 for "Emergency ≥130 hp manufactured after July 1, 2009:" NO_x - 2.0 g/HP-hr, CO - 4.0 g/HP-hr, and VOC - 1.0 g/HP-hr. The emission standards and the proposed compliance therewith of the engines are given in the following table:

Table 12: Subpart JJJJ Compliance

Pollutant	Standard (g/HP-hr)	Uncontrolled Emissions (g/hp-hr)(1)	Control Percentage(1)	Controlled Emissions (g/hp-hr)(1)	JJJJ Compliant?
NO_x	2.0	--	--	2.00	Yes
CO	4.0	--	--	4.00	Yes
VOC	1.0	--	--	1.00	Yes

(1) Make and model of the engines are TBD as of this writing. BACT was determined to be the Subpart JJJJ emission limits for applicable pollutants.

Compliance with the requirements above may be determined by either purchasing an engine certified to meet the above standards and demonstrating continuous compliance according to the procedures of §60.4243(a) or purchasing a non-certified engine and demonstrating compliance according to the requirements specified in §60.4244, as applicable, and according to paragraphs §60.4243(b)(2)(i) and (ii).

40 CFR 63, Subpart CCC: National Emission Standards for Hazardous Air Pollutants for Steel Pickling--HCl Process Facilities and Hydrochloric Acid Regeneration Plants - (Non-Applicable)

40 CFR 63, Subpart CCC is a federal MACT rule that includes requirements for new steel pickling facilities located at major sources of HAPs. As shown in Table 7, the proposed WV Steel Mill is not defined as a major source of HAPs and, therefore, Subpart CCC does not apply.

40 CFR 63, Subpart ZZZZ: National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

40 CFR 63, Subpart ZZZZ is a federal MACT that establishes national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. As the West Virginia Steel Mill is defined as an area source of HAPs (see Table 7), the facility is subject to applicable requirements of Subpart ZZZZ. Pursuant to §63.6590(c):

> An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

§63.6590(c)(1) specifies that "[a] *new or reconstructed stationary RICE located at an area source*" is defined as a RICE that shows compliance with the requirements of Subpart ZZZZ by "*meeting the requirements of . . . 40 CFR part 60 subpart JJJJ, for spark ignition engines.*" Pursuant to §63.6590(a)(2)(iii), a "[a] *stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.*" The (6) 2,000 hp natural gas-fired Emergency Engines (EMGEN1 through EMGEN6) proposed for the West Virginia Steel Mill will each be defined as a new stationary RICE and, therefore, will show compliance with Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart JJJJ. Compliance with Subpart JJJJ is discussed above.

40 CFR 63, Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants for Hazardous Air Pollutants Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters - (Non-Applicable)

40 CFR 63, Subpart DDDDD is a federal MACT rule that establishes national emission limitations and work practice standards for HAPs emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAPs. As shown in Table 7, the proposed West Virginia Steel Mill is not defined as a major source of HAPs and, therefore, Subpart DDDDD does not apply.

40 CFR 63, Subpart YYYYY: National Emission Standards for Hazardous Air Pollutants for Area Sources: Electric Arc Furnace Steelmaking Facilities

40 CFR 63, Subpart YYYYY is a federal MACT rule that applies to Electric Arc Furnace Steelmaking Facilities that are area sources of HAPs. Pursuant to §63.10692, an "Electric Arc Furnace Steelmaking Facilities" is defined as "*a steel plant that produces carbon, alloy, or specialty steels using an EAF. This definition excludes EAF steelmaking facilities at steel foundries and EAF facilities used to produce nonferrous metals.*" The EAFs proposed at the West Virginia Steel Mill meet this definition, and as shown in Table 7, the proposed facility is defined as an area source of HAPs. Therefore, Subpart YYYYY applies to the EAFs.

The applicable requirements of Subpart YYYYY are targeted at (1) the management of the scrap that is charged into the EAF, and (2) the emissions standards of the EAF stacks. The requirements relating to the management of scrap are given under §63.10685 and require both a pollution prevention plan to minimize the amount of chlorinated plastics, lead, and free organic liquids that is charged to the furnace and a program to ensure that mercury switches are removed from any motor vehicle scrap charged into the EAFs.

The EAF emission standards are given under §63.10686(b) for EAFs that have a production capacity of greater than 150,000 tons/year (each Nucor EAF has a production capacity of 1,5000,000 tons/year) and state that Nucor must not discharge or cause the discharge into the atmosphere from an EAF any gases which:

- Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf); and

- Exit from a shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater;

Compliance with the pollution prevention plan and the mercury switch removal program is determined by the requirements of Subpart YYYYY. With respect to the emission standards, they are equivalent to those given under 40 CFR 60, Subpart AAa. The compliance demonstrations are also equivalent - see the discussion under Subpart AAa.

40 CFR 63, Subpart ZZZZZ: National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources - (Non-Applicable)

40 CFR 63, Subpart DDDDD is a federal MACT rule that establishes requirements for iron and steel foundries that are area sources of HAPs. Pursuant to §63.10906, an "Iron and Steel Foundry" is defined as "*a facility or portion of a facility that melts scrap, ingot, and/or other forms of iron and/or steel and pours the resulting molten metal into molds to produce final or near final shape products for introduction into commerce. Research and development facilities, operations that only produce non-commercial castings, and operations associated with nonferrous metal production are not included in this definition.*" The proposed West Virginia Steel Mill will not have the capability to pour molten steel directly into molds to produce final or near final shape products. Therefore, Subpart ZZZZZ will not apply.

40 CFR 63, Subpart CCCCCC: National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities

40 CFR 63, Subpart CCCCCC is a federal MACT rule that establishes national emission limitations and management practices for HAPs emitted from the loading of gasoline storage tanks at gasoline dispensing facilities (GDF). GDF's are defined under §63.11132 as "*any stationary facility which dispenses gasoline into the fuel tank of a motor vehicle, motor vehicle engine, nonroad vehicle, or nonroad engine, including a nonroad vehicle or nonroad engine used solely for competition. These facilities include, but are not limited to, facilities that dispense gasoline into on- and off-road, street, or highway motor vehicles, lawn equipment, boats, test engines, landscaping equipment, generators, pumps, and other gasoline-fueled engines and equipment.*" Nucor has

proposed the use of a 1,000 gallon gasoline storage tank (T7) for storing gasoline to dispense to gasoline-fueled non-road engines and equipment. This storage tank and the associated dispensing operation is defined as a GDF under Subpart CCCCCC.

Nucor has proposed a maximum monthly GDF throughput of gasoline less than 10,000 gallons and, therefore, pursuant to §63.11111(b), Nucor must comply with the requirements given under §63.11116, which include the following:

- You must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following: (1) Minimize gasoline spills; (2) Clean up spills as expeditiously as practicable; (3) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use; and (4) Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.

40 CFR 63 Subpart JJJJJJ: National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources - (Not Applicable)

40 CFR 63, Subpart JJJJJJ is a federal MACT rule that establishes national emission limitations and work practice standards for HAPs emitted from industrial, commercial, and institutional boilers located at area sources of HAPs. The proposed West Virginia Steel Mill meets the definition of an area source of HAPs (see Table 7).

Pursuant to §63.11237, the definition of "boiler" covered under Subpart JJJJJJ is limited to "an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam or hot water." This definition would only include the 11 mmBtu/hr Water Bath Vaporizer (ASP). However, pursuant to §63.11195(e), as this unit is exclusively "gas-fired," it is exempt from Subpart JJJJJJ.

PSD REVIEW REQUIREMENTS

In 1977, Congress passed the Clean Air Act Amendments (CAAA), which included the Prevention of Significant Deterioration (PSD) program. This program was designed to allow industrial development in areas that were in attainment with the NAAQS without resulting in a non-attainment designation for the area. The program, as implied in the name, permits the deterioration of the ambient air in an area (usually a county) as long as it is within defined limits (defined as "increments"). The program, however, does not allow for a significant (as defined by the rule) deterioration of the ambient air. The program prevents significant deterioration by allowing concentration levels to increase in an area within defined limits - called pollutant increments - as long as the pollutants never increase enough to exceed the NAAQS. Projected concentration levels are calculated using complex computer simulations that use meteorological data to predict impacts from the source's potential emission rates (see below). The concentration levels are then, in turn, compared to the NAAQS and pollutant increments to verify that the ambient air around the source does not significantly deteriorate (violate the increments) or violate the NAAQS. The PSD program also requires application of best available control technology (BACT) to new or modified sources, protection of Class 1 areas, and analysis of impacts on soils, vegetation, and visibility.

WV implements the PSD program as a SIP-approved state through 45CSR14. As a SIP-approved state, WV is the sole issuing authority for PSD permits. EPA has reviewed WV Legislative Rule 45CSR14 and concluded that it incorporates all the necessary requirements to successfully meet the goals of the PSD program as discussed above. EPA retains, however, an oversight role in WV's administration of the PSD program.

As stated above under the 45CSR14 Regulatory Applicability Section, the proposed West Virginia Steel Mill is defined as construction of a "major stationary source" under 45CSR14 and PSD review is required for the pollutants of CO, NO_x, $PM_{2.5}$, PM_{10}, PM (filterable), SO_2, VOCs, Lead, Fluorides, and GHGs. The substantive requirements of a PSD review include a BACT analysis, an air dispersion modeling analysis, and an additional impacts analysis - each of which will be discussed below.

BACT Analysis - 45CSR14 Section 8.2

Pursuant to 45CSR14, Section 8.2, Nucor is required to apply BACT to each reasonable emission source that emits a PSD pollutant (CO, NO_x, $PM_{2.5}$, PM_{10}, PM (filterable), SO_2, VOCs, Lead, Fluoride, and GHGs) with a PTE in excess of the amount that is defined as "significant" for that pollutant. BACT is defined under §45-14-2.12 as:

> ". . .an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the Secretary, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any federally enforceable emissions limitations or emissions limitations enforceable by the Secretary. If the Secretary determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment work practice, operational standard or combination thereof may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation and shall provide for compliance by means which achieve equivalent results."

Pursuant to USEPA and DAQ policy, the permit applicant determines an appropriate BACT emission limit by using a "top-down" analysis. The key steps in performing a "top-down" BACT analysis are the following: (1) Identification of all applicable control technologies; (2) Elimination of technically infeasible options; (3) Ranking remaining control technologies by control effectiveness; (4) Evaluation of most effective controls and documentation of results; and (5) the selection of BACT. Also included in the BACT selection process is, where appropriate, the review of BACT determinations at similar facilities using the RACT/BACT/LAER Clearinghouse (RBLC). The RBLC is a database of RACT, BACT, and LAER determinations maintained by EPA and periodically updated by the individual permitting authorities (it is important to note, however, that the RBLC is not exhaustive as not all determinations are uploaded to the database).

Nucor included a BACT analysis in their permit application under Section 4 generally using the top-down approach as described above. For a detailed review of Nucor's BACT, see Section 4 (p 30) of Permit Application R14-0039. The BACT determination is summarized below.

Nucor's BACT Submission

Nucor included in the permit application a BACT Analysis reasonably performed in accordance with 45CSR14 and relevant guidance. For each pollutant, Nucor generally performed, for each source or logical grouping of sources, a top-down analysis for the emissions unit(s). Where applicable, Nucor included an economic analysis and data from the RBLC to support the final selection of BACT.

This section will summarize key points of the Nucor BACT determination (for the detailed and complete BACT Analysis, see the permit application) and the following table lists Nucor's BACT selections (technology selection only, for tables/requirements containing BACT emission limits, see applicable permit section as cited in the below table).

Table 13: Nucor BACT Summary Table

Emission Unit ID	Pollutant	BACT Technology	Draft Permit Citation
Raw Material Handling and Storage **EAF Baghouse Dust Handling** **Slag Processing**			
SLGSK1-3 SCRPSK1-4	$PM_{2.5}$, PM_{10}, PM (filterable)	Wet Suppression, Good Housekeeping Practices	Appendix A, Table A-1, A-2
LIME-DUMP CARBON-DUMP ALLOY-HANDLE LCB EAFVF1/2	$PM_{2.5}$, PM_{10}, PM (filterable)	Enclosures (Dump Station) Enclosed Conveyers (w/ Baghouses) Storage Silo Fabric Filters Good Housekeeping Practices	
DRI-DOCK DRI1-4 DRI-DB1/2 BULK-DRI DRI-CONV	$PM_{2.5}$, PM_{10}, PM (filterable)	Enclosures (Dump Station) Storage Silo/Day Bin Fabric Filters Enclosed Conveyers (w/ Baghouses) Good Housekeeping Practices	
SCRAP-RAIL SCRAP-DOCK SCRAP-BULK34-40	$PM_{2.5}$, PM_{10}, PM (filterable)	Good Housekeeping Practices	
SCRAP-BULK1-33	$PM_{2.5}$, PM_{10}, PM (filterable)	Wet Suppression, Good Housekeeping Practices	
FUGD-UNPAVED-11U - 19U FUGD-PAVED-01P - 10P	$PM_{2.5}$, PM_{10}, PM (filterable)	Vacuum Truck (Paved) Wet Suppression	4.1.3(g)

Melt Shop			
EAF1/2 LMF1/2 (MSFUG)	CO	Good Combustion Practices	Table 4.1.4(a) Table 4.1.4(b) 4.14(e)(5)
	NO_x	LNBs, Oxy-Fuel Burners, Good Combustion Practices	
	$PM_{2.5}$, PM_{10}, (filterable) PM	DEC/Canopy Hood/Baghouse Fugitive Mitigation	
	SO_2	Scrap Management Plan	
	VOCs	Good Combustion Practices	
	Lead	DEC/Canopy Hood/Baghouse Fugitive Mitigation	
	Fluoride	DEC/Canopy Hood/Baghouse	
	GHGs	Efficiency Requirements	
CAST1/2	$PM_{2.5}$, PM_{10}, (filterable) PM	Canopy Hood/Baghouse/ Fugitive Mitigation	Table 4.1.4(b)
VTG1/2	CO	Flare	Table 4.1.4(d)(3)
	$PM_{2.5}$, PM_{10}, (filterable) PM	Particulate Matter Filter	
Natural Gas Combustion			
LD LPHTR1-7 TD TPHTR1/2 SENPHTR1/2 GALVFN1/2 BOXANN1-22 TF1 SLAG-CUT ASP	CO	Good Combustion Practices	Table 4.1.5(a)
	NO_x	LNB	
	$PM_{2.5}$, PM_{10}, (filterable) PM	Use of Natural Gas, Good Combustion Practices	
	SO_2	Use of Natural Gas	
	VOCs	Good Combustion Practices	
	GHGs	Use of Natural Gas, Good Combustion Practices	
Hot & Cold Mills			
RM PKL-1 PKLSB TCM STM SPM1/2 CGL1/2	$PM_{2.5}$, PM_{10}, (filterable) PM	Baghouses Scrubbers/Mist Eliminators	Appendix A, Table A-4
Storage Tanks			
T1 - T9	VOCs	White/Aluminum Shell Good Operating Practices	4.1.7(e)
T25 - T29	VOCs	Good Operating Practices	4.1.7(f)

Cooling Towers			
CT1 - CT8	$PM_{2.5}$, PM_{10}, (filterable) PM	Drift Eliminators	4.1.8(b)
Emergency Engines			
EMGEN1 - 6	CO	Subpart JJJJ Certification Annual Hrs of Op[1] Limit	Table 4.1.9(b)
	NO_x	Subpart JJJJ Certification Annual Hrs of Op[1] Limit	
	$PM_{2.5}$, PM_{10}, (filterable) PM	Use of Natural Gas Annual Hrs of Op[1] Limit	
	SO_2	Use of Natural Gas Annual Hrs of Op[1] Limit	
	VOCs	Annual Hrs of Op[3] Limit	
	GHGs	Use of Natural Gas Good Combustion Practices	

(1) Limited to 100 hours a year of non-emergency operation.

Material Handling Operations

Nucor will utilize a variety of materials in the steel making process and has proposed suite of BACT control technologies/mitigation strategies for the different material handling operations. Where feasible, for most of the DRI, lime, carbon, and alloy handling operations, Nucor has proposed the use of enclosed conveying systems that exhaust to baghouses/fabric filters/bin vents to control particulate matter emissions from these sources. For the slag and steel scrap material handling operations (including open storage piles), for which the particulate matter emissions are fugitive in nature (and, therefore, the reasonable use of full enclosures and baghouses is not appropriate), Nucor has proposed the use of various enclosures and wet suppression as the BACT mitigation strategies. These control technologies/mitigation strategies are consistent with similar units in the RBLC database. BACT emission rates for the control devices are set at the outlet grain loading rates for the baghouses/fabric filters/bin vents and at the lb/hr emission rates for the fugitive sources.

Melt Shop Sources: EAF/LMFs and Casting Operations

The BACT determination on the EAFs/LMFs was based for all pollutants (with the exception of GHGs) on the most efficient control technology/strategy that was not considered technically infeasible for use on the specific source in question.

BACT for the EAFs/LMFs was driven primarily by two characteristics of the emission source: the potential for high particulate matter emissions and the need to account for the variability of the scrap source in the production of VOCs and SO_2 emissions. The control of particulate matter and the BACT technology is driven by the NSPS-defined use of the DEC (and canopy hood) to achieve a very high control of the emissions generated during electrode use in the EAFs. The use of the DEC and associated baghouses preclude the use of bolt-on NO_x and CO control technology such as catalytic reduction and oxidation as the temperature profiles of these technologies do not align with the baghouse systems. There were no examples of these technologies being used on EAFs in the RBLC. The exclusion of these technologies was therefore appropriate.

VOCs and SO_2 emissions from the EAFs/LMFs are related to the characteristics of the scrap. For this reason, BACT is defined as the use of a the "Scrap Management Plan" as required under 40 CFR 63, Subpart YYYYY and the use of commercially available low residue, pre-processed, and inspected scrap. The BACT emission rates were chosen so as to allow for this site-specific scrap variability while mitigating the emissions of VOCs and SO_2. The use of the Scrap Management Plan is consistently present on the RBLC entries, and it is important to note that Nucor has proposed the use of an SO_2 CEMS that will allow for real-time monitoring of the SO_2 emissions from the EAFs/LMFs.

In addition, Nucor has noted, in response to a comment provided by the NPS concerning the consideration of lime injection in the EAF baghouses, that the proposed WV Steel Mill will be a producer of lower sulfur steel that utilizes correspondingly lower sulfur feedstocks. These feedstocks result in lower SO_2 exhaust concentrations that are below the levels generally controlled by flue gas desulfurization systems such as lime injection. Nucor also has proposed the use of lime injection in the melting process to remove sulfur in the form of the slag. While the NPS was able to provide an example from the RBLC of use of a lime-injection baghouse (Gerdau Macsteel MI-0438), it was used on a producer of higher-sulfur steel. Nucor also notes that the BACT emission limit chosen for the Gerdau Macsteel EAF/LMFs (0.35 lb-SO_2/ton-steel) was higher than that of Nucor's proposed EAF/LMFs (0.24 lb-SO_2/ton-steel). For these reasons, the DAQ agrees that lime injection in the baghouse is appropriately removed from consideration as BACT for Nucor's proposed low-sulfur steel production process.

As stated, the particulate matter BACT is driven by use of the DEC (and canopy hood) that evacuates to a baghouse to achieve a very high control of the emissions generated during electrode use in the EAFs. This is consistent with most of the other similar facilities listed in the RBLC.

Non-Fugitive Particulate Matter Sources

Generally, Nucor chose the most effective control option for the many non-fugitive particulate matter sources - baghouses, fabric filters, and silo bin vents. These sources primarily include the particulate matter generated during steel slab milling, surface cleansing operations, and the non-fugitive material handling operations. Baghouses work by pulling process exhaust gas through a tightly woven or felted fabric arranged in sheets, cartridges, or bags that collects particulate matter via sieving and other mechanisms. The dust cake that accumulates on the filters increases collection efficiency. Various cleaning techniques include pulse-jet, reverse-air, and shaker technologies. Collected dust then falls into a collection area and is periodically removed for disposal. Baghouses are capable of capturing up to 99.9%+ of uncontrolled emissions and are relatively easy to install and maintain operational at these high levels.

Also chosen for sources with certain exhaust characteristics (such as the Cold Mill Pickling Line that also has HCl emissions and the steel cleaning sections) was the use of mist eliminators and wet scrubbers. Wet scrubbers work when a scrubbing liquid is introduced into the process gas stream that captures and collects entrained particles. In the case of a venturi scrubber, the turbulent airflow atomizes the scrubbing liquid to increase droplet-particle interaction. The droplets containing particles are typically separated from the exhaust gas in a downstream cyclonic separator and/or mist eliminator. These particulate matter control devices are also capable of capturing up to 99.9%+ of uncontrolled emissions and are also relatively easy to install and maintain operation at this high levels.

Nucor provided information that showed the use of these control devices are strongly supported where data is available on the RBLC and that the chosen emission rates are at or exceed those chosen as BACT at most other similar facilities.

Natural Gas Combustion Sources

The most significant result of the BACT Analysis for the natural gas combustion sources (not including the RICE) was the determination that use of combustion exhaust technologies for control of NO_x (SCR, SNCR) and CO (oxidation catalysts) was either not technically feasible or was economically prohibitive. The elimination of these technologies were primarily based on the exhaust characteristics of the sources in question - either outside the temperature profile or used directly for heat and not captured and vented through a stack. Where these stack characteristics were not determinative, Nucor provided an economic analysis that showed the use of these technologies were cost prohibitive. For this reason, Nucor proposed the use of LNBs for the natural gas combustion devices as the NO_x BACT. This was consistent with the similar units in the RBLC database.

Again consistent with other units in the RBLC and conventional for natural gas combustion units of the size and characteristic of those proposed for the West Virginia Steel Mill, Nucor proposed the use of Good Combustion Practices and the use of natural gas as a fuel as BACT for the other pollutants including CO.

BACT emission rates were based on the AP-42, Section 1.4 for all pollutants (excluding GHGs) with the exception of NO_x from the following units: a NO_x emission factor of 0.05 lb/mmBtu was used for the Box Annealing Furnaces and the Galvanizing Furnaces and 0.07 lb/mmBtu was used for the Hot Mill Tunnel Furnace. These BACT emission limits were based on expected available vendor guarantees and consistency with recent RBLC data. GHG BACT was based on the TPY limits of the units in turn based on emission factors taken from 40 CFR Part 98 - "Mandatory Greenhouse Gas Reporting," Tables C-1 and C-2.

Additional GHG BACT Requirements

Nucor, under Section 4.8 of the permit application, provided a separate pollutant-specific GHG BACT analysis. This is appropriate as beyond unit-specific GHG BACT control technologies or pollution prevention strategies, as GHG BACT selections often involve plant-wide and systemic strategies that focus on energy efficiency or maintenance activities. Table 4-60 of the permit application (p 89) provides a suite of GHG BACT technologies for both plant-wide application and on specific units. This table is integrated into the draft permit under 4.1.11 and specific EAF/LMF GHG BACT requirements are also given under 4.1.4(c)(5).

DAQ Conclusion on BACT Analysis

The DAQ has concluded that Nucor reasonably conducted a BACT analysis using, where appropriate, the top-down analysis and eliminated technologies for valid reasons. The DAQ concludes that the selected BACT emission rates given in the draft permit are achievable, are consistent where appropriate with recent applicable BACT determinations, and are accepted as BACT. Further, the DAQ accepts the selected control technologies and control strategies as BACT.

Modeling Analysis - 45CSR14, Section 9 and Section 10

§45-14-9 and §45-14-10 contain requirements relating to a proposed major source's impact on air quality (Section 9) and the requirements for the air dispersion modeling used to determine the potential impact (Section 10). Specifically, §45-14-9.1 requires subject sources to demonstrate that "*allowable emission increases from the proposed source or modification, in conjunction with all other applicable emission increases or reductions (including secondary emissions), would not cause or contribute to*" (1) a NAAQS violation or (2) an exceedance of a maximum allowable increase over the baseline concentration in any area (exceed the increment).

Pursuant to the above, Nucor was required to do an air dispersion modeling analysis to determine the potential impacts on Class II areas only. To this end, Nucor provided a detailed Modeling Report submitted on March 23, 2022. Class I area modeling was not performed (as explained below). The pollutants required to be modeled were CO, NO_x, $PM_{2.5}$, PM_{10}, SO_2, and lead. GHGs are not modeled as part of the PSD application review process and VOC emissions (as a precursor to tropospheric ozone formation) were addressed in Section 7.1 of the modeling report. The results of the modeling analyses are summarized below. More detailed descriptions of these modeling analyses and quantitative results are contained in Attachment A prepared by Mr. Jon McClung of DAQ's Planning Section.

Class I Modeling

As part of the Clean Air Act Amendments (CAA) of 1977, Congress designated a list of national parks, memorial parks, wilderness areas, and recreational areas as federal Class I air quality areas. Federal Class I areas are defined as national parks over 6,000 acres, and wilderness areas and memorial parks over 5,000 acres. As part of this designation, the CAA gives designated Federal Land Managers (FLM's) an affirmative responsibility to protect the natural and cultural resources of Class I areas from the adverse impacts of air pollution. The impacts on a Class I area from an emissions source are determined through complex computer models that take into account the source's emissions, stack parameters, meteorological conditions, and terrain.

If an FLM demonstrates that emissions from a proposed source will cause or contribute to adverse impacts on the air quality related values (AQRV's) of a Class I area, and the permitting authority concurs, the permit will not be issued. The AQRVs typically reviewed, in the case of evaluating adverse impacts, are visibility (both regional and direct plume impact) and acid deposition (including both nitrogen and sulfur).

Additionally, the Class I Increments may not be exceeded. Class I Increments are limits to how much the air quality may deteriorate from a reference point (called the baseline). There are Class I Increments for NO_2, $PM_{2.5}$, PM_{10}, and SO_2. Based on EPA guidance, a full increment analysis is not required if the source's impacts alone do not exceed a calculated Class I Area Significant Impact Level (SIL) - based on the same ratio of the Class II increment levels and the associated Class II SILs as applied to the Class I Increment.

There are generally four Class I areas that may have to be considered when conducting PSD reviews in West Virginia. These are, in West Virginia, the Otter Creek Wilderness Area and the Dolly Sods Wilderness Area; both of which are managed by the US Forest Service. The Shenandoah National Park, managed by the National Park Service (NPS), and the James River Face Wilderness Area, managed by the US Forest Service (USFS), are in Virginia. The West Virginia Steel Mill is approximately 220 kilometers (km) from the Otter Creek Wilderness Area, 240 km from the Dolly Sods Wilderness Area, 302 km from the Shenandoah National Park, and 318 km from the James River Face Wilderness Area.

The FLMs responsible for evaluating affects on AQRVs for federally protected Class I areas were, through standard procedure, provided with information concerning the proposed facility upon the submission of the permit application. On February 4, 2022 (USFS) and on February 10, 2022 (NPS), the USFS and the NPS notified the DAQ that an AQRV analysis was not required for the proposed West Virginia Steel Mill.

Nucor evaluated the project related increase of NO_2, PM_{10}, $PM_{2.5}$, and SO_2 against the Class I SILs by placing an arc of receptors at a distance of 50 km in the direction each Class I area within 300 km, to demonstrate that impacts are below the Class I SILs. Using this methodology, the maximum modeled concentrations at the 50 km receptors were less than the Class I SILs for all modeled pollutants (see Table 5-3 of the Nucor Modeling Report), and it is therefore reasonable to assume that the project also had maximum potential impacts that were less than the Class I SILs at the much more distant Class I areas. As stated above, pollutants modeled below the Class I SILs are not required to perform a full Class I increment modeling analysis.

Class II Modeling

A Class II Modeling analysis can require up to three runs to determine compliance with Rule 14. First, the proposed source is modeled by itself, on a pollutant by pollutant basis, to determine if it produces a "significant impact" - an ambient concentration published by US EPA (the Class II SIL). If the dispersion model determines that the proposed source produces significant impacts, then the demonstration proceeds to the second stage. If the model finds that the proposed source produces "insignificant impacts", no further modeling is needed (on a pollutant-by-pollutant basis). The modeling, the results of which are given in Table 6-1 and 6-2 of the Modeling Report, indicated that CO (1-hr and 8-hr) and SO_2 (3-hr and annual) were not significant. No further modeling was therefore required for these pollutants and the associated averaging times. The other pollutants (NO_2 1-hr and annual, $PM_{2.5}$ 24-hr and annual, PM_{10} 24-hr and annual, and SO_2 1-hr and 24-hr) were "significant," thereby requiring the applicant to proceed to the next stage of the modeling process for those pollutants and the associated averaging times.

The next tier of the modeling analysis is to determine if the proposed facility, in combination with the existing sources, will produce an ambient impact that is less than the National Ambient Air Quality Standards (NAAQS). As shown in Table 6-3 of the Modeling Report, the total concentration of each pollutant is less than the NAAQS for all relevant averaging periods.

This final stage is usually to determine how much of the PSD Increment the proposed construction of the facility consumes, along with all other increment consuming sources. This value may not exceed the PSD Increment. PSD Increments are the maximum concentration increases above a baseline concentration that are allowed in a specific area. As shown in Table 6-4 of the Modeling Report, the total concentration is less than the PSD increment for each pollutant and all relevant averaging times.

Nucor, therefore, passes all the required Air Quality Impact Analysis tests as required for Class II Areas under 45CSR14. Attachment A to this evaluation is a report prepared by Jon McClung on March 28, 2022 (for the complete report with all the attachments, please see Nucor's Modeling Report) that discusses in depth the above summarized analysis.

Additional Impacts Analysis - 45CSR14, Section 12

§45-14-12 requires an applicant to provide "*an analysis of the impairment to visibility, soils, and vegetation that would occur as a result of the source or modification and general commercial, residential, industrial, and other growth associated with the source or modification*." Nucor provided an Additional Impacts Analysis in Section 8.1 of their Modeling Report submitted on March 23, 2022. The following is a summary of that analysis. It is important to note that no specific thresholds (other than indirectly the secondary NAAQS) have been promulgated by USEPA to determine if any quantified additional impacts are beyond those considered reasonable for a proposed source.

Growth Analysis

Nucor provided a qualitative growth analysis in determining the impact of the proposed operation of the facility. While they expect the Nucor facility to "increase full-time employment after the construction phase," they state that the "proposed project . . . is anticipated to have a limited growth impact on Mason County, WV with the potential to contribute to adverse air quality impacts for the PSD triggering pollutants." Further, Nucor expects most of the permanent employees to already reside in the area and that the "installation of the plant is not expected to significantly contribute to substantial residential or commercial growth that would cause quantifiable air quality impacts." Finally, Nucor concluded that the proposed facility "would not expect any growth attributable to this proposed project to cause quantifiable air quality impacts."

Soil and Vegetation Analysis

The USEPA developed the secondary NAAQS to represent levels that "provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings." Therefore, if the impacts from a source are found to be less than the secondary NAAQS, emissions from that project may be reasonably determined to not result in harmful effects to either soils or vegetation. Based on the air dispersion modeling report, (see Attachment A), the facility has shown that the impacts from the facility will be below the secondary NAAQS.

Additional Visibility Analysis

In addition to Nucor's visibility analysis contained within the review of a source's secondary NAAQS impact, they also provided a specific screening analysis to determine the impact on visibility at Beech Fork State Park. Beech Fork State Park is located approximately 40 kilometers (km) to the south-southwest of the proposed location of the plant. Using VISCREEN - a conservative screening model to determine viability impacts from a plume - Nucor determined that at Beech Fork State Park, the impact of the plume would not exceed the Level 1 screening thresholds that would indicate the need to perform a more refined Level 2 analysis. This indicates that even a conservative estimate of the visibility impact of the proposed source on this specific area shows that the impact would be nominal.

Conclusions Regarding Additional Impacts Analysis

As noted above, no quantified state or federal standards have been promulgated concerning the potential impacts analyzed under Section 12. In the absence of statutory thresholds, it is the role of the regulatory agency to make a qualitative assessment of the potential impacts on the values identified under Section 12. Based on the size, nature, and location of the proposed source, as well as the submitted analysis, the DAQ concludes that none of the metrics identified in Section 12 (visibility, soils, and vegetation) will be substantively impaired from the construction of the steel mill.

Minor Source Baseline Date - Section 2.42.b

On March 23, 2022, Permit Application R14-0039 was deemed complete. This action, pursuant to 45CSR14, Section 2.42(b), has triggered the minor source baseline date (MSBD) for the specific pollutants in the following areas:

Table 14: Minor Source Baseline Triggering

Pollutant	Mason County
NO_2	n/a(1)
$PM_{2.5}$	Yes
PM_{10}	n/a(1)
SO_2	Yes

(1) Previously Triggered.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides information on those regulated pollutants that may be emitted from the proposed West Virginia Steel Mill and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM_{10} and $PM_{2.5}$), and Sulfur Dioxide (SO_2). These pollutants have NAAQS set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria *and without national concentration standards*, are regulated through various state and federal programs designed to limit their emissions and public exposure. These programs include federal source-specific HAP regulations promulgated under 40 CFR 61 and 40 CFR 63 (NESHAPS/MACT), and WV Legislative Rule 45CSR27 that regulates certain HAPs defined as Toxic Air Pollutants (TAPs). Any potential applicability to these programs is discussed above under REGULATORY APPLICABILITY.

The majority of non-criteria regulated pollutants fall under the definition of HAPs which are compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects *may* cause cancer or other serious human health effects. These adverse health affects, however, may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no applicable federal or state ambient air quality standards for these specific chemicals*. For a complete discussion of the potential health effects of each compound listed in this section, refer to the IRIS database located at www.epa.gov/iris. It is important to note that the USEPA does not divide the various HAPs into further classifications based on toxicity or if the compound is a suspected carcinogen.

Table 15 lists each HAP currently identified in the permit application as potentially emitted in an amount greater than 20 lbs/year (0.01 tons/year) from the proposed facility. Additionally, information concerning the pollutant, and the associated carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)), and any potentially applicable MACT is provided in Attachment B.

Table 15: Hazardous Air Pollutants

Pollutant	CAS #	PTE (tons/yr)
VOC-HAPs		
Acetaldehyde	75-07-0	0.035
Acrolein	107-02-8	0.033
Benzene	71-43-2	0.013
Formaldehyde	50-00-0	0.416
n-Hexane	110-54-3	4.427
Hydrochloric Acid (HCl)	7647-01-0	1.159
Methanol	67-56-1	0.013

Pollutant	CAS #	PTE (tons/yr)
Tetrachloroethylene	127-18-4	0.010
Toluene	108-88-3	0.012
PM-HAPs		
Lead[(1)]	7439-92-1	0.675
Manganese	7439-96-5	0.450
Mercury	7439-97-6	0.165

(1) Although Nucor has stated that the lead emitted from the Melt Shop sources will be almost all elemental lead (which is not defined as a HAP), to be conservative, all lead is assumed to fall in the category of "Lead Compounds," which are defined as HAPs.

Fluoride

Nucor has estimated a facility-wide PTE of Fluoride (16984-48-8) of 5.25 tons/year. Fluoride is not defined as a HAP under Section 112(b) but is defined under this section as a non-criteria regulated pollutant (regulated under 45CSR14). Fluoride is a naturally-occurring component of rocks and soil (the largest emitter of which is volcanoes) and is also found naturally in the air, water, plants, and animals. Fluoride in many areas is added to drinking water to promote healthy teeth. Anthropogenic sources of fluoride air emissions include many industrial sources including steel production. The fluorides emitted from the proposed Nucor facility are in the form of particulate matter and are emitted only from the EAFs. Particulate matter emissions of fluoride settle in the environment and may then be introduced into the ecosystem through absorption and consumption by animals. There is no entry in the IRIS database for fluoride. An article on the extant toxicology studies of fluoride is located at:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7261729/.

As a pollutant subject to BACT, the emissions of fluoride are strongly controlled through the use of BACT-level particulate matter control technology as described above: the EAFs DEC system, canopy hood, and the EAF baghouses.

GHGs

GHGs (gases that trap heat in the atmosphere) is collectively the air pollutant defined in 40 CFR 86, Section §86.1818-12(a)(1) as the aggregate group of six greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6). GHGs are included in this section as they are regulated under 45CSR14 and are subject to the BACT requirements therein (see PSD Requirements above). GHGs as regulated collectively have no direct toxicity and have no entry in the IRIS database. For information on GHGs, see the information on EPA's website:

https://www.epa.gov/ghgemissions.

MONITORING, COMPLIANCE DEMONSTRATIONS, REPORTING, AND RECORDING OF OPERATIONS

Monitoring and Compliance Demonstrations

The primary purpose of emissions monitoring is to determine continuous compliance with emission limits and operating restrictions in the permit over a determined averaging period. Emissions monitoring may include any or all of the following:

- Real-time continuous emissions monitoring to sample and record pollutant emissions (CEMS, COMS);
- Monitoring of plant-wide variables to limit the scope of the plant as applied for;
- Parametric monitoring of variables pre-determined to be proportional (at a known ratio) to emissions (recording of material throughput, fuel usage, production, etc.);
- Real-time tracking of materials and pollutant percentages used in processes where evaporation emissions are expected;
- Monitoring of control device performance indicators (pressure drops, liquid flow rates, oxidizer temperatures, etc.) to guarantee efficacy of pollution control equipment; and
- Visual stack observations to monitor opacity.

It is the permittee's responsibility to record, certify, and report the monitoring results so as to verify compliance with the emission limits. Where emissions are based on the maximum rated short and long-term capacity of units, generally no continuous emissions or parametric monitoring is required as compliance with the emission limits is based on the specific limited capacity of the units.

For the proposed West Virginia Steel Mill, a mix of the above methods are used to give a reasonable assurance that continuous compliance with emission limits is being maintained. Specifically, some examples include:

- Use of CEMS (for CO, NO_x, and SO_2) on the EAF Baghouses [4.2.4];
- Plant-wide monitoring of the production of steel [Table 4.2.3];
- Parametric throughput monitoring on selected material handling throughputs, storage tank throughputs, and hours of operation on the emergency engines [Table 4.2.3];
- Control device monitoring on selected baghouses and scrubbers [Table 4.2.11]; and
- Visible emissions monitoring, both based on statutory requirements and source specific requirements, will be required on all applicable sources with opacity requirements [Table 4.2.12].

In addition to site-specific monitoring and compliance demonstrations, Nucor is required to meet all applicable statutory requirements including those given under 40 CFR 60, Subpart AAa and 40 CFR 63, Subparts YYYYY and CCCCCC.

Refer to Section 4.2 of the draft permit for all the unit-specific monitoring, compliance demonstration, reporting, and record-keeping requirements (MRR).

Record-Keeping

Nucor will be required to follow the standard record-keeping boilerplate language as given under Section 4.4 of the draft permit. This will require Nucor to maintain records of all data monitored in the permit and keep the information for a minimum of five years. All collected data will be available to the Director upon request. Nucor will also be required to follow all the record-keeping requirements as applicable under the variously applicable state and federal rules and regulations.

Reporting

Beyond the requirement to follow all reporting requirements as applicable under the variously applicable state and federal rules and regulations, Nucor will be required to submit the following substantive reports:

- The results of stack testing within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives [3.3.1(d)];

- When necessary, any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned [4.2.12(f)];

- A report detailing all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports [4.5.1(a)]; and

- On or before March 15, a certification of compliance with all requirements of the draft permit for the previous calendar year ending on December 31 [4.5.1(b)].

PERFORMANCE TESTING OF OPERATIONS

Performance testing is required to verify, where reasonable and appropriate, the emissions or emission factors used to determine emission units' potential-to-emit and to show initial or periodic compliance with permitted emission limits. Performance testing must be conducted in accordance with accepted test methods and according to a protocol approved by the Director prior to testing (as outlined under 3.3 of the draft permit). The following table details the initial (within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit) performance testing required of specific emission units:

Table 16: Performance Testing Requirements

Emission Unit(s)	Emission Point(s)	Pollutants	Limit(1)
EAF1/LMF1/CAST1	BHST-1(2)	All Pollutants under Table 4.1.4(a) with the exception of Total HAPs, and CO_2e.	PPH gr/dcsf (PM)
EAF2/LMF2/CAST2	BHST-2(2)		
TF1	TFST-1	CO and NO_x	PPH
GALVFN1 GALVFN2(3)	GALVFN1-ST GALVFN2-ST		
ASP	ASP-1		
RM	RM-BH	$PM_{2.5}$, PM_{10}, PM(4)	PPH gr/dscf
SPM1 SPM2(3)	SPMST1 SPMST2		

(1) Where applicable, test results will also be used to show compliance with lb/ton, lb/mmBtu, or other BACT performance limits.
(2) Initial and periodic performance testing on PM emitted from BHST-1 and BHST-2 shall be in accordance with the procedures outlined under §60.18 and §60.275a.
(3) Permittee may choose one of the identical listed units to test.
(4) Filterable Only.

Periodic testing will then be required as based on the schedule given in Table 4.3.3. of the draft permit. Refer to Section 4.3 of the draft permit for all performance testing requirements.

RECOMMENDATION TO DIRECTOR

The WVDAQ has preliminarily determined that the proposed construction of Nucor Steel West Virginia LLC's West Virginia Steel Mill located near Apple Grove, Mason County will meet the emission limitations and conditions set forth in the DRAFT permit and will comply with all current applicable state and federal air quality rules and regulations including 45CSR14, the WV Legislative Rule implementing the Prevention of Significant Deterioration (PSD) program. A final decision regarding the DRAFT permit will be made after consideration of all public comments. It is the recommendation of the undersigned, upon review and approval of this document and the DRAFT permit, that the WVDAQ, pursuant to §45-14-17, go to public notice on Permit Application R14-0039.

Joseph R. Kessler, PE
Engineer

Attachment A: Air Dispersion Modeling Report

Nucor Corporation: West Virginia Steel Mill

Permit Number R14-0039: Facility ID 053-00085

MEMO

To: Joe Kessler
From: Jon McClung
CC: David Fewell, Bev McKeone, Ed Andrews, Steve Pursley, Rex Compston
Date: March 28, 2022
Re: Air Quality Impact Analysis Review
Nucor Steel West Virginia LLC
West Virginia Steel Mill
PSD Permit Application: R14-0039
Plant ID: 053-00085

Jonathan D. McClung Digitally signed by: Jonathan D. McClung DN: CN = Jonathan D. McClung email = JON.D. MCCLUNG@WV.GOV C = AD O = Department of Environmental Protection OU = Division of Air Quality Date: 2022.03.28 15:32:05 -04'00'

I have completed my review and replication of the air quality impact analysis submitted by Nucor Steel West Virginia LLC (Nucor) in support of the PSD permit application (R14-0039) for the proposed construction of a steel making plant in Apple Grove, West Virginia, within Mason County. Review and replication of various components of the modeling analysis were performed by Ed Andrews, Joe Kessler, Steve Pursley, and Rex Compston. This dispersion modeling analysis is required pursuant to §45-14-9 (Requirements Relating to the Source's Impact on Air Quality). Nucor has demonstrated that the proposed project will not cause or contribute to any violations of applicable NAAQS or increment standards.

The protocol for the modeling analysis was submitted by Nucor on January 13, 2022 and approved by West Virginia Division of Air Quality (DAQ) on January 13, 2022. The initial PSD permit application, which did not contain a modeling analysis report, was received on January 21, 2022. A revised permit application with a modeling analysis report was received on March 23, 2022. A land-use sensitivity analysis and related electronic modeling files were submitted by Nucor on February 9, 2022. Additional electronic modeling files related to the land-use analysis were submitted on February 11, 2022. Multi-processor electronic modeling files were submitted by Nucor on March 8, 2022 and single-processor electronic modeling files were submitted on March 23, 2022.

As part of the review process, an applicant for a PSD permit performs the air quality impact analysis and submits a report and the results to the DAQ. The DAQ then reviews and replicates the modeling analysis to confirm the modeling inputs, procedures, and results. This memo contains a synopsis of the modeling analysis. For a complete technical description of the modeling analysis, please consult the complete administrative record that contains communications with the applicant, the protocol, modeling analysis reports, and electronic modeling files submitted by the applicant.

This review is for the Class II area surrounding the proposed project site. Class I areas within 318 km of the project site are: Dolly Sods Wilderness (WV), Otter Creek Wilderness (WV), James River Face Wilderness (Virginia), and Shenandoah National Park (Virginia). The Federal Land Managers (FLMs) responsible for evaluating potential affects on Air Quality Related

Values (AQRVs) for federally protected Class I areas were consulted. Based on the emissions from the proposed project and the distances to the Class I areas the National Park Service and U.S. Forest Service have stated a Class I analysis for this project is not required.

Nucor will manufacture sheets of steel primarily from scrap steel, direct reduced iron (DRI), and other scrap substitutes. Iron ore will not be processed at the proposed mill and the proposed mill will not utilize coke ovens or blast furnaces. The proposed West Virginia Steel Mill is expected to produce approximately 3 million tons of steel product per year. The following air emission units are proposed for the steel manufacturing plant:

Melt Shop

- Two (2) single shell DC EAFs and two (2) LMFs each with a maximum hourly capacity of 171 tph and annual capacity of 1.5 million tons per year; each controlled with a DEC system and negative pressure baghouses,
- One (1) ladle dryer firing natural gas with a rating of 15 MMBtu/hr
- Seven (7) ladle preheaters firing natural gas each with a rating of 15 MMBtu/hr
- One (1) tundish dryer firing natural gas with a rating of 6 MMBtu/hr
- Two (2) tundish preheaters firing natural gas each with a rating of 9 MMBtu/hr
- Two (2) subentry nozzle preheaters firing natural gas each with a rating of 1 MMBtu/hr
- Two (2) vacuum degassers each with a maximum hourly capacity of 171 tph and annual capacity of 0.875 million tons per year.
- One (1) continuous caster with a maximum hourly capacity of 171 tph and annual capacity of 1.5 million tons per year

Hot Mill

- One (1) tunnel furnace firing natural gas with a rating of 150 MMBtu/hr
- One (1) rolling mill with a rating of 342 tph and annual capacity of 3 million tons per year

Cold Mill

- One (1) scale breaker with a rating of 342 tph and annual capacity of 3 million tons per year
- One (1) pickling line and two (2) galvanizing lines each with a rating of 171 tpy and annual capacity of 1.5 million tons per year
- Two (2) galvanizing furnaces firing natural gas each with a rating of 83 MMBtu/hr
- Twenty-two (22) box annealing furnaces firing natural gas each with a rating of 10 MMBtu/hr
- One (1) tandem cold mill with a rating of 342 tph and annual capacity of 3 million tons per year
- One (1) temper mill with a rating of 342 tph and annual capacity of 3 million tons per year
- Two (2) skin pass mills each with a rating of 114 tph and annual capacity of 1 million tons per year

Raw Material Handling

- One (1) lime handling system consisting of dump station, conveyor systems, and silos
- One (1) carbon handling system consisting of dump station, conveyor systems, and silos
- One (1) alloy handling system consisting of dump station, conveyor systems, and silos
- One (1) DRI handling system consisting of dump station, conveyor systems, and silos
- One (1) scrap handling system

Slag Handling

- One (1) slag handling system consisting of various conveyors systems, screen, piles, and crushers.

Storage Piles

- Three (3) slag stockpiles
- Four (4) scrap metal stockpiles

Auxiliary Equipment

- One (1) air separation unit including a 10 MMBtu/hr water vaporizer bath
- Eight (8) contact and non-contact cooling towers with a total recirculation rate of 204,150 gallons per minute
- Six (6) natural gas fired emergency engines each with a rating of 2,000 hp
- Ten (10) storage tanks containing organic liquids (e.g., diesel, gasoline, hydraulic oil, used oil)
- Fourteen (14) storage tanks containing virgin or spent hydrochloric acid
- Five (5) cold degreasers
- Paved and unpaved roadways will be constructed in and around the facility

Mason County, WV is in attainment or unclassifiable/attainment status for all criteria pollutants. The following pollutants are emitted in excess of the significant emission rate and are subject to PSD review though dispersion modeling: Lead, NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$. Also, Nucor addressed secondary formation of $PM_{2.5}$ as a result of NO_x and SO_2 emissions as well as formation of ozone from NO_x and VOC emissions. The facility wide maximum Project emission rates are in Table 1 (from Page 2-8 of the revised permit application, 3/23/2022).

Table 1. Project Emission Rates

	NO_x (tpy)	CO (tpy)	SO_2 (tpy)	VOC (tpy)	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	Total HAPs (tpy)	CO_2e (tpy)
West Virginia Steel Mill PTE	702	3,263	361	178	396	618	570	0.68	7.50	673,848

Table 2 presents a summary of the air quality standards that were addressed for the Nucor Project. The pollutants, averaging times, increments, significant impact levels (SILs) and National Ambient Air Quality Standards (NAAQS) are listed. The NAAQS are incorporated by reference in WV Legislative Rule 45CSR8 and the PSD increments are found in 45CSR14. The SIL for 1-hour NO_2 and 1-hour SO_2 represents the values the Division of Air Quality has implemented as described in the memorandum included in Attachment A.

Table 2. Ambient Air Quality Standards, SILs, and PSD Increments (µg/m3)

Pollutant	Averaging Period	SIL	Class II PSD Increment	NAAQS
Ozone	8-hr	1 ppb	-	70 ppb
Lead	Rolling 3-month avg.	-	-	0.15
CO	1-hour	2000	-	40,000
	8-hour	500	-	10,000
SO_2	1-hr	7.8	-	196
	3-hr	25	512	-
	24-hr	5	91	-
	Annual	1	20	-
NO_2	1-hour	7.5	-	188
	Annual	1	25	100
PM_{10}	24-hour	5	30	150
	Annual	1	17	-
$PM_{2.5}$	24-hour	1.2	9	35
	Annual	0.2	4	12

An air quality impact analysis, as a part of the PSD review process, is a two tiered process. First, a proposed facility is modeled by itself, on a pollutant-by-pollutant and averaging-time basis, to determine if ambient air concentrations estimated by the model exceed the significant impact level (SIL). If ambient impacts are below the SIL then the proposed source is deemed to not have a significant impact and no further modeling is required. If ambient impacts exceed the SIL, then the modeling analysis proceeds to the second tier of cumulative modeling. The cumulative modeling analysis consists of modeling the proposed facility with existing off-site sources and adding representative background concentrations and comparing the results to PSD increments (increment consuming and expanding sources only, no background concentration) and NAAQS. To receive a PSD permit, the proposed source must not cause or contribute to an exceedance of the NAAQS or PSD increments. In cases where the PSD increments or NAAQS are predicted to be exceeded in the cumulative analysis, the proposed source would not be considered to cause or contribute to the exceedance if the project-only impacts are less than the SIL, and the applicant may still receive a permit if all other requirements are met.

On January 22, 2013, the U.S. Court of Appeals for the District of Columbia Circuit vacated two provisions in EPA's PSD regulations containing SILs for $PM_{2.5}$. The court granted the EPA's request to remand and vacate the SIL provisions in Sections 51.166(k)(2) and 52.21(k)(2) of the regulations so that EPA could address corrections. EPA's position remains that the court decision does not preclude the use of SILs for $PM_{2.5}$ but special care should be taken in applying the SILs for $PM_{2.5}$. This special care involves ensuring that the difference between the NAAQS and the representative measured background concentration is greater than the SIL. If this difference is greater than the SIL, then it is appropriate to use the SIL as a screening tool to inform the decision as to whether to require a cumulative air quality impact analysis. As shown in Table 3, for both the 24-hr and annual averaging time for $PM_{2.5}$, this difference is greater than the SIL and it is appropriate to use the SIL as a screening tool.

Table 3. NAAQS, Monitor Design Values, and Significant Impact Levels

Pollutant	Avg. Period	NAAQS ($\mu g/m^3$)	SIL ($\mu g/m^3$)	Background ($\mu g/m^3$)	NAAQS - Background difference ($\mu g/m^3$)	Greater than SIL?
$PM_{2.5}$	24-hr	35	1.2	15.57	19.43	Yes
$PM_{2.5}$	Annual	12	0.2	7.7	4.3	Yes

Modeling Basis

The modeling system used conforms to 40 CFR 51 Appendix W, applicable guidance, the approved protocol, and is summarized below:

- Nucor used the regulatory dispersion model and supporting programs: AERMOD (version 21112), AERMET (version 21112), AERMINUTE (version 15272), AERMAP (version 18081), AERSURFACE (version 20060), and BPIPPRM (version 04274). The AERMOD modeling system (AERMOD, AERMET, AERMAP) is the regulatory default modeling system for near-field (<50km) regulatory dispersion modeling.
- AERMET was used to process five years of surface meteorological data from the

Huntington Tri-State, WV Airport (ICAO code: KHTS; WBAN Station ID 3860). Upper air data from Pittsburgh, PA airport (ICAO code: KPIT; WBAN Station ID 94823) were used.

- AERSURFACE was used to develop appropriate surface characteristic (albedo, Bowen ratio, surface roughness length) inputs to AERMET.
- A nested receptor grid was developed and AERMAP was used to determine terrain heights and hill height scales for use by AERMOD to determine maximum modeled concentrations.
- The background monitoring data used in the cumulative modeling analysis is in Table 4 (from Page 2-5 of the Nucor modeling report, 3/23/2022). The 1-hr NO_2 background concentrations vary by season-and-hour-of-day.

Table 4. Background Monitor Design Values

Pollutant	Averaging Period	Monitor	Background Concentration (µg/m³)
SO_2	1-Hour	Ashland (21-019-0017)	14.83
NO_2	1-Hour	Ashland (21-019-0017)	Varies
	Annual	Ashland (21-019-0017)	8.91
$PM_{2.5}$	24-Hour	Ashland (21-019-0017)	15.57
	Annual	Ashland (21-019-0017)	7.70
PM_{10}	24-Hour	Ironton (39-087-0012)	25.33
Lead	Rolling 3-Month Avg.	--	--
Ozone	8-Hour	Ashland (21-019-0017)	61 ppb

Ozone Analysis and Secondary Formation of $PM_{2.5}$

In April 2019, EPA released a guidance memorandum[1] (MERP Memorandum) that describes how modeled emission rates of precursors (MERPs) could be calculated as part of a Tier 1 ozone and secondary $PM_{2.5}$ formation analysis to assess a project's emissions of precursor pollutants. The MERPs may be used to describe an emission rate of a precursor that is expected to result in ambient ozone (O_3) or fine particulate matter ($PM_{2.5}$) impact that would be less than a specific air quality concentration threshold for O_3 or $PM_{2.5}$ that a permitting authority chooses to use to determine whether an impact is significant. Additionally, the methods in this guidance can be used to quantify an estimate of impact to perform a cumulative impact analysis. Based on this guidance, Nucor has quantified the potential secondary formation of $PM_{2.5}$ from NO_x and SO_2 and the quantified the impact of the Project's NO_x and VOC emissions on ozone.

[1]Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.s under the PSD Permitting Program (4/30/19)

The MERP Memorandum defines a MERP as:

MERP = Critical Air Quality Threshold * (Modeled emission rate from hypothetical source/ Modeled air quality impact from hypothetical source)

For ozone, EPA has proposed a Significant Impact Level (SIL) of 1 ppb and this value can be used to represent the critical air quality threshold. Table 5 shows the ozone SIL analysis for the Project (from Page 7-2 of the Nucor modeling report, 3/23/2022). Since the estimated ozone impacts from the proposed Nucor facility exceed the SIL, a cumulative analysis for ozone was performed.

Table 5. Ozone SIL Analysis Results

Averaging Period	Precursor	Critical Air Quality Threshold (ppb)	Modeled ER from Hypo. Source[a] (tpy)	Modeled Impact from Hypo. Source[a] (ppb)	Ozone MERP (tpy)	Net Emissions Increase (tpy)	% of Critical Air Quality Threshold	Ozone Project Impact (ppb)	SIL (ppb)
8-hour	NO_X	1.0	1,000	3.794	264	760.7	288.6	2.89	
	VOC	1.0	500	0.170	2,939	183.5	6.2	0.06	
							Total	**2.95**	**1.0**

[a] Hypothetical source is lower release height source located in Boyd County, Kentucky from EPA's MERPs View Qlik website. Hypothetical source emission rate represents the closest value available in MERPs View Qlik to the source-wide PTE for NO_X and VOC for the project.

Table 6 presents the results of the ozone NAAQS analysis for Nucor (from Page 7-3 of the Nucor modeling report, 3/23/2022). This analysis demonstrates that Nucor's estimated impact on ozone combined with a representative background concentration of ozone will be below the 8-hr ozone NAAQS.

Table 6. Ozone NAAQS Analysis Results

Averaging Period	Pollutant	Ozone Project Impact (ppb)	Ozone Background Conc.[a] (ppb)	Cumulative Ozone Impact (ppb)	NAAQS (ppb)
8-hour	Ozone	2.95	61	**63.9**	**70**

[a] Three-year average for 2018-2020 of the annual 4th highest daily maximum 8-hour concentrations measured at the Ashland, KY monitor (21-019-0017).

Nucor utilized EPA's website at https://www.epa.gov/scram/merps-view-qlik to obtain information necessary to assess the Project's formation of secondary $PM_{2.5}$ from NO_x and SO_2. The USEPA model results for the hypothetical source in Boyd County, KY are representative the area of the proposed Nucor facility and were used to assess secondary formation of $PM_{2.5}$ concentrations from direct emissions of NO_x and SO_2 as shown in Table 7 (from Page 7-4 of the

Nucor modeling report, 3/23/22). The total secondary 24- hr $PM_{2.5}$ project impact is 0.06013 $\mu g/m^3$ + 0.12404 $\mu g/m^3$ = 0.18417 $\mu g/m^3$. This value is added to the AERMOD-modeled direct impact of 24-hr $PM_{2.5}$ in the SIL, NAAAQS, and increment analyses. The total secondary Annual $PM_{2.5}$ project impact is 0.00343 $\mu g/m^3$ + 0.00269 $\mu g/m^3$ = 0.00612 $\mu g/m^3$. This value is added to the AERMOD-modeled direct impact of Annual $PM_{2.5}$ in the SIL, NAAAQS, and increment analyses.

Table 7. Class II Assessment of Secondary Formation of $PM_{2.5}$

Averaging Period	Precursor	Critical Air Quality Threshold ($\mu g/m^3$)	Modeled ER from Hypo. Source[a] (tpy)	Modeled Impact from Hypo. Source[a] ($\mu g/m^3$)	$PM_{2.5}$ MERP (tpy)	Net Emissions Increase (tpy)	% of Critical Air Quality Threshold	Secondary $PM_{2.5}$ Project Impact ($\mu g/m^3$)
24-hour	NO_X	1.2	1,000	0.079	15,183	760.7	5.010	**0.06013**
24-hour	SO_2	1.2	1,000	0.343	3,502	362.0	10.337	**0.12404**
Annual	NO_X	0.2	1,000	0.005	44,419	760.7	1.713	**0.00343**
Annual	SO_2	0.2	1,000	0.007	26,874	362.0	1.347	**0.00269**

[a] Hypothetical source is lower release height source located in Boyd County, Kentucky from EPA's MERPs View Qlik website. Hypothetical source emission rate represents the closest value available in MERPs View Qlik to the source-wide PTE for NO_X and SO_2 for the project.

SIL Analysis Results (Tier I)

The results of the Significant Impact Analysis for the Nucor Project sources are included in Tables 8a. and 8b. (from Page 6-1 of the Nucor report, 3/23/2022). Secondary impacts of $PM_{2.5}$ are added to the direct impacts of $PM_{2.5}$ to compare to the $PM_{2.5}$ SILs. Any pollutant/averaging time result exceeding the Significant Impact Level (SIL) must be addressed in a cumulative analysis. A pollutant/averaging time with a result below the SIL is considered insignificant and no further modeling analysis is required. A cumulative modeling analysis is required for the following pollutant(s)/averaging time(s): 1-hr and Annual NO_2, 24-hr and annual PM_{10}, 24-hr and Annual $PM_{2.5}$, 1-hr and 24-hr SO_2. No further modeling is required for 1-hr and 8-hr CO and 3-hr and Annual SO_2. No SIL exists for lead so a cumulative analysis was performed by Nucor.

Tables 8a. and 8b. SIL Analysis Results

Table 8a. Class II Significance Results for CO, PM_{10}, SO_2, and NO_2

Pollutant	Averaging Period	SIL ($\mu g/m^3$)	Maximum Impact ($\mu g/m^3$)	Exceed SIL?	SIA (km)
PM_{10}	24-hr	5	28.9	**Yes**	3.15
	Annual	1	5.6	**Yes**	2.01
CO	1-hr	2,000	1,138.7	No	--
	8-hr	500	106.7	No	--
NO_2	1-hr	7.5	92.1	**Yes**	29.22
	Annual	1	5.4	**Yes**	2.62
SO_2	1-hr	7.8	19.1	**Yes**	3.38
	3-hr	25	12.5	No	--
	24-hr	5	5.5	**Yes**	0.73
	Annual	1	0.9	No	--

Table 8b. Class II Significance Results for $PM_{2.5}$

Pollutant	Averaging Period	SIL ($\mu g/m^3$)	Maximum Impact ($\mu g/m^3$)	Secondary Impact ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Exceed SIL?	SIA (km)
$PM_{2.5}$	24-hr	1.2	7.94	0.184	8.1	**Yes**	9.71
	Annual	0.2	2.77	0.006	2.8	**Yes**	8.55

<u>Cumulative Analysis Results (Tier II)</u>

The cumulative analysis consists of both the NAAQS analysis and PSD increment analysis. The cumulative analysis for demonstrating compliance with the applicable NAAQS includes the modeled impacts from the Nucor Project sources, off-site existing sources, and representative monitored background concentrations. For off-site existing sources, the modeled emission rates represent the two-year average actual emissions. Nucor proposed and followed a procedure to identify the appropriate off-site sources to include in the NAAQS modeling source inventory. The background concentration data is summarized above with detailed information in the applicant's modeling report. Secondary impacts of $PM_{2.5}$ are added to the direct impacts of $PM_{2.5}$ to compare to the $PM_{2.5}$ NAAQS.

The SIL analysis is based on the highest-first-high modeled concentration. The cumulative analysis is based on the modeled concentration in the form of the standard for each pollutant and averaging time and varies for NAAQS and PSD increments. The results of the NAAQS analysis are included in Table 9. No modeled violations of the NAAQS are predicted.

Table 9. Class II NAAQS Analysis Results

Pollutant	Averaging Period	Modeled Concentration (μg/m³)	Background Concentration (μg/m³)	Secondary Impact (μg/m³)	Total Concentration (μg/m³)	NAAQS (μg/m³)	Exceeds NAAQS?
PM_{10}	24-hr	33.44	25.33	--	58.78	150	No
$PM_{2.5}$	24-hr	10.27	15.57	0.184	26.02	35	No
	Annual	2.86	7.70	0.006	10.56	12	No
NO_2	1-hr	140.72	Incl. in Model	--	140.72	188	No
	Annual	8.54	8.91	--	17.45	100	No
SO_2	1-hr	14.79	14.83	--	29.62	196	No
Lead	Rolling 3-Month Avg.	2.37E-03	--	--	2.37E-03	0.15	No

Table 10 shows the results of the Class II PSD Increment Analysis. Pursuant to 45CSR14, actual emissions from any major stationary source on which construction commenced after the major source baseline date and actual emissions increases at any stationary source occurring after the minor source baseline date affect the baseline concentration by consuming increment.

The major source baseline dates are: January 6, 1975 for PM_{10} and sulfur dioxide; February 8, 1988 for NO_2; and October 20, 2010 for $PM_{2.5}$. All major sources of these pollutants in the maximum impact area were constructed prior to the earliest major source baseline date and are included in the baseline concentration and do not consume increment.

The minor source baseline date in Mason County, WV for $PM_{2.5}$ and SO_2 has been set by Nucor's complete PSD application on March 23, 2022. The minor source baseline date for Mason County, WV for TSP, NO_2, and PM_{10} is July 8, 1994. Both APG Polytech, LLC and ICL-North America Inc - Gallipolis Ferry Plant had their original permits (issued in 1975 and 1978, respectively) approved prior to the the minor source baseline date for TSP, NO_2 and PM_{10}.

Accordingly, Nucor is the only source consuming increment and is the only source included in the increment analysis.

Table 10. PSD Class II Increment Analysis Results

Pollutant	Averaging Period	Cumulative Model Impact (μg/m³)	Secondary Impact [a] (μg/m³)	Total Concentration (μg/m³)	Class II PSD Increment (μg/m³)	Exceeds PSD Increment?
PM_{10}	24-hr	28.00	--	28.00	30	No
	Annual	5.59	--	5.59	17	No
$PM_{2.5}$	24-hr	8.15	0.184	8.34	9	No
	Annual	2.89	0.006	2.90	4	No
NO_2	Annual	5.45	--	5.45	25	No
SO_2	24-hr	3.96	--	3.96	91	No

Summary

The air quality impact analysis prepared and submitted by Nucor to the DAQ has been reviewed and replicated and conforms to 40 CFR 51 Appendix W, applicable guidance, and the modeling protocol. No modeled violations are predicted for the applicable NAAQS and PSD increment standards, and, accordingly, Nucor does not cause or contribute to any violations of the applicable NAAQS or PSD increments. No further modeling is required by Nucor.

ATTACHMENT A

Division of Air Quality Memorandum regarding Interim 1-Hour Significant Impact Levels for Nitrogen Dioxide and Sulfur Dioxide

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
dep.wv.gov

MEMORANDUM

To: Jay Fedczak
Fred Durham

Cc: John Benedict
Bev McKeone
Joe Kessler
Steve Pursley

From: Jon McClung JDM

Date: January 28, 2014

Subject: Interim 1-Hour Significant Impact Levels for Nitrogen Dioxide and Sulfur Dioxide

Summary

As a follow-up to our discussions regarding the use of interim significant impact levels (SILs) for the 1-hour nitrogen dioxide (NO_2) and 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standards (NAAQS), I have conducted a detailed review of EPA's relevant guidance concerning their recommended SILs. EPA's guidance provides recommended SILs for 1-hr NO_2 and 1-hr SO_2 to serve as a useful screening tool for implementing the PSD requirements for an air quality analysis. EPA has provided recommended interim SILs since they have not yet codified final SILs through rulemaking. I have confirmed via discussions with the EPA Region 3 Modeler, Timothy A. Leon Guerrero, that the recommended SILs are consistent for use with EPA's PSD permitting program, as codified in 40 CFR 51. We have reviewed EPA's recommended interim SILs for 1-hr NO_2 and 1-hr SO_2 and concur with EPA's finding that an applicant for a PSD permit demonstrating an air quality impact at or below the SIL is *de minimis* in nature and would not cause a violation of the NAAQS. The interim SILs should be used in air quality impact assessments for PSD permit applications until EPA issues a final rule establishing SILs for 1-hr NO_2 and 1-hr SO_2.

Discussion

On February 9, 2010, EPA published a final rule, which became effective on April 12, 2010, establishing a new 1-hour NO_2 NAAQS at 100 ppb (188 $\mu g/m^3$ at 25 °C and 760 mm Hg), based on the 3-year average of the 98th-percentile of the annual distribution of the daily maximum 1-hour concentrations.

On June 22, 2010, EPA published a final rule, which became effective on August 23, 2010, establishing a new 1-hour SO_2 NAAQS at 75 ppb (196 $\mu g/m^3$ at 25 °C and 760 mm Hg), based on the 3-year average of the 99th-percentile of the annual distribution of the daily maximum 1-hour concentrations.

EPA guidance establishes that an air quality assessment for a PSD application begins with the applicant estimating the potential air quality impacts from the project source alone. If a source demonstrates an impact above a SIL then a cumulative impact analysis and PSD increment analysis is required. If modeled impacts do not exceed the SIL, the permitting authority may conclude that the project would not cause or contribute to a violation of the NAAQS and EPA would not consider it necessary to conduct a more comprehensive cumulative impact assessment. Establishing an appropriate SIL is an integral part of the PSD air quality analysis process since without it a permitting authority may not conclude that impacts below a SIL are *de minimis* and further analyses that may not be necessary to demonstrate compliance would automatically be required.

Interim 1-Hour NO_2 and 1-Hour SO_2 SILs

This memo documents the establishment, for the West Virginia PSD program, of an interim 1-hour NO_2 SIL of 4 ppb (7.5 $\mu g/m^3$), which is the same as that recommended by EPA in the June 29, 2010 memorandum from Stephen D. Page, *Guidance Concerning the Implementation of the 1-hour NO_2 NAAQS for the Prevention of Significant Deterioration Program.* This memorandum, which contains the technical analysis to determine the SIL, is appended as Attachment 1.

This memo also documents the establishment, for the West Virginia PSD program, an interim 1-hour SO_2 SIL of 3 ppb (7.8 $\mu g/m^3$), which is the same as that recommended by EPA in the August 23, 2010 memorandum from Stephen D. Page, *Guidance Concerning the Implementation of the 1-hour SO_2 NAAQS for the Prevention of Significant Deterioration Program.* This memorandum, which contains the technical analysis to determine the SIL, is appended as Attachment 2.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

JUN 29 2010

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Guidance Concerning the Implementation of the 1-hour NO_2 NAAQS for the Prevention of Significant Deterioration Program

FROM: Stephen D. Page, Director Stephen Page
Office of Air Quality Planning and Standards

TO: Regional Air Division Directors

On January 22, 2010, the Environmental Protection Agency (EPA) announced a new 1-hour nitrogen dioxide (NO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour NO_2 NAAQS or 1-hour NO_2 standard) of 100 parts per billion (ppb), which is attained when the 3-year average of the 98th-percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 100 ppb at each monitor within an area. EPA revised the primary NO_2 NAAQS to provide the requisite protection of public health. The final rule for the new 1-hour NO_2 NAAQS was published in the Federal Register on February 9, 2010 (75 FR 6474), and the standard became effective on April 12, 2010. EPA policy provides that any federal Prevention of Significant Deterioration (PSD) permit issued under 40 CFR 52.21 on or after that effective date must contain a demonstration of source compliance with the new 1-hour NO_2 standard.

EPA is aware of reports from stakeholders indicating that some sources—both existing and proposed—are modeling potential violations of the 1-hour NO_2 standard. In many cases, the affected units are emergency electric generators and pump stations, where short stacks and limited property rights exist. However, larger sources, including coal-fired and natural gas-fired power plants, refineries, and paper mills, could also model potential violations of the new NO_2 NAAQS.

To respond to these reports and facilitate the PSD permitting of new and modified major stationary sources, we are issuing the attached guidance, in the form of two memoranda, for implementing the new 1-hour NO_2 NAAQS under the PSD permit program. The guidance contained in the attached memoranda addresses two areas. The first memorandum, titled, "General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level," includes guidance for the preparation and review of PSD permits with respect to the new 1-hour NO_2 standard. This guidance memorandum sets forth a recommended interim 1-hour NO_2 significant impact level (SIL) that states may consider when carrying out the required

PSD air quality analysis for NO_2, until EPA promulgates a 1-hour NO_2 SIL via rulemaking. The second memorandum, titled "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard," includes specific modeling guidance for estimating ambient NO_2 concentrations and determining compliance with the new 1-hour NO_2 standard.

This guidance does not bind state and local governments and the public as a matter of law. Nevertheless, we believe that state and local air agencies and industry will find this guidance useful when carrying out the PSD permit process. We believe it will provide a consistent approach for estimating NO_2 air quality impacts from proposed construction or modification of NOx emissions sources. For the most part, the attached guidance reiterates existing policy and guidance, but focuses on how this information is relevant to implementation of the new 1-hour NO_2 NAAQS.

Please review the guidance included in the two attached memoranda. If you have questions regarding the general implementation guidance contained in the first memorandum, please contact Raj Rao (rao.raj@epa.gov). If you have questions regarding the modeling guidance in the second memorandum, please contact Tyler Fox (fox.tyler@epa.gov). We are continuing our efforts to address permitting issues related to NO_2 and other NAAQS including the recently-signed 1-hour sulfur dioxide NAAQS. We plan to issue additional guidance to address these new 1-hour standards in the near future.

Attachments:

1. Memorandum from Anna Marie Wood, Air Quality Policy Division, to EPA Regional Air Division Directors, "General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level" (June 28, 2010).
2. Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" (June 28, 2010).

cc: Anna Marie Wood
Richard Wayland
Raj Rao
Tyler Fox
Dan deRoeck
Roger Brode
Rich Ossias
Elliott Zenick
Brian Doster

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

June 28, 2010

MEMORANDUM

SUBJECT: General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level

FROM: Anna Marie Wood, Acting Director /s/
Air Quality Policy Division

TO: Regional Air Division Directors

INTRODUCTION

We are issuing the following guidance to explain and clarify the procedures that may be followed by applicants for Prevention of Significant Deterioration (PSD) permits and permitting authorities reviewing such applications to properly demonstrate that proposed construction will not cause or contribute to a violation of the new 1-hour nitrogen dioxide (NO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour NO_2 NAAQS or 1-hour NO_2 standard) that became effective on April 12, 2010. EPA revised the primary NO_2 NAAQS by promulgating a 1-hour NO_2 NAAQS to provide the requisite protection of public health. Under section 165(a)(3) of the Clean Air Act (the Act) and sections 52.21(k) and 51.166(k) of EPA's PSD regulations, to obtain a permit, a source must demonstrate that its proposed emissions increase will not cause or contribute to a violation of any NAAQS.

This guidance is intended to: (1) explain the recommended procedures for stakeholders to follow to properly address concerns over high preliminary modeled estimates of ambient NO_2 concentrations that suggest potential violations of the new 1-hour NO_2 standard under some modeling and permitting scenarios; (2) help reduce the burden of modeling for the hourly NO_2 standard where it can be properly demonstrated that a source will not have a significant impact on ambient 1-hour NO_2 concentrations; and (3) identify approaches that allow sources and permitting authorities to mitigate, in a manner consistent with existing regulatory requirements, potential modeled violations of the 1-hour NO_2 NAAQS, where appropriate. Accordingly, the techniques described in this memorandum may be used by permit applicants and permitting authorities to configure projects and permit conditions in order to reasonably conclude that a proposed source's emissions do not cause or contribute to modeled 1-hour NO_2 NAAQS violations so that permits can be issued in accordance with the applicable PSD program requirements.

This guidance discusses existing provisions in EPA regulations and previous guidance for applying those provisions but focuses on the relevancy of this information for implementing the new NAAQS for NO_2. Importantly, however, this guidance also sets forth a recommended interim 1-hour NO_2 significant impact level (SIL) that EPA will use for implementing the federal PSD program, and that states may choose to rely upon to implement their PSD programs for NOx if they agree that these values represent *de minimis* impact levels and incorporate into each permit record a rationale supporting this conclusion. This interim SIL is a useful screening tool that can be used to determine whether or not the emissions from a proposed source will significantly impact hourly NO_2 concentrations, and, if significant impacts are predicted to occur, whether the source's emissions "cause or contribute to" any modeled violations of the new 1-hour NO_2 NAAQS.

BACKGROUND

On April 12, 2010, the new 1-hour NO_2 NAAQS became effective. EPA interprets its regulations at 40 CFR 52.21 (the federal PSD program) to require permit applicants to demonstrate compliance with "any" NAAQS that is in effect on the date a PSD permit is issued. (See, e.g., EPA memo dated April 1, 2010, titled "Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards.") Due to the introduction of a short-term averaging period for the 1-hour NO_2 NAAQS, we anticipate that some stationary sources with relatively short stacks may experience increased difficulty demonstrating that emissions from new construction or modifications will not cause or contribute to a violation of the 1-hour NO_2 NAAQS.

We are responding to reports from stakeholders which indicate that some sources, existing and proposed, are modeling high hourly NO_2 concentrations showing violations of the 1-hour NO_2 NAAQS—based only on the source's projected emissions of NOx under some modeling and permitting scenarios. We find that, in many cases, the modeled violations are resulting from emissions at emergency electric generators and pump stations, where short stacks and limited property rights exist. In other cases, the problem may occur during periods of unit startup, particularly where controls may initially not be in operation. Finally, certain larger sources, including coal-fired and natural gas-fired power plants, refineries, and paper mills could also experience problems in meeting the new 1-hour NO_2 NAAQS using particular modeling assumptions and permit conditions.

We believe that, in some instances, the projected violations result from the use of maximum modeled concentrations that do not adequately take into account the form of the 1-hour standard, and are based on the conservative assumption of 100% NOx-to-NO_2 conversion in the ambient air. To the extent that this is the case, it may be possible to provide more accurate projections of ambient NO_2 concentrations by applying current procedures which account for the statistical form of the 1-hour NO_2 standard, as well as more realistic estimates of the rate of conversion of NOx emissions to ambient NO_2 concentrations. See EPA Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" (June 28, 2010) for specific modeling guidance for estimating ambient NO_2 concentrations consistent with the new 1-hour NO_2 NAAQS. In addition, where short stacks are currently being used, or are under design, it may be possible to lessen the source's air quality impacts without improper dispersion by implementing "good engineering practice" (GEP) stack heights to increase the height of existing or designed stacks to avoid excessive concentrations due to downwash, as described in the guidance below.

It is EPA's expectation that the guidance in this memorandum and available modeling guidance for NO_2 assist in resolving some of the issues arising from preliminary analyses that are reportedly showing potential exceedances of the new 1-hour NO_2 NAAQS that would not be present under more refined modeling applications. In addition, the techniques described in this memorandum may also help avoid violations of the standard through design of the proposed source or permit conditions, consistent with existing regulatory requirements, which enable the source to demonstrate that its proposed emissions increase will not cause or contribute to a modeled violation of the 1-hour NO_2 standard. Moreover, the interim 1-hour NO_2 SIL that is included in this guidance will provide a reasonable screening tool for efficiently implementing the PSD requirements for an air quality impact analysis.

The following discussion provides guidance concerning demonstrating compliance with the new NAAQS and mitigating modeled violations using air quality-based permit limits more stringent than what the Best Available Control Technology provisions may otherwise require, air quality offsets, the use of GEP stack heights, possible permit conditions for emergency generators, and an interim 1-hour NO_2 SIL.

AIR-QUALITY BASED EMISSIONS LIMITATIONS

Once a level of control required by the Best Available Control Technology provisions is proposed by the PSD applicant, the proposed source's emissions must be modeled at the BACT emissions rate(s) to demonstrate that those emissions will not cause or contribute to a violation of any NAAQS or PSD increment. EPA's 1990 Workshop Manual (page B.54) describes circumstances where a source's emissions based on levels proposed through the top-down process may not be sufficiently controlled to prevent modeled violations of an increment or NAAQS. In such cases, it may be appropriate for PSD applicants to propose a more stringent control option (that is, beyond the level identified via the top-down process) as a result of an adverse impact on the NAAQS or PSD increments.

DEMONSTRATING COMPLIANCE WITH THE NEW NAAQS & MITIGATING MODELED VIOLATIONS WITH AIR QUALITY OFFSETS

A 1988 EPA memorandum provides procedures to follow when a modeled violation is identified during the PSD permitting process. See Memorandum from Gerald A. Emison, EPA OAQPS, to Thomas J. Maslany, EPA Air Management Division, "Air Quality Analysis for Prevention of Significant Deterioration (PSD)." (July 5, 1988). In brief, a reviewing authority may issue a proposed new source or modification a PSD permit only if it can be shown that the proposed project's emissions will not "cause or contribute to" any modeled violations.

To clarify the above statement, in cases where modeled violations of the 1-hour NO_2 NAAQS are predicted, but the permit applicant can show that the NOx emissions increase from the proposed source will not have a significant impact *at the point and time of any modeled violation*, the permitting authority has discretion to conclude that the source's emissions will not contribute to the modeled violation. As provided in the July 5, 1988, guidance memo, in such instances, because of the proposed source's *de minimis* contribution to any modeled violation, the source's impact will not be considered to cause or contribute to such modeled violations, and the permit could be issued. This concept continues to apply, and the significant impact level (described further below) may be used as part of this analysis. A 2006 decision by the EPA Environmental Appeals Board (EAB) provides detailed reasoning that demonstrates the permissibility of finding that a PSD source would not be considered to cause or contribute to a modeled NAAQS violation because its estimated air quality impact was insignificant at the time and place of the modeled violations.[1] See In re *Prairie State Gen. Co.*, 13 E.A.D. ___, ___, PSD Appeal No. 05-05, Slip. Op. at 137-144 (EAB 2006)

However, where it is determined that a source's impact does cause or contribute to a modeled violation, a permit cannot be issued without some action taken to mitigate the source's impact. In accordance with 40 CFR 51.165(b)[2], a major stationary source or major modification (as defined at §51.165(a)(1)(iv) and (v)) that locates in an NO_2 attainment area, but would cause or contribute to a violation of the 1-hour NO_2 NAAQS anywhere may "reduce the impact of its emissions upon air quality by obtaining sufficient emission reductions to, at a minimum, compensate for its adverse ambient [NO_2] impact where the major source or major modification would otherwise cause or contribute to a violation …." An applicant can meet this requirement for obtaining additional emissions reductions by either reducing its emissions at the source, e.g., promoting more efficient production methodologies and energy efficiency, or by obtaining air quality offsets (see below). See, e.g., In re *Interpower of New York, Inc.*, 5 E.A.D. 130, 141 (EAB 1994).[3] A State may also provide the necessary emissions reductions by imposing emissions limitations on other sources through an approved State Implementation Plan (SIP) revision. These approaches may also be combined as necessary to demonstrate that a source will not cause or contribute to a violation of the NAAQS.

Unlike emissions offset requirements in nonattainment areas, in addressing the air quality offset concept, it may not be necessary for a permit applicant to fully offset the proposed emissions increase if an emissions reduction of lesser quantity will mitigate the adverse air quality impact on a modeled violation. ("Although full emission offsets are not required, such a source must obtain emission offsets sufficient to compensate for its air quality impact where the violation occurs." 44 FR 3274, January 16, 1979, at 3278.) To clarify this, the 1988 guidance memo referred to above states that:

> offsets sufficient to compensate for the source's significant impact must be obtained pursuant to an approved State offset program consistent with State Implementation Plan (SIP) requirements under 40 CFR 51.165(b). Where the source is contributing to an

[1] While there is no 1-hour NO_2 significant impact level (SIL) currently defined in the PSD regulations, we believe that states may adopt interim values, with the appropriate justification for such values, to use for permitting purposes. In addition, we are recommending an interim SIL as part of this guidance for implementing the NO_2 requirements in the federal PSD program, and in state programs where states choose to use it.

[2] The same provision is contained in EPA's Interpretative Ruling at 40 CFR part 51 Appendix S, section III.

[3] In contrast to Nonattainment New Source Review permits, offsets are not mandatory requirements in PSD permits if it can otherwise be demonstrated that a source will not cause or contribute to a violation of the NAAQS. See, In re *Knauf Fiber Glass, GMBH*, 8 E.A.D. 121, 168 (EAB 1999).

existing violation, the required offset may not correct the violation. Such existing violations must be addressed [through the SIP].

In addition, in order to determine the appropriate emissions reductions, the applicant and permitting authority should take into account modeling procedures for the form of the 1-hour standard and for the appropriate NOx-NO_2 conversion rate that applies in the area of concern. As part of this process, existing ambient ozone concentrations and other meteorological conditions in the area of concern may need to be considered. Note that additional guidance for this and other aspects of the modeling analysis for the impacts of NOx emissions on ambient concentrations of NO_2 are addressed in EPA modeling guidance, including the June 28, 2010, Memorandum titled, "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard."

"GOOD ENGINEERING PRACTICE" STACK HEIGHT & DISPERSION TECHNIQUES

If a permit applicant is unable to show that the source's proposed emissions increase will not cause or contribute to a modeled violation of the new 1-hour NO_2 NAAQS, the problem could be the result of plume downwash effects which may cause high ambient concentrations near the source. In such cases, a source may be able to raise the height of its existing stacks (or designed stacks if not yet constructed) to a GEP stack height of at least 65 meters, measured from the ground-level elevation at the base of the stack.

While not necessarily totally eliminating the effects of downwash in all cases, raising stacks to GEP height may provide substantial air quality benefits in a manner consistent with statutory provisions (section 123 of the Act) governing acceptable stack heights to minimize extensive concentrations due to atmospheric downwash, eddies or wakes. Permit applicants should also be aware of the regulatory restrictions on stack heights for the purpose of modeling for compliance with NAAQS and increments. Section 52.21(h) of the PSD regulations currently prohibits the use of dispersion techniques, such as stack heights above GEP, merged gas streams, or intermittent controls for setting NOx emissions limits or to meet the annual and 1-hour NAAQS and annual NO_2 increments. However, stack heights in existence before December 31, 1970, and dispersion techniques implemented before then, are not affected by these limitations. EPA's general stack height regulations are promulgated at 40 CFR 51.100(ff), (gg), (hh), (ii), (jj), (kk) and (nn), and 40 CFR 51.118.

a. *Stack heights*: A source cannot take credit for that portion of a stack height in excess of the GEP height when modeling to develop the NOx emissions limitations or to determine source compliance with the annual and 1-hour NO_2 NAAQS. It should be noted, however, that this limitation <u>does not limit</u> the actual height of any stack constructed by a new source or modification.

The following limitations apply in accordance with §52.21(h):

- For a stack height less than GEP, the actual stack height must be used in the source impact analysis for NOx emissions;

- For a stack height equal to or greater than 65 meters, the impact on NOx emission limits may be modeled using the greater of:
    - A *de minimis* stack height equal to 65 meters, as measured from the ground-level elevation at the base of the stack, without demonstration or calculation (40 CFR 51.100(ii)(1));
    - The refined formula height calculated using the dimensions of nearby structures in accordance with the following equation:

  GEP = H + 1.5L, where H is the height of the nearby structure and L is the lesser dimension of the height or projected width of the nearby structure (40 CFR 51.100(ii)(2)(ii)).[4]

- A GEP stack height exceeding the refined formula height may be approved when it can be demonstrated to be necessary to avoid "excessive concentrations" of NO_2 caused by atmospheric downwash, wakes, or eddy effects by the source, nearby structures, or nearby terrain features.
  (40 CFR 51.100(ii)(3), (jj), (kk));

- For purposes of PSD (and NOx/NO_2), "excessive concentrations" means a maximum ground-level concentration of NO_2 due to NOx emissions from a stack due in whole or in part to downwash, wakes, and eddy effects produced by nearby structures or nearby terrain features which individually is at least 40 percent in excess of the maximum NO_2 concentration experienced in the absence of such effects and (a) which contributes to a total NO_2 concentration due to emissions from all sources that is greater than the annual or 1-hour NO_2 NAAQS or (b) greater than the PSD (annual) increment for NO_2.
  (40 CFR 51.100(kk)(1)).

Reportedly, for economic and other reasons, many existing source stacks have been constructed at heights less than 65 meters, and source impact analyses may show that the source's emissions will cause or contribute to a modeled violation of the annual or 1-hour NO_2 NAAQS. Where this is the case, sources should be aware that they can increase their stack heights up to 65 meters without a GEP demonstration.

b. *Other dispersion techniques*: The term "dispersion technique" includes any practice carried out to increase final plume rise, subject to certain exceptions (40 CFR 51.100(hh)(1)(iii), (2)(i) – (v)). Beyond the noted exceptions, such techniques are not allowed for getting credit for modeling source compliance with the annual and 1-hour NO_2 NAAQS and annual NO_2 increment.

[4] For stacks in existence on January 12, 1979, the GEP equation is GEP = 2.5 H (provided the owner or operator produces evidence that this equation was actually relied on in establishing an emission limitation for NOx (40 CFR 51.100(ii)(2)(i)

OPERATION OF EMERGENCY EQUIPMENT & GENERAL STARTUP CONDITIONS

In determining an emergency generator's potential to emit, existing guidance (EPA memo titled "Calculating Potential to Emit (PTE) for Emergency Generators," September 6, 1995) allows a default value of 500 hours "for estimating the number of hours that an emergency generator could be expected to operate under worst-case conditions." The guidance also allows for alternative estimates to be made on a case-by-case basis for individual emergency generators. This time period must also consider operating time for both testing/maintenance as well as for emergency utilization. Likewise, existing EPA policy does not allow NOx emissions to be excluded from the source impact analysis (NAAQS and increments) when the emergency equipment is operating during an emergency. EPA provides no exemption from compliance with the NAAQS during periods of emergency operation. Thus, it is not sufficient to consider only emissions generated during periods of testing/maintenance in the source impact analysis.

If during an emergency, emergency equipment is never operated simultaneously with other emissions units at the source that the emergency equipment will back up, a worst-case hourly impact analysis may very well occur during periods of normal source operation when other emissions units at the facility are likely to be operating simultaneously with the scheduled testing of emergency equipment. To avoid such worst-case modeling situations, a permit applicant may commit to scheduling the testing of emergency equipment during times when the source is not otherwise operating, or during known off-peak operating periods. This could provide a basis to justify not modeling the 1-hour impacts of the emergency equipment under conditions that would include simultaneous operation with other onsite emissions units. Accordingly, permits for emergency equipment may include enforceable conditions that specifically limit the testing/maintenance of emergency equipment to certain periods of time (seasons, days of the week, hours of the day, etc.) as long as these limitations do not constitute dispersion techniques under 40 CFR 51.1(hh)(1)(ii).

We also note that similar problems associated with the modeling of high 1-hour NO_2 concentrations have been reported to occur during startup periods for certain kinds of emissions units—often because control equipment cannot function during all or a portion of the startup process. EPA currently has no provisions for exempting emissions occurring during equipment startups from the air quality analysis to demonstrate compliance with the NAAQS. Startup emissions may occur during only a relatively small portion of the unit's total annual operating schedule; however, they must be included in the required PSD air quality analysis for the NAAQS. Sources may be willing to accept enforceable permit conditions limiting equipment startups to certain hours of the day when impacts are expected to be lower than normal. Such permit limitations can be accounted for in the modeling of such emissions. Applicants should direct other questions arising concerning procedures for modeling startup emissions to the applicable permitting authority to determine the most current modeling guidance.

SCREENING VALUES

In the final rule establishing the hourly NO_2 standard, EPA discussed various implementation considerations for the PSD permitting program. 75 FR.6474, 6524 (Feb. 9, 2010). This discussion included the following statements regarding particular screening values that have historically been used on a widespread basis to facilitate implementation of the PSD permitting program:

> We also believe that there may be a need to revise the screening tools currently used under the NSR/PSD program for completing NO_2 analyses. These screening tools include the significant impact levels (SILs), as mentioned by one commenter, but also include the significant emissions rate for emissions of NOx and the significant monitoring concentration (SMC) for NO_2. EPA intends to evaluate the need for possible changes or additions to each of these important screening tools for NOx/NO_2 due to the addition of a 1-hour NO_2 NAAQS. If changes or additions are deemed necessary, EPA will propose any such changes for public notice and comment in a separate action. 75 FR 6525.

EPA intends to conduct an evaluation of these issues and submit our findings in the form of revised significance levels under notice and comment rulemaking if any revisions are deemed appropriate. In the interim, for the reasons provided below, we recommend the continued use of the existing significant emissions rates (SER) for NOx emissions as well as an interim 1-hour NO_2 SIL that we are setting forth today for conducting air quality impact analyses for the 1-hour NO_2 NAAQS. As described in the section titled Introduction, EPA intends to implement the interim 1-hour NO_2 SIL contained herein under the federal PSD program and offers states the opportunity to use it in their PSD programs if they choose to do so. EPA is not addressing the significant monitoring concentrations in this memorandum.

SIGNIFICANT EMISSIONS RATE

Under the terms of existing EPA regulations, the applicable significant emissions rate for nitrogen oxides is 40 tons per year. 40 CFR 52.21(b)(23); 40 CFR 51.166(b)(23). The significant emissions rates defined in those regulations are specific to individual pollutants but are not differentiated by the averaging times of the air quality standards applicable to some of the listed pollutants. Although EPA has not previously promulgated a NO_2 standard using an averaging time of less than one year, the NAAQS for SO_2 have included standards with 3-hour and 24-hour averaging times for many years. EPA has applied the 40 tons per year significant emissions rate for SO_2 across all of these averaging times. Until the evaluation described above and any associated rulemaking is completed, EPA does not believe it has cause to apply the NO_2 significant emissions rate any differently than EPA has historically applied the SO_2 significant emissions rate and others that apply to standards with averaging times less than 1 year.

Under existing regulations, an ambient air quality impact analysis is required for "each pollutant that [a source] would have the potential to emit in significant amounts." 40 CFR 52.21(m)(1)(i)(a); 40 CFR. 51.166(m)(1)(i)(a). For modifications, these regulations require this analysis for "each pollutant for which [the modification] would result in a significant net emissions increase." 40 CFR.52.21(m)(1)(i)(b); 40 CFR.51.166(m)(1)(i)(b). EPA construes this regulation to mean that an ambient impact analysis is not necessary for pollutants with emissions rates below the significant emissions rates in paragraph (b)(23) of the regulations. No additional action by EPA or permitting authorities is necessary at this time to apply the 40 tpy significant emissions rate in existing regulations to the hourly NO_2 standard.

INTERIM 1-HOUR NO_2 SIGNIFICANT IMPACT LEVEL

A significant impact level (SIL) serves as a useful screening tool for implementing the PSD requirements for an air quality analysis. The primary purpose of the SIL is to serve as a screening tool to identify a level of ambient impact that is sufficiently low relative to the NAAQS or PSD increments such that the impact can be considered trivial or *de minimis*. Hence, the EPA considers a source whose individual impact falls below a SIL to have a *de minimis* impact on air quality concentrations that already exist. Accordingly, a source that demonstrates that the projected ambient impact of its proposed emissions increase does not exceed the SIL for that pollutant at a location where a NAAQS or increment violation occurs is not considered to cause or contribute to that violation. In the same way, a source with a proposed emissions increase of a particular pollutant that will have a significant impact at some locations is not required to model at distances beyond the point where the impact of its proposed emissions is below the SILs for that pollutant. When a proposed source's impact by itself is not considered to be "significant," EPA has long maintained that any further effort on the part of the applicant to complete a cumulative source impact analysis involving other source impacts would only yield information of trivial or no value with respect to the required evaluation of the proposed source or modification. The concept of a SIL is grounded on the *de minimis* principles described by the court in *Alabama Power Co. v. Costle*, 636 F.2d 323, 360 (D.C. Cir. 1980); See also *Sur Contra La Contaminacion v. EPA*, 202 F.3d 443, 448-49 (1st Cir. 2000) (upholding EPA's use of SIL to allow permit applicant to avoid full impact analysis); *In re: Prairie State Gen. Co.*, PSD Appeal No. 05-05, Slip. Op. at 139 (EAB 2006)

EPA has codified several SILs into regulations at 40 CFR 51.165(b). EPA plans to undertake rulemaking to develop a 1-hour NO_2 SIL for the new NAAQS for NO_2. However, EPA has recognized that the absence of an EPA-promulgated SIL does not preclude permitting authorities from developing interim SILs for use in demonstrating that a cumulative air quality analysis would yield trivial gain. Response to Comments, Implementation of New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers in Diameter ($PM_{2.5}$), pg. 82 (March 2008) [EPA-HQ-OAR-2003-0062-0278].

Until such time as a 1-hour NO_2 SIL is defined in the PSD regulations, we are herein providing a recommended interim SIL that we intend to use as a screening tool for completing the required air quality analyses for the new 1-hour NO_2 under the federal PSD program at 40 CFR 52.21. To support the application of this interim SIL in each instance, a permitting authority that utilizes this SIL as part of an ambient air quality analysis should include in the permit record the analysis reflected in this memorandum and the referenced documents to demonstrate that an air quality impact at or below the SIL is *de minimis* in nature and would not cause a violation of the NAAQS.

Using the interim 1-hour NO_2 SIL, the permit applicant and permitting authority can determine: (1) whether, based on the proposed increase in NOx emissions, a cumulative air quality analysis is required; (2) the area of impact within which a cumulative air quality analysis should focus; and (3) whether, as part of a cumulative air quality analysis, the proposed source's NOx emissions will cause or contribute to a modeled violation of the 1-hour NO_2 NAAQS.

In this guidance, EPA recommends an interim 1-hour NO_2 SIL value of 4 ppb. To determine initially whether a proposed project's emissions increase will have a significant impact (resulting in the need for a cumulative air quality analysis), this interim SIL should be compared to either of the following:

- The highest of the 5-year averages of the maximum modeled 1-hour NO_2 concentrations predicted each year at each receptor, based on 5 years of National Weather Service data; or
- The highest modeled 1-hour NO_2 concentration predicted across all receptors based on 1 year of site-specific meteorological data, or the highest of the multi-year averages of the maximum modeled 1-hour NO_2 concentrations predicted each year at each receptor, based on 2 or more, up to 5 complete years of available site-specific meteorological data.

Additional guidance will be forthcoming for the purpose of comparing a proposed source's modeled impacts to the interim 1-hour NO_2 SIL in order to make a determination about whether that source's contribution is significant when a cumulative air quality analysis identifies violations of the 1-hour NO_2 NAAQS (i.e., "causes or contributes to" a modeled violation).

We derived this interim 1-hour NO_2 SIL by using an impact equal to 4% of the 1-hour NO_2 NAAQS (which is 100 ppb). We have chosen this approach because we believe it is reasonable to base the interim 1-hour NO_2 SIL directly on consideration of impacts relative to the 1-hour NO_2 NAAQS. In 1980, we defined SER for each pollutant subject to PSD. 45 FR 52676, August 7, 1980 at 52705-52710. For PM and SO_2, we defined the SER as the emissions rate that resulted in an ambient impact equal to 4% of the applicable short-term NAAQS. The 1980 analysis focused on levels no higher than 5% of the primary standard because of concerns that higher levels were found to result in unreasonably large amounts of increment being consumed by a single source. Within the range of impacts analyzed, we considered two factors that had an important influence on the choice of *de minimis* emissions levels: (1) cumulative effect on increment consumption of multiple sources in an area, each making the maximum *de minimis* emissions increase; and (2) the projected consequence of a given *de minimis* level on administrative burden. As explained in the preamble to the 1980 rulemaking and the supporting documentation,[5] EPA decided to use 4% of the 24-hour primary NAAQS for PM and SO_2 to define the significant emissions rates (SERs) for those pollutants. It was noted that, at the time, only an annual NO_2 NAAQS existed. Thus, for reasons explained in the 1980 preamble, to define the SER for NOx emissions we used a design value of 2% of the annual NO_2 NAAQS. See 45 FR 52708. Looking now at a short-term NAAQS for NO_2, we believe that it is reasonable as an interim approach to use a SIL value that represents 4% of the 1-hour NO_2

[5] EPA evaluated de minimis levels for pollutants for which NAAQS had been established in a document titled "Impact of Proposed and Alternative De Minimis Levels for Criteria Pollutants"; EPA-450/2-80-072, June 1980.

NAAQS. EPA will consider other possible alternatives for developing a 1-hour NO_2 SIL in a future rulemaking that will provide an opportunity for public participation in the development of a SIL as part of the PSD regulations.

Several state programs have already adopted interim 1-hour NO_2 SILs that differ (both higher and lower) from the interim value being recommended herein. The EPA-recommended interim 1-hour NO_2 SIL is not intended to supersede any interim SIL that is now or may be relied upon to implement a state PSD program that is part of an approved SIP, or to impose the use of the SIL concept on any state that chooses to implement the PSD program—in particular the ambient air quality analysis—without using a SIL as a screening tool. Accordingly, states that implement the PSD program under an EPA-approved SIP may choose to use this interim SIL, another value that may be deemed more appropriate for PSD permitting purposes in the state of concern, or no SIL at all. The application of any SIL that is not reflected in a promulgated regulation should be supported by a record in each instance that shows the value represents a *de minimis* impact on the 1-hour NO_2 standard, as described above.

In the event of questions regarding the general implementation guidance contained in this memorandum, please contact Raj Rao (rao.raj@epa.gov).

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June 28, 2010

MEMORANDUM

SUBJECT: Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard

FROM: Tyler Fox, Leader
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TO: Regional Air Division Directors

INTRODUCTION

On January 22, 2010, EPA announced a new 1-hour nitrogen dioxide (NO_2) National Ambient Air Quality Standard (1-hour NO_2 NAAQS or 1-hour NO_2 standard) which is attained when the 3-year average of the 98th-percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 100 ppb at each monitor within an area. The final rule for the new 1-hour NO_2 NAAQS was published in the Federal Register on February 9, 2010 (75 FR 6474-6537), and the standard became effective on April 12, 2010 (EPA, 2010a). This memorandum clarifies the applicability of current guidance in the *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W) for modeling NO_2 impacts in accordance with the Prevention of Significant Deterioration (PSD) permit requirements to demonstrate compliance with the new 1-hour NO_2 standard.

SUMMARY OF CURRENT GUIDANCE

While the new 1-hour NAAQS is defined relative to ambient concentrations of NO_2, the majority of nitrogen oxides (NOx) emissions for stationary and mobile sources are in the form of nitric oxide (NO) rather than NO_2. Appendix W notes that the impact of an individual source on ambient NO_2 depends, in part, "on the chemical environment into which the source's plume is to be emitted" (see Section 5.1.j). Given the role of NOx chemistry in determining ambient impact levels of NO_2 based on modeled NOx emissions, Section 5.2.4 of Appendix W recommends the following three-tiered screening approach for NO_2 modeling for annual averages:

- Tier 1 - assume full conversion of NO to NO_2 based on application of an appropriate refined modeling technique under Section 4.2.2 of Appendix W to estimate ambient NOx concentrations;
- Tier 2 - multiply Tier 1 result by empirically-derived NO_2/NOx ratio, with 0.75 as the annual national default ratio (Chu and Meyer, 1991); and

- Tier 3 - detailed screening methods may be considered on a case-by-case basis, with the Ozone Limiting Method (OLM) identified as a detailed screening technique for point sources (Cole and Summerhays, 1979).

Tier 2 is often referred to as the Ambient Ratio Method, or ARM. Site-specific ambient NO_2/NOx ratios derived from appropriate ambient monitoring data may also be considered as detailed screening methods on a case-by-case basis, with proper justification. Consistent with Section 4.2.2, AERMOD is the current preferred model for "a wide range of regulatory applications in all types of terrain" for purposes of estimating ambient concentrations of NO_2, based on NOx emissions, under Tiers 1 and 2 above. We discuss the role of AERMOD for Tier 3 applications in more detail below.

APPLICABILITY OF CURRENT GUIDANCE TO 1-HOUR NO_2 NAAQS

In general, the Appendix W recommendations regarding the annual NO_2 standard are also applicable to the new 1-hour NO_2 standard, but additional issues may need to be considered in the context of a 1-hour standard, depending on the characteristics of the emission sources, and depending on which tier is used, as summarized below:

- Tier 1 applies to the 1-hour NO_2 standard without any additional justification;
- Tier 2 may also apply to the 1-hour NO_2 standard in many cases, but some additional consideration will be needed in relation to an appropriate ambient ratio for peak hourly impacts since the current default ambient ratio is considered to be representative of "area wide quasi-equilibrium conditions"; and
- Tier 3 "detailed screening methods" will continue to be considered on a case-by-case basis for the 1-hour NO_2 standard. However, certain input data requirements and assumptions for Tier 3 applications may be of greater importance for the 1-hour standard than for the annual standard given the more localized nature of peak hourly vs. annual impacts. In addition, use of site-specific ambient NO_2/NOx ratios based on ambient monitoring data will generally be more difficult to justify for the 1-hour NO_2 standard than for the annual standard.

While Appendix W specifically mentions OLM as a detailed screening method under Tier 3, we also consider the Plume Volume Molar Ratio Method (PVMRM) (Hanrahan, 1999a) discussed under Section 5.1.j of Appendix W to be in this category at this time. Both of these options account for ambient conversion of NO to NO_2 in the presence of ozone, based on the following basic chemical mechanism, known as titration, although there are important differences between these methods:

$$NO + O_3 \rightarrow NO_2 + O_2 \qquad \text{(Eq. 1)}$$

As noted in Section 5.1.j, EPA is currently testing the PVMRM option to determine its suitability as a refined method. Limited evaluations of PVMRM have been completed, which show encouraging results, but the amount of data currently available is too limited to justify a designation of PVMRM as a refined method for NO_2 (Hanrahan, 1999b; MACTEC, 2005). EPA is currently updating and extending these evaluations to examine model performance for predicting hourly NO_2 concentrations, including both the OLM and PVMRM options, and results of these additional evaluations will be provided at a later date. A sensitivity analysis of the OLM and PVMRM options in AERMOD has been conducted that compares modeled concentrations based on OLM and PVMRM with Tiers 1 and 2 for a range of source characteristics (MACTEC, 2004). This analysis serves as a useful reference to understand how ambient NO_2 concentrations may be impacted by application of this three-tiered screening approach, and includes comparisons for both annual average and maximum 1-hour NO_2 concentrations.

Key model inputs for both the OLM and PVMRM options are the in-stack ratios of NO_2/NOx emissions and background ozone concentrations. While the representativeness of these key inputs is important in the context of the annual NO_2 standard, they will generally take on even greater importance for the new 1-hour NO_2 standard, as explained in more detail below. Recognizing the potential importance of the in-stack NO_2/NOx ratio for hourly NO_2 compliance demonstrations, we recommend that in-stack ratios used with either the OLM or PVMRM options be justified based on the specific application, i.e., there is no "default" in-stack NO_2/NOx ratio for either OLM or PVMRM.

The OLM and PVMRM methods are both available as non-regulatory-default options within the EPA-preferred AERMOD dispersion model (Cimorelli, *et al.*, 2004; EPA, 2004; EPA, 2009). As a result of their non-regulatory-default status, pursuant to Sections 3.1.2.c, 3.2.2.a, and A.1.a(2) of Appendix W, application of AERMOD with the OLM or PVMRM option is no longer considered a "preferred model" and, therefore, requires justification and approval by the Regional Office on a case-by-case basis. While EPA is continuing to evaluate the PVMRM and OLM options within AERMOD for use in compliance demonstrations for the 1-hour NO_2 standard, as long as they are considered to be non-regulatory-default options, their use as alternative modeling techniques under Appendix W should be justified in accordance with Section 3.2.2, paragraph (e), as follows:

> "e. Finally, for condition (3) in paragraph (b) of this subsection [preferred model is less appropriate for the specific application, or there is no preferred model], an alternative refined model may be used provided that:
>
> i. The model has received a scientific peer review;
> ii. The model can be demonstrated to be applicable to the problem on a theoretical basis;
> iii. The data bases which are necessary to perform the analysis are available and adequate;
> iv. Appropriate performance evaluations of the model have shown that the model is not biased toward underestimates; and
> v. A protocol on methods and procedures to be followed has been established."

Since AERMOD is the preferred model for dispersion for a wide range of application, the focus of the alternative model demonstration for use of the OLM and PVMRM options within AERMOD is on the treatment of NOx chemistry within the model, and does not need to address basic dispersion algorithms within AERMOD. Furthermore, items i and iv of the alternative model demonstration for these options can be fulfilled in part based on existing documentation (Cole and Summerhays, 1979; Hanrahan, 1999a; Hanrahan, 1999b; MACTEC, 2005), and the remaining items should be routinely addressed as part of the modeling protocol, irrespective of the regulatory status of these options. The issue of applicability to the problem on a theoretical basis (item ii) is a case-by-case determination based on an assessment of the adequacy of the ozone titration mechanism utilized by these options to account for NOx chemistry within the AERMOD model based on "the chemical environment into which the source's plume is to be emitted" (Appendix W, Section 5.1.j). The adequacy of available data bases needed for application of OLM and PVMRM (item iii), including in-stack NO_2/NOx ratios and background ozone concentrations, is a critical aspect of the demonstration which we discuss in more detail below. It should also be noted that application of the OLM or PVMRM methods with other Appendix W models or alternative models, whether as a separate post-processor or integrated within the model, would require additional documentation and demonstration that the methods have been implemented and applied appropriately within that context, including model-specific performance evaluations which satisfy item iv under Section 3.2.2.e.

Given the form of the new 1-hour NO_2 standard, some clarification is needed regarding the appropriate data periods for modeling demonstrations of compliance with the NAAQS vs. demonstrations of attainment of the NAAQS through ambient monitoring. While monitored design values for the 1-hour NO_2 standard are based on a 3-year average (in accordance with Section 1(c)(2) of Appendix S to 40 CFR Part 50), Section 8.3.1.2 of Appendix W addresses the length of the meteorological data record for dispersion modeling, stating that "[T]he use of 5 years of NWS [National Weather Service] meteorological data or at least 1 year of site specific data is required." Section 8.3.1.2.b further states that "one year or more (including partial years), up to five years, of site specific data . . . are preferred for use in air quality analyses." Although the monitored design value for the 1-hour NO_2 standard is defined in terms of the 3-year average, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data. The 5-year average based on use of NWS data, or an average across one or more years of available site specific data, serves as an unbiased estimate of the 3-year average for purposes of modeling demonstrations of compliance with the NAAQS. Modeling of "rolling 3-year averages," using years 1 through 3, years 2 through 4, and years 3 through 5, is not required. Furthermore, since modeled results for NO_2 are averaged across the number of years modeled for comparison to the new 1-hour NO_2 standard, the meteorological data period should include complete years of data to avoid introducing a seasonal bias to the averaged impacts. In order to comply with Appendix W recommendations in cases where partial years of site specific meteorological data are available, while avoiding any seasonal bias in the averaged impacts, an approach that utilizes the most conservative modeling result based on the first complete-year period of the available data record vs. results based on the last complete-year period of available data may be appropriate, subject to approval by the appropriate reviewing authority. Such an approach would ensure that all available site specific data are accounted for in the modeling analysis without imposing an undue burden on the applicant and avoiding arbitrary choices in the selection of a single complete-year data period.

The form of the new 1-hour NO_2 standard also has implications regarding appropriate methods for combining modeled ambient concentrations with monitored background concentrations for comparison to the NAAQS in a cumulative modeling analysis. As noted in the March 23, 2010 memorandum regarding "Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS" (EPA, 2010b), combining the 98^{th} percentile monitored value with the 98^{th} percentile modeled concentrations for a cumulative impact assessment could result in a value that is below the 98^{th} percentile of the combined cumulative distribution and would, therefore, not be protective of the NAAQS. However, unlike the recommendations presented for $PM_{2.5}$, the modeled contribution to the cumulative ambient impact assessment for the 1-hour NO_2 standard should follow the form of the standard based on the 98^{th} percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled. A "first tier" assumption that may be applied without further justification is to add the overall highest hourly background NO_2 concentration from a representative monitor to the modeled design value, based on the form of the standard, for comparison to the NAAQS. Additional refinements to this "first tier" approach based on some level of temporal pairing of modeled and monitored values may be considered on a case-by-case basis, with adequate justification and documentation.

DISCUSSION OF TECHNICAL ISSUES

While many of the same technical issues related to application of Appendix W guidance for an annual NO_2 standard would also apply in the context of the new 1-hour NO_2 standard, there are some important differences that may also need to be considered depending on the specific application. This section discusses several aspects of these technical issues related to the new 1-hour NO_2 NAAQS, including a discussion of source emission inventories required for modeling demonstrations of compliance with the NAAQS and other issues specific to each of the three tiers identified in Section 5.2.4 of Appendix W for NO_2 modeling.

Emission Inventories

The source emissions data are a key input for all modeling analyses and one that may require additional considerations under the new 1-hour NO_2 standard is the source emissions data. Section 8.1 of Appendix W provides guidance regarding source emission input data for dispersion modeling and Table 8-2 summarizes the recommendations for emission input data that should be followed for NAAQS compliance demonstrations. Although existing NOx emission inventories used to support modeling for compliance with the annual NO_2 standard should serve as a useful starting point, such inventories may not always be adequate for use in assessing compliance with the new 1-hour NO_2 standard since some aspects of the guidance in Section 8.1 differs for long-term (annual and quarterly) standards vs. short-term ($\leq$ 24 hours) standards. In particular, since maximum ground-level concentrations may be more sensitive to operating levels and startup/shutdown conditions for an hourly standard than for an annual standard, emission rates and stack parameters associated with the maximum ground-level concentrations for the annual standard may underestimate maximum concentrations for the new 1-hour NO_2 standard. Due to the importance of in-stack NO_2/NOx ratios required for application of the OLM and PVMRM options within AERMOD discussed above, consideration should also be given to the potential variability of in-stack NO_2/NOx ratios under different operating conditions when those non-regulatory-default options are applied. We also note that source emission input data recommendations in Table 8-2 of Appendix W for "nearby sources" and "other sources" that may be needed to conduct a cumulative impact assessment include further differences between emission data for long-term vs. short-term standards which could also affect the adequacy of existing annual NOx emission inventories for the new 1-hour NO_2 standard. The terms "nearby sources" and "other sources" used in this context are defined in Section 8.2.3 of Appendix W. Attachment A provides a more detailed discussion on determining NOx emissions for permit modeling.

While Section 8.2.3 of Appendix W emphasizes the importance of professional judgment by the reviewing authority in the identification of nearby and other sources to be included in the modeled emission inventory, Appendix W establishes "a significant concentration gradient in the vicinity of the source" under consideration as the main criterion for this selection. Appendix W also indicates that "the number of such [nearby] sources is expected to be small except in unusual situations." See Section 8.2.3.b. Since concentration gradients will vary somewhat depending on the averaging period being modeled, especially for an annual vs. 1-hour standard, the criteria for selection of "nearby" and "other" sources for inclusion in the modeled inventory may need to be reassessed for the 1-hour NO_2 standard.

The representativeness of available ambient air quality data also plays an important role in determining which nearby sources should be included in the modeled emission inventory. Key issues to consider in this regard are the extent to which ambient air impacts of emissions from nearby sources are reflected in the available ambient measurements, and the degree to which emissions from those background sources during the monitoring period are representative of allowable emission levels under the existing permits. The professional judgments that are required in developing an appropriate inventory of background sources should strive toward the proper balance between adequately characterizing the potential for cumulative impacts of emission sources within the study area to cause or contribute to violations of the NAAQS, while minimizing the potential to overestimate impacts by double-counting of modeled source impacts that are also reflected in the ambient monitoring data. We would also caution against the literal and uncritical application of very prescriptive procedures for identifying which background sources should be included in the modeled emission inventory for NAAQS compliance demonstrations, such as those described in Chapter C, Section IV.C.1 of the draft *New Source Review Workshop Manual* (EPA, 1990), noting again that Appendix W emphasizes the importance of professional judgment in this process. While the draft workshop manual serves as a useful general reference regarding New Source Review (NSR) and PSD programs, and such procedures may play a useful role in defining the spatial extent of sources whose emissions may need to be considered, it should be recognized that "[i]t is not intended to be an official statement of policy and standards and does not establish binding regulatory requirements." See, Preface.

Given the range of issues involved in the determination of an appropriate inventory of emissions to include in a cumulative impact assessment, the appropriate reviewing authority should be consulted early in the process regarding the selection and proper application of appropriate monitored background concentrations and the selection and appropriate characterization of modeled background source emission inventories for use in demonstrating compliance with the new 1-hour NO_2 standard.

Tier-specific Technical Issues

This section discusses technical issues related to application of each tier in the three-tiered screening approach for NO_2 modeling recommended in Section 5.2.4 Appendix W. A basic understanding of NOx chemistry and "of the chemical environment into which the source's plume is to be emitted" (Appendix W, Section 5.1.j) will be helpful for addressing these issues based on the specific application.

Tier 1:

Since the assumption of full conversion of NO to NO_2 will provide the most conservative treatment of NOx chemistry in assessing ambient impacts, there are no technical issues associated with treatment of NOx chemistry for this tier. However, the general issues related to emission inventories for the 1-hour NO_2 standard discussed above and in Attachment A apply to Tier 1.

Tier 2:

As noted above, the 0.75 national default ratio for ARM is considered to be representative of "area wide quasi-equilibrium conditions" and, therefore, may not be as appropriate for use with the 1-hour NO_2 standard. The appropriateness of this default ambient ratio will depend somewhat on the characteristics of the sources, and as such application of Tier 2 for 1-hour NO_2 compliance demonstrations may need to be considered on a source-by-source basis in some cases. The key technical issue to address in relation to this tier requires an understanding of the meteorological conditions that are likely to be associated with peak hourly impacts from the source(s) being modeled. In general, for low-level releases with limited plume rise, peak hourly NOx impacts are likely to be associated with nighttime stable/light wind conditions. Since ambient ozone concentrations are likely to be relatively low for these conditions, and since low wind speeds and stable atmospheric conditions will further limit the conversion of NO to NO_2 by limiting the rate of entrainment of ozone into the plume, the 0.75 national default ratio will likely be conservative for these cases. A similar rationale may apply for elevated sources where plume impaction on nearby complex terrain under stable atmospheric conditions is expected to determine the peak hourly NOx concentrations. By contrast, for elevated sources in relatively flat terrain, the peak hourly NOx concentrations are likely to occur during daytime convective conditions, when ambient ozone concentrations are likely to be relatively high and entrainment of ozone within the plume is more rapid due to the vigorous vertical mixing during such conditions. For these sources, the 0.75 default ratio may not be conservative, and some caution may be needed in applying Tier 2 for such sources. We also note that the default equilibrium ratio employed within the PVMRM algorithm as an upper bound on an hourly basis is 0.9.

Tier 3:

This tier represents a general category of "detailed screening methods" which may be considered on a case-by-case basis. Section 5.2.4(b) of Appendix W cites two specific examples of Tier 3 methods, namely OLM and the use of site-specific ambient NO_2/NOx ratios supported by ambient measurements. As noted above, we also believe it is appropriate to consider the

PVMRM option as a Tier 3 detailed screening method at this time. The discussion here focuses primarily on the OLM and PVMRM methods, but we also note that the use of site-specific ambient NO_2/NOx ratios will be subject to the same issues discussed above in relation to the Tier 2 default ARM, and as a result it will generally be much more difficult to determine an appropriate ambient NO_2/NOx ratio based on monitoring data for the new 1-hour NO_2 standard than for the annual standard.

While OLM and PVMRM are both based on the same simple chemical mechanism of titration to account for the conversion of NO emissions to NO_2 (see Eq. 1) and therefore entail similar technical issues and considerations, there are some important differences that also need to be considered when assessing the appropriateness of these methods for specific applications. While the titration mechanism may capture the most important aspects of NO-to-NO_2 conversion in many applications, both methods will suffer from the same limitations for applications in which other mechanisms, such as photosynthesis, contribute significantly to the overall process of chemical transformation.· Sources located in areas with high levels of VOC emissions may be subject to these limitations of OLM and PVMRM. Titration is generally a much faster mechanism for converting NO to NO_2 than photosynthesis, and as such is likely to be appropriate for characterizing peak 1-hour NO_2 impacts in many cases.

Both OLM and PVMRM rely on the same key inputs of in-stack NO_2/NOx ratios and hourly ambient ozone concentrations. Although both methods can be applied within the AERMOD model using a single "representative" background ozone concentration, it is likely that use of a single value would result in very conservative estimates of peak hourly ambient concentrations since its use for the 1-hour NO_2 standard would be contingent on a demonstration of conservatism for all hours modeled. Furthermore, hourly monitored ozone concentrations used with the OLM and PVMRM options must be concurrent with the meteorological data period used in the modeling analysis, and thus the temporal representativeness of the ozone data for estimating ambient NO_2 concentrations could be a factor in determining the appropriateness of the meteorological data period for a particular application. As noted above, the representativeness of these key inputs takes on somewhat greater importance in the context of a 1-hour NO_2 standard than for an annual standard, for obvious reasons. In the case of hourly background ozone concentrations, methods used to substitute for periods of missing data may play a more significant role in determining the 1-hour NO_2 modeled design value, and should therefore be given greater scrutiny, especially for data periods that are likely to be associated with peak hourly concentrations based on meteorological conditions and source characteristics. In other words, ozone data substitution methods that may have been deemed appropriate in prior applications for the annual standard may not be appropriate to use for the new 1-hour standard.

While these technical issues and considerations generally apply to both OLM and PVMRM, the importance of the in-stack NO_2/NOx ratios may be more important for PVMRM than for OLM in some cases, due to differences between the two methods. The key difference between the two methods is that the amount of ozone available for conversion of NO to NO_2 is based simply on the ambient ozone concentration and is independent of source characteristics for OLM, whereas the amount of ozone available for conversion in PVMRM is based on the amount of ozone within the volume of the plume for an individual source or group of sources. The plume volume used in PVMRM is calculated on an hourly basis for each source/receptor combination, taking into account the dispersive properties of the atmosphere for that hour. For a low-level release where peak hourly NOx impacts occur close to the source under stable/light wind conditions, the plume volume will be relatively small and the ambient NO_2 impact for such cases will be largely determined by the in-stack NO_2/NOx ratio, especially for sources with relatively close fenceline or ambient air boundaries. This example also highlights the fact that the relative importance of the in-stack NO_2/NOx ratios may be greater for some applications than others, depending on the source characteristics and other factors. Assumptions regarding in-stack NO_2/NOx ratios that may have been deemed appropriate in the context of the annual standard may not be appropriate to use for the new 1-hour standard. In particular, it is worth reiterating that the 0.1 in-stack ratio often cited as the "default" ratio for OLM should not be treated as a default value for hourly NO_2 compliance demonstrations.

Another difference between OLM and PVMRM that is worth noting here is the treatment of the titration mechanism for multiple sources of NOx. There are two possible modes that can be used for applying OLM to multiple source scenarios within AERMOD: (1) apply OLM to each source separately and assume that each source has all of the ambient ozone available for conversion of NO to NO_2; and (2) assume that sources whose plumes overlap compete for the available ozone and apply OLM on a combined plume basis. The latter option can be applied selectively to subsets of sources within the modeled inventory or to all modeled sources using the OLMGROUP keyword within AERMOD, and is likely to result in lower ambient NO_2 concentrations in most cases since the ambient NO_2 levels will be more ozone-limited. One of the potential refinements in application of the titration method incorporated in PVMRM is a technique for dynamically determining which sources should compete for the available ozone based on the relative locations of the plumes from individual sources, both laterally and vertically, on an hourly basis, taking into account wind direction and plume rise. While this approach addresses one of the implementation issues associated with OLM by making the decision of which sources should compete for ozone, there is only very limited field study data available to evaluate the methodology.

Given the importance of the issue of whether to combine plumes for the OLM option, EPA has addressed the issue in the past through the Model Clearinghouse process. The general guidance that has emerged in those cases is that the OLM option should be applied on a source-by-source basis in most cases and that combining plumes for application of OLM would require a clear demonstration that the plumes will overlap to such a degree that they can be considered as "merged" plumes. However, much of that guidance was provided in the context of applying the OLM method outside the dispersion model in a post-processing mode on an annual basis. The past guidance on this issue is still appropriate in that context since there is no realistic method to account for the degree of plume merging on an hourly basis throughout the modeling analysis when applied as a post-processor. However, the implementation of the OLM option within the AERMOD model applies the method on a source-by-source, receptor-by-receptor, and hour-by-hour basis. As a result, the application of the OLMGROUP option within AERMOD is such that the sources only compete for the available ozone to the extent that each source contributes to the cumulative NOx concentration at each receptor for that hour. Sources which contribute significantly to the ambient NOx concentration at the receptor will compete for available ozone in proportion to their contribution, while sources that do not contribute significantly to the ambient NOx concentration will not compete for the ozone. Thus, the OLMGROUP option implemented in AERMOD will tend to be "self-correcting" with respect to concerns that combining plumes for OLM will overestimate the degree of ozone limiting potential (and therefore underestimate ambient NO_2 concentrations). As a result of these considerations, we recommend that use of the "OLMGROUP ALL" option, which specifies that all sources will potentially compete for the available ozone, be routinely applied and accepted for all approved applications of the OLM option in AERMOD. This recommendation is supported by model-to-monitor comparisons of hourly NO_2 concentrations from the application of AERMOD for the Atlanta NO_2 risk and exposure assessment (EPA, 2008), and recent re-evaluations of hourly NO_2 impacts from the two field studies (New Mexico and Palaau) that were used in the evaluation of PVMRM (MACTEC, 2005). These model-to-monitor comparisons of hourly NO_2 concentrations show reasonably good performance using the "OLMGROUP ALL" option within AERMOD, with no indication of any bias to underestimate hourly NO_2 concentrations with OLMGROUP ALL. Furthermore, model-to-monitor comparisons based on OLM without the OLMGROUP option do exhibit a bias to overestimate hourly NO_2 concentrations. We will provide further details regarding these recent hourly NO_2 model-to-monitor comparisons at a later date.

SUMMARY

To summarize, we emphasize the following points:

1. The 3-tiered screening approach recommended in Section 5.2.4 of Appendix W for annual NO_2 assessments generally applies to the new 1-hour NO_2 standard.
2. While generally applicable, application of the 3-tiered screening approach for assessments of the new 1-hour NO_2 standard may entail additional considerations, such as the importance of key input data, including appropriate emission rates for the 1-hour standard vs. the annual standard for all tiers, and the representativeness of in-stack NO_2/NOx ratios and hourly background ozone concentrations for Tier 3 detailed screening methods.
3. Since the OLM and PVMRM methods in AERMOD are currently considered non-regulatory-default options, application of these options requires justification and approval by the Regional Office on a case-by-case basis as alternative modeling techniques, in accordance with Section 3.2.2, paragraph (e), of Appendix W.
4. Applications of the OLM option in AERMOD, subject to approval under Section 3.2.2.e of Appendix W, should routinely utilize the "OLMGROUP ALL" option for combining plumes.
5. While the 1-hour NAAQS for NO_2 is defined in terms of the 3-year average for monitored design values to determine attainment of the NAAQS, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data.

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ATTACHMENT A

Background on Hourly NOx Emissions for Permit Modeling for the 1-hour NO_2 NAAQS

Introduction

The purpose of this attachment is to address questions about availability of hourly NOx emissions for permit modeling under the new NO_2 NAAQS. It summarizes existing guidance regarding emission input data requirements for NAAQS compliance modeling, and provides background on the historical approach to development of inventories for NO_2 permit modeling and computation of hourly emissions appropriate for assessing the new 1-hour NO_2 standard. Although the NAAQS is defined in terms of ambient NO_2 concentrations, source emission estimates for modeling are based on NOx.

Under the PSD program, the owner or operator of the source is required to demonstrate that the source does not cause or contribute to a violation of a NAAQS (40 CFR 51.166 (k)(1) and 40 CFR 52.21 (k)(1)) and/or PSD increments (40 CFR 51.166 (k)(2) and 52.21 (k)(2)). However, estimation of the necessary emission input data for NAAQS compliance modeling entails consideration of numerous factors, and the appropriate reviewing authority should be consulted early in the process to determine the appropriate emissions data for use in specific modeling applications (see 40 CFR 51, Appendix W, 8.1.1.b and 8.2.3.b)

Summary of Current Guidance

Section 8.1 of the *Guideline on Air Quality Models*, Appendix W to 40 CFR Part 51, provides recommendations regarding source emission input data needed to support dispersion modeling for NAAQS compliance demonstrations. Table 8-2 of Appendix W provides detailed guidance regarding the specific components of the emission input data, including the appropriate emission limits (pounds/MMBtu), operating level (MMBtu/hr), and operating factor (e.g., hr/yr or hr/day), depending on the averaging time of the standard. Table 8-2 also distinguishes between the emission input data needed for the new or modified sources being assessed, and "nearby" and "other" background sources included in the modeled emission inventory.

Based on Table 8-2, emission input data for new or modified sources for annual and quarterly standards are essentially the same as for short-term standards ($\leq$ 24 hours), based on maximum allowable or federally enforceable emission limits, design capacity or federally enforceable permit conditions, and the assumption of continuous operation. However, there are a few additional considerations cited in Appendix W that could result in different emission input data for the 1-hour vs. annual NO_2 NAAQS. For example, while design capacity is listed as the recommended operating level for the emission calculation, peak hourly ground-level concentrations may be more sensitive than annual average concentrations to changes in stack parameters (effluent exit temperature and exit velocity) under different operating capacities. Table 8-2 specifically recommends modeling other operating levels, such as 50 percent or 75 percent of capacity, for short-term standards (see footnote 3). Another factor that may affect maximum ground-level concentrations differently between the 1-hour vs. annual standard is restrictions on operating factors based on federally enforceable permit conditions. While federally enforceable operating factors other than continuous operation may be accounted for in the emission input data (e.g., if operation is limited to 8 am to 4 pm each day), Appendix W also states that modeled emissions should not be averaged across non-operating time periods (see footnote 2 of Table 8-2).

While emission input data recommendations for "nearby" and "other" background sources included in the modeled emission inventory are similar to the new or modified source emission inputs in many respects, there is an important difference in the operating factor between annual and short-term standards. Emission input data for nearby and other sources may reflect actual operating factors (averaged over the most recent 2 years) for the annual standard, while continuous operation should be assumed for short-term standards. This could result in important differences in emission input data for modeled background sources for the 1-hour NO_2 NAAQS relative to emissions used for the annual standard.

Model Emission Inventory for NO_2 Modeling

For the existing annual NO_2 NAAQS, the permit modeling inventory has generally been compiled from the annual state emission inventory questionnaire (EIQ) or Title V permit applications on file with the relevant permitting authority (state or local air program). Since a state uses the annual EIQ for Title V fee assessment, the state EIQ typically requires reporting of unit capacity, total fuel combusted, and/or hours of operation to help verify annual emissions calculations for fee accuracy purposes. Likewise, Title V operating permit applications contain all of the same relevant information for calculating emissions. While these emission inventories are important resources for gathering emission input data on background sources for NAAQS compliance modeling, inventories which are based on actual operations may not be sufficient for short-term standards, such as the new 1-hour NO_2 NAAQS. However, appropriate estimates of emissions from background sources for the 1-hour NO_2 standard may be derived in many cases from information in these inventories regarding permitted emission limits and operating capacity.

Historically, it has not been a typical practice for an applicant to use the EPA's national emission inventory (NEI) as the primary source for compiling the permit modeling inventory. Since the emission data submitted to the NEI represents annual emission totals, it may not be suitable for use in NAAQS compliance modeling for short-term standards since modeling should be based on continuous operation, even for modeled background sources. Although the NEI may provide emission data for background sources that are more appropriate for the annual NO_2 standard, the utility of the NEI for purposes of NAAQS compliance modeling is further limited due to the fact that additional information regarding stack parameters and operating rates required for modeling may not be available from the NEI. While records exist in the NEI for reporting stack data necessary for point source modeling (i.e., stack coordinates, stack heights, exit temperatures, exit velocities), some states do not report such information to the NEI, or there are may be errors in the location data submitted to the NEI. Under such conditions, default stack information based upon SIC is substituted and use of such data could invalidate modeling results. Building locations and dimensions, which may be required to account for building downwash influences in the modeling analysis, may also be missing or incomplete in many cases.

A common and relatively straightforward approach for compiling the necessary information to develop an inventory of emissions from background sources for a permit modeling demonstration is as follows, patterned after the draft *New Source Review Workshop Manual* (EPA, 1990). The applicant completes initial modeling of allowable emission increases associated with the proposed project and determines the radii of impact (ROI) for each pollutant and averaging period, based on the maximum distance at which the modeled ambient concentration exceeds the Significant Impact Level (SIL) for each pollutant and averaging period. Typically, the largest ROI is selected and then a list of potential background sources within the ROI plus a screening distance beyond the ROI is compiled by the permitting authority and supplied to the applicant. The applicant typically requests permit applications or EIQ submittals from the records department of the permitting authority to gather stack data and source operating data necessary to compute emissions for the modeled inventory. Once the applicant has gathered the relevant data from the permitting authorities, model emission rates are calculated. While this approach is fairly common, it should be noted that the draft workshop manual "is not intended to be an official statement of policy and standards and does not establish binding regulatory requirements" (see, Preface), and the appropriate reviewing authority should be consulted early in the process regarding the selection of appropriate background source emission inventories for the 1-hour NO_2 standard. We also note that Appendix W establishes "a significant concentration gradient in the vicinity of the source" under consideration as the main criterion for selection of nearby sources for inclusion in the modeled inventory, and further indicates that "the number of such [nearby] sources is expected to be small except in unusual situations." See Section 8.2.3.b.

As mentioned previously, modeled emission rates for short-term NAAQS are computed consistent with the recommendations of Section 8.1 of Appendix W, summarized in Table 8-2. The maximum allowable (SIP-approved process weight rate limits) or federally enforceable permit limit emission rates assuming design capacity or federally enforceable capacity limitation are used to compute hourly emissions for dispersion modeling against short-term NAAQS such as the new 1-hour NO_2 NAAQS. If a source assumes an enforceable limit on the hourly firing capacity of a boiler, this is reflected in the calculations. Otherwise, the design capacity of the source is used to compute the model emission rate. A load analysis is typically necessary to determine the load or operating condition that causes the maximum ground-level concentrations. In addition to 100 percent load, loads such as 50 percent and 75 percent are commonly assessed. As noted above, the load analysis is generally more important for short-term standards than for annual standards. For an hourly standard, other operating scenarios of relatively short duration such as "startup" and "shutdown" should be assessed since these conditions may result in maximum hourly ground-level concentrations, and the control efficiency of emission control devices during these operating conditions may also need to be considered in the emission estimation.

Emission Calculation Example

The hourly emissions are most commonly computed from AP-42 emission factors based on unit design capacity. For a combustion unit, the source typically reports both the unit capacity and the actual total amount of fuel combusted annually (gallons, millions of cubic feet of gas, etc.) to the permitting authority for the EIQ. Likewise, Title V operating permit applications will contain similar information that can be used to compute hourly emissions.

For example, assume you are modeling an uncontrolled natural gas package boiler with a design firing rate of 30 MMBtu/hr. The AP-42 emission factor for an uncontrolled natural gas external combustion source (AP-42, Section 1.4) for firing rates less than 100 MMBtu/hr is 100 lbs. NOx/10^6 SCF natural gas combusted. The hourly emission rate is derived by converting the emission factor expressed in terms of lbs. NOx/10^6 SCF to lbs. NOx/MMBtu. The conversion is done by dividing the 100 lbs. NOx/10^6 SCF by 1,020 to convert the AP-42 factor to lbs. NOx/MMBtu. The new emission factor is now 0.098 lbs. NOx/MMBtu.

For this example, the source has no limit on the hourly firing rate of the boiler; therefore, the maximum hourly emissions are computed by multiplying the design firing rate of the boiler by the new emission factor.

E_{hourly} = 0.098 lbs/MMBtu x 30MMBtu/hr = 2.94 lbs/hr

Thus 2.94 lbs/hr represents the emission rate that would be input into the dispersion model for modeling against the 1-hour NO_2 NAAQS to comport with emission rate recommendations of Section 8.1 of Appendix W.

It is important to note that data derived for the annual state emission inventory (EI) is based on actual levels of fuel combusted for the year, and is therefore different than how allowable emissions are computed for near-field dispersion modeling. For the annual EI report, a source computes their annual emissions based upon the AP-42 emission factor multiplied by the actual total annual throughput or total fuel combusted.

In the 30 MMBtu/hr boiler example, the annual NOx emissions reported to the NEI is computed by:

E_{annual} = (AP-42 emission factor) x (total annual fuel combusted)

E_{annual} = (100 lbs/10^6 SCF) x (100 10^6 SCF/yr) = 10,000 lbs. NOx/yr or 5 tons NOx/yr

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

AUG 23 2010

MEMORANDUM

SUBJECT: Guidance Concerning the Implementation of the 1-hour SO_2 NAAQS for the Prevention of Significant Deterioration Program

FROM: Stephen D. Page, Director
Office of Air Quality Planning and Standards

TO: Regional Air Division Directors

On June 2, 2010, the U.S. Environmental Protection Agency (EPA) announced a new 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour SO_2 NAAQS or 1-hour SO_2 standard) of 75 ppb, which is attained when the 3-year average of the annual 99th-percentile of 1-hour daily maximum concentrations does not exceed 75 ppb at each monitor within an area. EPA revised the primary SO_2 NAAQS to provide the requisite protection of public health. The final rule for the new 1-hour SO_2 NAAQS was published in the Federal Register on June 22, 2010 (75 FR 35520), and the standard becomes effective on August 23, 2010. In the same notice, we also announced that we are revoking both the existing 24-hour and annual primary SO_2 standards. However, as explained in this guidance, those SO_2 standards, as well as the 24-hour and annual increments for SO_2, remain in effect for a while further and must continue to be protected.

EPA interprets the Prevention of Significant Deterioration (PSD) provisions of the Clean Air Act and EPA regulations to require that any federal permit issued under 40 CFR 52.21 on or after that effective date must contain a demonstration of source compliance with the new 1-hour SO_2 NAAQS. We anticipate that some new major stationary sources or major modifications, especially those involving relatively short stacks, may experience difficulty demonstrating that emissions from proposed projects will not cause or contribute to a modeled violation of the new 1-hour SO_2 NAAQS. We also anticipate problems that sources may have interpreting the modeled 1-hour SO_2 impacts if the form of the hourly standard is not properly addressed. To respond to these and other related issues, we are providing the attached guidance, in the form of two memoranda, for implementing the new 1-hour SO_2 NAAQS under the PSD permit program.

The first memorandum, titled "General Guidance for Implementing the 1-hour SO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour SO_2 Significant Impact Level," includes guidance for the preparation and review of PSD permits with respect to the new 1-hour SO_2 standard. That guidance memorandum sets forth a recommended interim 1-hour SO_2 significant impact level (SIL) that states may consider for carrying out the required PSD air quality analysis for SO_2, until EPA promulgates a 1-hour SO_2 SIL via rulemaking, and addresses the continued use of the existing SO_2 Significant Emissions Rate (SER) and Significant Monitoring Concentration (SMC) to implement the new 1-hour SO_2 standard.. The second memorandum, titled "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard," includes specific modeling guidance for estimating ambient SO_2 concentrations and determining compliance with the new 1-hour SO_2 standard.

This guidance does not bind state and local governments and permit applicants as a matter of law. Nevertheless, we believe that state and local air agencies and industry will find this guidance useful for carrying out the PSD permit process and it will provide a consistent approach for estimating SO_2 air quality impacts from proposed construction or modification of SO_2 emissions sources. For the most part, the attached guidance focuses on how existing policy and guidance is relevant to and should be used for implementing the new 1-hour SO_2 NAAQS.

Please review the guidance included in the two attached memoranda. In the event of questions regarding the general implementation guidance contained in the first memorandum, please contact Raj Rao (rao.raj@epa.gov). For questions pertaining to the modeling guidance in the second memorandum, please contact Tyler Fox (fox.tyler@epa.gov). We are continuing our efforts to address permitting issues related to the implementation of new and revised NAAQS, and will issue additional guidance to address the NAAQS as appropriate.

Attachments:

1. Memorandum from Anna Marie Wood, Air Quality Policy Division, to EPA Regional Air Division Directors, "General Guidance for Implementing the 1-hour SO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour SO_2 Significant Impact Level" (August 23, 2010).
2. Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard" (August 23, 2010).

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

August 23, 2010

MEMORANDUM

SUBJECT: General Guidance for Implementing the 1-hour SO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour SO_2 Significant Impact Level

FROM: Anna Marie Wood, Acting Director /s/
Air Quality Policy Division

TO: Regional Air Division Directors

INTRODUCTION

We are issuing the following guidance to explain and clarify the procedures that may be followed by applicants for Prevention of Significant Deterioration (PSD) permits, and permitting authorities reviewing such applications, to properly demonstrate that proposed projects to construct and operate will not cause or contribute to a modeled violation of the new 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour SO_2 NAAQS or 1-hour SO_2 standard) that becomes effective on August 23, 2010. The EPA revised the primary SO_2 NAAQS by promulgating a 1-hour SO_2 NAAQS to provide the requisite protection of public health. Under section 165(a)(3) of the Clean Air Act (the Act) and sections 52.21(k) and 51.166(k) of EPA's PSD regulations, to obtain a permit, a source must demonstrate that its proposed emissions increase will not cause or contribute to a violation of "any NAAQS."

This guidance is intended to (1) highlight the importance of a 1-hour averaging period for setting an emissions limitation for SO_2 in the PSD permit (2) reduce the modeling burden to implement the 1-hour SO_2 standard where it can be properly demonstrated that a source will not have a significant impact on ambient 1-hour SO_2 concentrations, and (3) identify approaches that allow sources and permitting authorities to mitigate, in a manner consistent with existing regulatory requirements, potential modeled violations of the 1-hour SO_2 NAAQS, where appropriate. Accordingly, the techniques described in this memorandum may be used by permit applicants and permitting authorities to perform an acceptable 1-hour SO_2 NAAQS compliance modeling assessment and/or properly configure projects and permit conditions in order that a proposed source's emissions do not cause or contribute to modeled 1-hour SO_2 NAAQS violations, so that permits can be issued in accordance with the applicable PSD program requirements.

This guidance discusses existing provisions in EPA regulations and guidance, and focuses on the relevancy of this information for implementing the new NAAQS for SO_2. Importantly, however, this guidance also sets forth a recommended interim 1-hour SO_2 significant impact level (SIL) that EPA will use when it evaluates applications and issues permits under the federal PSD program, and that states may choose to rely upon to implement their PSD programs for SO_2 if they agree that the value represents a reasonable threshold for determining a significant ambient impact, and they incorporate into each permit record a rationale supporting this conclusion. This interim SIL is a useful screening tool that can be used to determine whether or not the predicted ambient impacts caused by a proposed source's emissions increase will be significant and, if so whether the source's emissions should be considered to "cause or contribute to" modeled violations of the new 1-hour SO_2 NAAQS.

BACKGROUND

On August 23, 2010, the new 1-hour SO_2 NAAQS will become effective. Regulations at 40 CFR 52.21 (the federal PSD program) require permit applicants to demonstrate compliance with "any" NAAQS that is in effect on the date a PSD permit is issued. (See, e.g., EPA memo dated April 1, 2010, titled "Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards.") Due to the promulgation of this short-term averaging period (1-hour) for the SO_2 NAAQS, we anticipate that some new major stationary sources or major modifications, especially those involving relatively short stacks may experience increased difficulty demonstrating that emissions from proposed project will not cause or contribute to a modeled violation.

We believe that, in some instances, preliminary predictions of violations could result from the use of maximum modeled concentrations that do not adequately take into account the form of the 1-hour standard. To the extent that is the case, ambient SO_2 concentrations in the form of the new 1-hour NAAQS should be estimated by applying the recommended procedures that account for the statistical form of the standard. See EPA Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard" (August 23, 2010) for specific modeling guidance for estimating ambient SO_2 concentrations consistent with the new 1-hour SO_2 NAAQS.

It is EPA's expectation that currently available SO_2 guidance, including the guidance presented in this memorandum, will assist in resolving some of the issues arising from preliminary analyses that show potential exceedances of the new 1-hour SO_2 NAAQS that would not be present under more refined modeling applications. In addition, the techniques described in this memorandum may also help avoid violations of the standard through design of the proposed source or permit conditions, consistent with existing regulatory requirements. Moreover, the interim 1-hour SO_2 SIL that is included in this guidance will provide a reasonable screening tool for effectively implementing the PSD requirements for an air quality impact analysis.

The following discussion provides guidance for establishing a 1-hour emissions limitation to demonstrate compliance with the new NAAQS, and for possibly mitigating modeled violations using any of the following: air quality-based permit limits more stringent than what the Best Available Control Technology provisions may otherwise require, air quality offsets, "good engineering practice" (GEP) stack heights, and an interim 1-hour SO_2 SIL. The continued use of the existing SO_2 Significant Emissions Rate (SER) and Significant Monitoring Concentration (SMC) to implement the new 1-hour SO_2 standard is also discussed.

SCREENING VALUES

In the final rule establishing the 1-hour SO_2 standard, EPA discussed various implementation considerations for the PSD permitting program. 75 FR.35520 (June 22, 2010). That discussion included the following statements regarding particular screening values that have historically been used on a widespread basis to facilitate implementation of the PSD permitting program:

> We agree with the commenters that there may be a need for EPA to provide additional screening tools or to revise existing screening tools that are frequently used under the NSR/PSD program for reducing the burden of completing SO_2 ambient air impact analyses. These screening tools include the SILs, as mentioned by the commenter, but also include the SER for emissions of SO_2 and the SMC for SO_2. The existing screening tools apply to the periods used to define the existing NAAQS for SO_2, including the annual, 24-hour, and 3-hour averaging periods. EPA intends to evaluate the need for possible changes or additions to each of these useful screening tools for SO_2 due to the revision of the SO_2 NAAQS to provide for a 1-hour standard. We believe it is highly likely that in order to be most effective for implementing the new 1-hour averaging period for NSR purposes, new 1-hour screening values will be appropriate.

75 FR 35579. EPA intends to conduct an evaluation of these issues and submit our findings in the form of revised significance levels under notice and comment rulemaking if any revisions are deemed appropriate. In the interim, for the reasons provided below, we recommend the continued use of the existing SER for SO_2 emissions as well as an interim 1-hour SO_2 SIL that we are setting forth today for conducting air quality impact analyses for the 1-hour SO_2 NAAQS. As described in the section titled Introduction, EPA intends to implement the interim 1-hour SO_2 SIL contained herein under the federal PSD program and offers states the opportunity to use it in their PSD programs if they choose to do so. EPA is not addressing the significant monitoring concentration (SMC) for SO_2 in this memorandum; the existing SMC for SO_2, at 40 CFR 52.21(i)(5)(i) should continue to be used.

SIGNIFICANT EMISSIONS RATE

The PSD regulations define SER for various regulated NSR pollutants. When a proposed new source's potential to emit a pollutant, or a modified source's net emissions increase of a pollutant, would be less than the SER, the source is not required to undergo the requisite PSD analyses (BACT and air quality) for that particular emissions increase. Under the terms of existing EPA regulations, the applicable SER for SO_2 is 40 tons per year (tpy). 40 CFR 52.21(b)(23); 40 CFR 51.166(b)(23). Each of the significant emissions rates defined in those regulations is specific to an individual pollutant with no differentiation by averaging time with regard to NAAQS. The NAAQS for SO_2 have included standards with 3-hour and 24-hour and annual averaging times for many years. The EPA has applied the 40 tpy SER for SO_2 across all of these averaging times, and we are aware of no reason why it should not be used for the 1-hour averaging period for the present time. Therefore, until the evaluation described above and any associated rulemaking are completed, we will use 40 tpy as the SER for the 1-hour standard.

Under existing regulations, an ambient air quality impact analysis is required for "each pollutant that [a source] would have the potential to emit in significant amounts." [40 CFR 52.21(m)(1)(i)(a); 40 CFR. 51.166(m)(1)(i)(a)]. For modifications, these regulations require this analysis for "each pollutant for which [the modification] would result in a significant net emissions increase." 40 CFR.52.21(m)(1)(i)(b); 40 CFR.51.166(m)(1)(i)(b). EPA construes this regulation to mean that an ambient impact analysis is not necessary for pollutants with emissions rates below the significant emissions rates in paragraph (b)(23) of the regulations. No additional action by EPA or permitting authorities is necessary at this time to apply the 40 tpy significant emissions rate in existing regulations to the hourly SO_2 standard.

INTERIM 1-HOUR SO_2 SIGNIFICANT IMPACT LEVEL

Under the PSD program, a proposed new major stationary source or major modification must, among other things, complete an air quality impact analysis that involves performing an analysis of air quality modeling and ambient monitoring data, where appropriate, to demonstrate compliance with applicable NAAQS. In order to implement this requirement, EPA traditionally has provided a screening tool known as the Significant Impact Level (SIL) to help applicants and permitting authorities determine whether a source's modeled ambient impact is significant so as to warrant a comprehensive, cumulative air quality analysis to demonstrate compliance with the NAAQS. Accordingly, where a proposed source's modeled impact is deemed insignificant, or *de minimis*, using the SIL as a threshold for significance, the applicant is not required to model anything besides its own proposed emissions increase to show that the proposed source or modification will not cause or contribute to a violation of the NAAQS.[1]

If, on the other hand, the source's modeled impact is found to be significant, based on the SIL, the applicant will need to complete a comprehensive, cumulative air quality impact analysis to demonstrate that the source's emissions will not cause or contribute to a modeled violation of any NAAQS. To make this demonstration, EPA has recommended that a cumulative analysis cover a circular area measuring out from the source to the maximum distance where the source's impact is equal to the SIL. Within this modeling area, the source should also model the impacts of other sources (existing and newly permitted), including applicable SO_2 sources located outside the circular area described above, to account for the cumulative hourly SO_2 air quality impacts

[1] When a proposed source's impact by itself is not considered to be "significant," EPA has long maintained that any further effort on the part of the applicant to complete a cumulative source impact analysis involving other source impacts would only yield information of trivial or no value with respect to the required evaluation of the proposed source or modification. The concept of a SIL is grounded on the *de minimis* principles described by the court in *Alabama Power Co. v. Costle*, 636 F.2d 323, 360 (D.C. Cir. 1980); See also *Sur Contra La Contaminacion v. EPA*, 202 F.3d 443, 448-49 (1st Cir. 2000) (upholding EPA's use of SIL to allow permit applicant to avoid full impact analysis); *In re: Prairie State Gen. Co.*, PSD Appeal No. 05-05, Slip. Op. at 139 (EAB 2006).

that are predicted to occur. The applicant may also have to gather ambient monitoring data as part of the total air quality analysis that is required for demonstrating compliance with the NAAQS.[2] Accordingly, the source will evaluate its contribution to any modeled violation of the 1-hour SO_2 NAAQS to determine whether the source's emissions contribution will cause or contribute to the modeled violation at any receptor. Note that in the accompanying modeling guidance memorandum we are providing recommended procedures and guidance for completing the modeling analysis to demonstrate compliance with the new 1-hour SO_2 NAAQS.

We plan to undertake rulemaking to adopt a 1-hour SO_2 SIL value. However, until such time as a 1-hour SO_2 SIL is defined in the PSD regulations, we are providing an interim SIL of 3 ppb, which we intend to use as a screening tool for completing the required air quality analyses for the new 1-hour SO_2 NAAQS under the federal PSD program at 40 CFR 52.21. We are also making the interim SIL available to States with EPA-approved implementation plans containing a PSD program to use at their discretion. To support the application of this interim 1-hour SO_2 SIL in each instance, a permitting authority that utilizes it as part of an ambient air quality analysis should include in the permit record the analysis reflected in this memorandum and the referenced documents to demonstrate that a modeled air quality impact is *de minimis,* and thereby would not be considered to cause or contribute to a modeled violation of the NAAQS.[3]

States may also elect to choose another value that they believe represents a significant air quality impact relative to the 1-hour SO_2 NAAQS. The EPA-recommended interim 1-hour SO_2 SIL is not intended to supersede any interim SIL that any state chooses to rely upon to implement a state PSD program that is part of an approved SIP, or to impose the use of the SIL concept on any state that chooses to implement the PSD program—in particular the ambient air quality analysis—without using a SIL as a screening tool. Accordingly, states that implement the PSD program under an EPA-approved SIP may choose to use this interim SIL, another value that may be deemed more appropriate for PSD permitting purposes in the state of concern, or no SIL at all. The application of any SIL that is not reflected in a promulgated regulation should be supported by a record in each instance that shows the value represents a *de minimis* impact on the 1-hour SO_2 standard, as described above.

As indicated above, using the interim 1-hour SO_2 SIL, the permit applicant and permitting authority can determine: (1) whether, based on the proposed increase in SO_2 emissions, a cumulative air quality analysis is required; (2) the area of impact within which a cumulative air quality analysis should focus; and (3) whether, as part of a cumulative air quality analysis, the proposed source's SO_2 emissions will cause or contribute to any modeled violation of the 1-hour SO_2 NAAQS.

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[2] A screening tool known as the Significant Monitoring Concentration (SMC) for SO_2 already exists in the PSD regulations. EPA plans to evaluate the existing SMC in light of the new 1-hour SO_2 NAAQS; however, the existing value of 13 $\mu g/m^3$, 24-hour average, should continue to be used until and unless a revised value is issued through rulemaking.

[3] Where the cumulative air quality analysis identifies a modeled violation of the NAAQS or increments, and the proposed source is issued its permit by virtue of the fact that its proposed emissions increase is not considered to cause or contribute to the modeled violation, it is still the permitting authority's responsibility to address such modeled violations independently from the PSD permitting process to determine the nature of the problem and to mitigate it accordingly,

As mentioned above, we are providing an interim 1-hour SO_2 SIL value of 3 ppb to implement the federal PSD program. To determine initially whether a proposed project's emissions increase will have a significant impact (resulting in the need for a cumulative air quality analysis), this interim SIL should be compared to either of the following:

- The highest of the 5-year averages of the maximum modeled 1-hour SO_2 concentrations predicted each year at each receptor, based on 5 years of National Weather Service data; or
- The highest modeled 1-hour SO_2 concentration predicted across all receptors based on 1 year of site-specific meteorological data, or the highest of the multi-year averages of the maximum modeled 1-hour SO_2 concentrations predicted each year at each receptor, based on 2 or more, up to 5 complete years of available site-specific meteorological data.

Additional guidance will be forthcoming for the purpose of comparing a proposed source's modeled impacts to the interim 1-hour SO_2 SIL in order to make a determination about whether that source's contribution is significant when a cumulative air quality analysis identifies violations of the 1-hour SO_2 NAAQS (i.e., "causes or contributes to" a modeled violation).

We derived this interim 1-hour SO_2 SIL by using an impact equal to 4% of the 1-hour SO_2 NAAQS (which is 75 ppb). On June 29, 2010, we issued an interim 1-hour NO_2 SIL that used an impact equal to 4% of the 1-hour NO_2 standard. As explained in the June memorandum, we have chosen this approach because we believe it is reasonable to base the interim 1-hour SIL directly on consideration of impacts relative to the corresponding 1-hour NAAQS. In 1980, we defined SER for each pollutant subject to PSD. 45 FR 52676 (August 7, 1980) at 52705-52710. For PM and SO_2, we defined the SER as the emissions rate that resulted in an ambient impact equal to 4% of the applicable short-term NAAQS. The 1980 analysis focused on levels no higher than 5% of the primary standard because of concerns that higher levels were found to result in unreasonably large amounts of increment being consumed by a single source. Within the range of impacts analyzed, we considered two factors that had an important influence on the choice of the significant impact levels: (1) cumulative effect on increment consumption of multiple sources in an area, each making the maximum *de minimis* emissions increase; and (2) the projected consequence of a given significant impact level on administrative burden. As explained in the preamble to the 1980 rulemaking and the supporting documentation,[4] EPA decided to use 4% of the 24-hour primary NAAQS for PM and SO_2 to define the significant emissions rates (SERs) for those pollutants. See 45 FR 52708. Looking now at a 1-hour NAAQS for SO_2, we believe that it is reasonable as an interim approach to use a SIL value that represents 4% of the 1-hour SO_2 NAAQS. EPA will consider other possible alternatives for developing a 1-hour SO_2 SIL in a future rulemaking that will provide an opportunity for public participation in the development of a SIL as part of the PSD regulations.

AIR-QUALITY BASED EMISSIONS LIMITATIONS

[4] EPA evaluated *de minimis* levels for pollutants for which NAAQS had been established in a document titled "Impact of Proposed and Alternative De Minimis Levels for Criteria Pollutants"; EPA-450/2-80-072, June 1980.

Once a level of control is determined by the PSD applicant via the Best Available Control Technology (BACT) top-down process, the applicant must model the proposed source's emissions at the BACT emissions rate(s) to demonstrate that those emissions will not cause or contribute to a violation of any NAAQS or PSD increment. However, the EPA 1990 Workshop Manual (page B.54) describes circumstances where a proposed source's emissions based on levels determined via the top-down process may not be sufficiently controlled to prevent modeled violations of an increment or NAAQS. In such cases, it may be appropriate for PSD applicants to propose a more stringent control option (that is, beyond the level identified via the top-down process) as a result of an adverse impact on the NAAQS or PSD increments. In addition, the use of certain dispersion techniques is permissible for certain proposed projects for SO_2 that may need to be considered where emissions limitations alone may not enable the source to demonstrate compliance with the new 1-hour SO_2 NAAQS. This is discussed in greater detail below in the section addressing GEP stack height requirements.

Because compliance with the new SO_2 NAAQS must be demonstrated on the basis of a 1-hour averaging period, the reviewing authority should ensure that the source's PSD permit defines a maximum allowable hourly emissions limitation for SO_2, regardless of whether it is derived from the BACT top-down approach or it is the result of an air-quality based emissions rate. Hourly limits are important because they are the foundation of the air quality modeling demonstration relative to the 1-hour SO_2 NAAQS. For estimating the impacts of existing sources, if necessary, existing SO_2 emission inventories used to support modeling for compliance with the 3-hour and 24-hour SO_2 standards should serve as a useful starting point, and may be adequate in many cases for use in assessing compliance with the new 1-hour SO_2 standard. The PSD applicant's coordination with the reviewing authority is important in this matter to obtain the most appropriate estimates of maximum allowable hourly SO_2 emissions.

DEMONSTRATING COMPLIANCE WITH THE NAAQS AND INCREMENTS & MITIGATING MODELED VIOLATIONS WITH AIR QUALITY OFFSETS

A 1988 EPA memorandum provides procedures to follow when a modeled violation is identified during the PSD permitting process. [See Memorandum from Gerald A. Emison , EPA OAQPS, to Thomas J. Maslany, EPA Air Management Division, "Air Quality Analysis for Prevention of Significant Deterioration (PSD)." (July 5, 1988.)] In cases where the air quality analysis predicts violations of the 1-hour SO_2 NAAQS, but the permit applicant can show that the SO_2 emissions increase from the proposed source will not have a significant impact *at the point and time of any modeled violation*, the permitting authority has discretion to conclude that the source's emissions will not contribute to the modeled violation. As provided in the July 5, 1988 guidance memo, because the proposed source only has a *de minimis* contribution to the modeled violation, the source's impact will not be considered to cause or contribute to such modeled violations, and the permit could be issued. This concept continues to apply, and the significant impact level (described further below) may be used as part of this analysis. A 2006 decision by the EPA Environmental Appeals Board (EAB) provides detailed reasoning that demonstrates the permissibility of a finding that a PSD source would not be considered to cause or contribute to a modeled NAAQS violation because its estimated air quality impact was insignificant at the time and place of the modeled violations.[5] [See In re *Prairie State Gen. Co.*, 13 E.A.D. ___, ___, PSD Appeal No. 05-05, Slip. Op. at 137-144 (EAB 2006)]

However, where it is determined that a source's impact does cause or contribute to a modeled violation, a permit cannot be issued without some action to mitigate the source's impact. In accordance with 40 CFR 51.165(b)[6], a major stationary source or major modification (as defined at §51.165(a)(1)(iv) and (v)) that locates in a SO_2 attainment area for the 1-hour SO_2 NAAQS and would cause or contribute to a violation of the 1-hour SO_2 NAAQS may "reduce the impact of its emissions upon air quality by obtaining sufficient emission reductions to, at a minimum, compensate for its adverse ambient [SO_2] impact where the major source or major modification would otherwise cause or contribute to a violation ...." An applicant can meet this requirement for obtaining additional emissions reductions either by reducing its emissions at the source (e.g., promoting more efficient production methodologies and energy efficiency) or by obtaining air quality offsets (see below). [See, e.g., In re *Interpower of New York, Inc.*, 5 E.A.D. 130, 141 (EAB 1994)].[7] A State may also provide the necessary emissions reductions by imposing emissions limitations on other sources through an approved SIP revision. These approaches may also be combined as necessary to demonstrate that a source will not cause or contribute to a violation of the NAAQS.

Unlike emissions offset requirements in areas designated as nonattainment, in addressing the air quality offset concept, it may not be necessary for a permit applicant to fully offset the proposed emissions increase if an emissions reduction of lesser quantity will mitigate the adverse air quality impact where the modeled violation was originally identified. ("Although full emission offsets are not required, such a source must obtain emission offsets sufficient to compensate for its air quality impact where the violation occurs." 44 FR 3274, January 16, 1979, at 3278.) To clarify this, the 1988 guidance memo referred to above states that:

> offsets sufficient to compensate for the source's significant impact must be obtained pursuant to an approved State offset program consistent with State Implementation Plan (SIP) requirements under 40 CFR 51.165(b). Where the source is contributing to an existing violation, the required offset may not correct the violation. Such existing violations must be addressed [through the SIP].

Note that additional guidance for this and other aspects of the modeling analysis for the impacts of SO_2 emissions on ambient concentrations of SO_2 are addressed in EPA modeling guidance, including the attached August 23, 2010 Memorandum titled "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard."

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[5] While there is no 1-hour SO_2 significant impact level (SIL) currently defined in the PSD regulations, we believe that states may adopt interim values, with the appropriate justification for such values, to use for permitting purposes. In addition, we are recommending an interim SIL as part of this guidance for implementing the SO_2 requirements in the federal PSD program, and in state programs where states choose to use it.

[6] The same provision is contained in EPA's Interpretative Ruling at 40 CFR part 51 Appendix S, section III.

[7] In contrast to Nonattainment New Source Review permits, offsets are not mandatory requirements in PSD permits if it can otherwise be demonstrated that a source will not cause or contribute to a violation of the NAAQS. See, In re *Knauf Fiber Glass, GMBH*, 8 E.A.D. 121, 168 (EAB 1999).

Although EPA announced that it is revoking the annual and 24-hour SO_2 NAAQS, the June 22, 2010 preamble to the final rule announcing the new 1-hour SO_2 NAAQS explained that those standards will remain in effect for a limited period of time as follows: for current SO_2 nonattainment areas and SIP call areas, until attainment and maintenance SIPs are approved by EPA for the new 1-hour SO_2 NAAQS; for all other areas, for one year following the effective date of the initial designations under section 107(d)(1) for the new 1-hour SO_2 NAAQS. Accordingly, the annual and 24-hour SO_2 NAAQS must continue to be protected under the PSD program for as long as they remain in effect for a PSD area. There is a more detailed discussion of the transition from the existing SO_2 NAAQS to a revised SO_2 NAAQS in that preamble. Also, the same preamble includes a footnote listing the current nonattainment areas and SIP call areas. 75 FR 35520, at 35580-2.

In addition, the existing SO_2 increments (class I, II and III) for the annual and 24-hour averaging periods will not be revoked in conjunction with our decision to revoke the corresponding SO_2 NAAQS. Instead, the annual and 24-hour SO_2 increments (Class I, II and III increments) will remain in effect because they are defined in the Clean Air Act at title I, part C, section 163. The annual and 24-hour SO_2 increments in section 163 are considered part of the suite of statutory increments applicable to sulfur dioxide that Congress expressly included in the statutory provisions for PSD. As such, those increments cannot be revoked simply because we have decided to revoke the annual and 24-hour SO_2 NAAQS, upon which the SO_2 increments are based. Consequently, sources must continue to demonstrate that their proposed emissions increases of SO_2 emissions will not cause or contribute to any modeled violation of the existing annual and 24-hour SO_2 increments for as long as those statutory increments remain in effect. Increments for the 1-hour averaging period do not yet exist; the Act provides a specific schedule for the promulgation of additional regulations, which may include new increments, following the promulgation of new or revised NAAQS. EPA plans to begin that rulemaking process in the near future to consider the need for such increments.

"GOOD ENGINEERING PRACTICE" STACK HEIGHT AND DISPERSION TECHNIQUES

If a permit applicant is unable to show that the source's proposed emissions increase will not cause or contribute to a modeled violation of the new 1-hour SO_2 NAAQS, the problem could be the result of plume downwash effects causing high ambient concentrations near the source. In such cases, a source may be able to raise the height of its existing stacks (or designed stacks if not yet constructed) to a "good engineering practice" (GEP) stack height, or at least 65 meters, measured from the ground-level elevation at the base of the stack.

While not necessarily eliminating the full effect of downwash in all cases, raising stacks to GEP height may provide substantial air quality benefits in a manner consistent with statutory provisions (section 123 of the Act) governing acceptable stack heights to minimize excessive concentrations due to atmospheric downwash, eddies or wakes. Permit applicants should also be aware of the regulatory restrictions on stack heights for the purpose of modeling for compliance with NAAQS and increments. Section 52.21(h) of the PSD regulations currently prohibits the use of dispersion techniques, such as stack heights above GEP, merged gas streams, or intermittent controls for setting SO_2 emissions limits to meet the NAAQS and PSD increments.

However, stack heights in existence before December 31, 1970, and dispersion techniques implemented before then, are not affected by these limitations. EPA's general stack height regulations are promulgated at 40 CFR 51.100(ff), (gg), (hh), (ii), (jj), (kk) and (nn), and 40 CFR 51.118.

a. *Stack heights*: A source can include only the actual stack height up to GEP height when modeling to develop the SO_2 emissions limitations or to determine source compliance with the SO_2 NAAQS and increments. This is not a limit on the actual height of any stack constructed by a new source or modification, however, and there may be circumstances where a source owner elects to build a stack higher than GEP height. However, such additional height may not be considered when determining an emissions limitation or demonstrating compliance with an applicable NAAQS or PSD increment. Thus, when modeling, the following limitations apply in accordance with §52.21(h):

- For a stack height less than GEP, the actual stack height must be used in the source impact analysis for emissions;
- For a stack height equal to or greater than 65 meters the impact may be modeled using the greater of:
    - A *de minimis* stack height equal to 65 meters, as measured from the ground-level elevation at the base of the stack, without demonstration or calculation (40 CFR 51.100(ii)(1));
    - The refined formula height calculated using the dimensions of nearby structures in accordance with the following equation:

  GEP = H + 1.5L, where H is the height of the nearby structure and L is the lesser dimension of the height or projected width of the nearby structure (40 CFR 51.100(ii)(2)(ii)).[8]

- A GEP stack height exceeding the refined formula height may be approved when it can be demonstrated to be necessary to avoid "excessive concentrations" of SO_2 caused by atmospheric downwash, wakes, or eddy effects by the source, nearby structures, or nearby terrain features. (40 CFR 51.100(ii)(3), (jj), (kk));

- For purposes of PSD, "excessive concentrations" means a maximum ground-level concentration from a stack due in whole or in part to downwash, wakes, and eddy effects produced by nearby structures or nearby terrain features which individually is at least 40 percent in excess of the maximum concentration experienced in the absence of such effects and (a) which contributes to a total concentration due to emissions from all sources that is greater than the applicable NAAQS or (b) greater than the applicable PSD increments. (40 CFR 51.100(kk)(1)).

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[8] For stacks in existence on January 12, 1979, the GEP equation is GEP = 2.5 H (provided the owner or operator produces evidence that this equation was actually relied on in establishing an emission limitation for SO_2 (40 CFR 51.100(ii)(2)(i)

Reportedly, for economic and other reasons, many existing source stacks have been constructed at heights less than 65 meters, and source impact analyses may show that the source's emissions will cause or contribute to a modeled violation of the 1-hour SO_2 NAAQS. Where this is the case, sources should be aware that it is permissible for them to increase their stack heights up to 65 meters without a GEP demonstration.

b. *Other dispersion techniques*: The term "dispersion technique" includes any practice carried out to increase final plume rise, subject to certain exceptions (40 CFR 51.100(hh)(1), (2)(i) – (v)). Beyond the noted exceptions, such techniques are not allowed for getting credit for modeling source compliance with the NAAQS and PSD increments. One such exception is for sources of SO_2. Section 51.100(hh)(2)(v) provides that identified techniques that increase final exhaust gas plume rise are not considered prohibited dispersion techniques pursuant to section 51.100(hh)(1)(iii) "where the resulting allowable emissions of sulfur dioxide from the facility do not exceed 5,000 tons per year." Thus, proposed modifications that experience difficulty modeling compliance with the new 1-hour SO_2 NAAQS when relying on BACT or an air quality-based emissions limit alone may permissibly consider techniques to increase their final exhaust gas plume rise consistent with these provisions.

The definition of "dispersion technique" at 40 CFR 51.100(hh)(1)(iii) describes techniques that are generally prohibited, but which do not apply with respect to the exemption for SO_2. Accordingly, it is permissible for eligible SO_2 sources to make adjustments to source process parameters, exhaust gas parameters, stack parameters, or to combine exhaust gases from several existing stacks into one stack, so as to increase the exhaust gas plume rise. It is important to remember that the exemption applies to sources that have facility-wide allowable SO_2 emissions of less than 5,000 tpy resulting from the increase in final exhaust gas plume rise. Thus, proposed modifications should not base their eligibility to use dispersion on the amount of the proposed net emissions increase, but on the total source emissions of SO_2.

The EPA does not recommend or encourage sources to rely on dispersion to demonstrate compliance with the NAAQS; however, we acknowledge the fact that certain SO_2 sources may legally do so. For example, while increasing stack height is a method of dispersion, EPA's rules allow use of that approach to the extent the resulting height meets EPA's requirements defining "good engineering practice (GEP)" stack height. See 40 CFR 50.100(hh)(1)(i), 50.100(ii)(1)-(3). Nevertheless, EPA encourages PSD applicants to seek other remedies, including the use of the most stringent controls (beyond top-down BACT) feasible or the acquisition of emissions reductions (offsets) from other existing sources, to address situations where proposed emissions increases would result in modeled violations of the SO_2 NAAQS.

GENERAL START-UP CONDITIONS

We do not anticipate widespread problems associated with high short-term SO_2 emissions resulting from start-up/shutdown conditions. Many sources are capable of starting a unit with natural gas or low-sulfur fuel to avoid significant start-up emissions problems. However, some sources could experience short-term peaks of SO_2 during start-up or shutdown that could adversely affect the new 1-hour SO_2 NAAQS. The EPA currently has no provisions for exempting emissions occurring during equipment start-up/shutdown from the BACT requirements or for air quality analyses to demonstrate compliance with the SO_2 NAAQS and increments. Therefore, such emissions should be addressed in the required BACT and air quality analyses.

There are approaches to addressing issues related to start-up/shutdown emissions. For example, sources may be willing to accept enforceable permit conditions limiting equipment start-up/shutdown to certain hours of the day when impacts are expected to be lower than normal. Such permit limitations can be accounted for in the modeling of such emissions. Applicants should direct other questions arising concerning procedures for modeling start-up/shutdown emissions to the applicable permitting authority to determine the most current modeling guidance.

In the event of questions regarding the general implementation guidance contained in this memorandum, please contact Raj Rao (rao.raj@epa.gov).

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
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August 23, 2010

MEMORANDUM

SUBJECT: Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard

FROM: Tyler Fox, Leader /s/
Air Quality Modeling Group, C439-01

TO: Regional Air Division Directors

INTRODUCTION

On June 2, 2010, EPA announced a new 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (1-hour SO_2 NAAQS or 1-hour SO_2 standard) which is attained when the 3-year average of the 99th-percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 75 ppb at each monitor within an area. The final rule for the new 1-hour SO_2 NAAQS was published in the Federal Register on June 22, 2010 (75 FR 35520-35603), and the standard becomes effective on August 23, 2010 (EPA, 2010a). This memorandum clarifies the applicability of current guidance in the *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W) for modeling SO_2 impacts in accordance with the Prevention of Significant Deterioration (PSD) permit requirements to demonstrate compliance with the new 1-hour SO_2 standard.

SUMMARY OF CURRENT GUIDANCE

Current modeling guidance for estimating ambient impacts of SO_2 for comparison with applicable NAAQS is presented in Section 4 of Appendix W under the general heading of "Traditional Stationary Source Models." This guidance acknowledges the fact that ambient SO_2 impacts are largely a result of emissions from stationary sources. Section 4.2.2 provides specific recommendations regarding "Refined Analytical Techniques," stating that "For a wide range of regulatory applications in all types of terrain, the recommended model is AERMOD" (see Section 4.2.2.b). As described in Section 4.1.d, the AERMOD dispersion model "employs best state-of-practice parameterizations for characterizing the meteorological influences and dispersion" (Cimorelli, *et al.*, 2004; EPA, 2004; EPA, 2009).

Section 7.2.6 of Appendix W addresses the issue of chemical transformation for modeling SO_2 emissions, stating that:

> The chemical transformation of SO_2 emitted from point sources or single industrial plants in rural areas is generally assumed to be relatively unimportant to the estimation of maximum concentrations when travel time is limited to a few hours. However, in urban areas, where synergistic effects among pollutants are of considerable consequence, chemical transformation rates may be of concern. In urban area applications, a half-life of 4 hours may be applied to the analysis of SO_2 emissions. Calculations of transformation coefficients from site specific studies can be used to define a ''half-life'' to be used in a steady-state Gaussian plume model with any travel time, or in any application, if appropriate documentation is provided. Such conversion factors for pollutant half-life should not be used with screening analyses.

The AERMOD model incorporates the 4 hour half-life for modeling ambient SO_2 concentrations in urban areas under the regulatory default option.

General guidance regarding source emission input data requirements for modeling ambient SO_2 impacts is provided in Section 8.1 of Appendix W and guidance regarding determination of background concentrations for purposes of a cumulative ambient air quality impact analysis is provided in Section 8.2.

APPLICABILITY OF CURRENT GUIDANCE TO 1-HOUR SO_2 NAAQS

The current guidance in Appendix W regarding SO_2 modeling in the context of the previous 24-hour and annual primary SO_2 NAAQS and the 3-hour secondary SO_2 NAAQS is generally applicable to the new 1-hour SO_2 standard. Since short-term SO_2 standards ($\leq$ 24 hours) have been in existence for decades, existing SO_2 emission inventories used to support modeling for compliance with the 3-hour and 24-hour SO_2 standards should serve as a useful starting point, and may be adequate in many cases for use in assessing compliance with the new 1-hour SO_2 standard, since issues identified in Table 8-2 of Appendix W related to short-term vs. long-term emission estimates may have already been addressed. However, the PSD applicant and reviewing authority may need to reassess emission estimates for very short-term emission scenarios, such as start-up and shut-down operations, for purposes of estimating source impacts on the 1-hour SO_2 standard. This is especially true if existing emission estimates for 3-hour or 24-hour periods are based on averages that include zero (0) or reduced emissions for some of the hours.

Given the form of the new 1-hour SO_2 standard, we are providing clarification regarding the appropriate data periods for modeling demonstrations of compliance with the NAAQS vs. demonstrations of attainment of the NAAQS through ambient monitoring. While monitored design values for the 1-hour SO_2 standard are based on a 3-year average (in accordance with Section 1(c) of Appendix T to 40 CFR Part 50), Section 8.3.1.2 of Appendix W addresses the length of the meteorological data record for dispersion modeling, stating that "[T]he use of 5 years of NWS [National Weather Service] meteorological data or at least 1 year of site specific data is required." Section 8.3.1.2.b further states that "one year or more (including partial years), up to five years, of site specific data . . . are preferred for use in air quality analyses." Although the monitored design value for the 1-hour SO_2 standard is defined in terms of the 3-year average, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data. The 5-year average based on use of NWS data, or an average across one or more years of available site specific data, serves as an unbiased estimate of the 3-year average for purposes of modeling demonstrations of compliance with the NAAQS. Modeling of "rolling 3-year averages," using years 1 through 3, years 2 through 4, and years 3 through 5, is not required. Furthermore, since modeled results for SO_2 are averaged across the number of years modeled for comparison to the new 1-hour SO_2 standard, the meteorological data period should include complete years of data to avoid introducing a seasonal bias to the averaged impacts. In order to comply with Appendix W recommendations in cases where partial years of site specific meteorological data are available, while avoiding any seasonal bias in the averaged impacts, an approach that utilizes the most conservative modeling result based on the first complete-year period of the available data record vs. results based on the last complete-year period of available data may be appropriate, subject to approval by the appropriate reviewing authority. Such an approach would ensure that all available site specific data are accounted for in the modeling analysis without imposing an undue burden on the applicant and avoiding arbitrary choices in the selection of a single complete-year data period.

The form of the new 1-hour SO_2 standard also has implications regarding appropriate methods for combining modeled ambient concentrations with monitored background concentrations for comparison to the NAAQS in a cumulative modeling analysis. As noted in the March 23, 2010 memorandum regarding "Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS" (EPA, 2010b), combining the 98th percentile monitored value with the 98th percentile modeled concentrations for a cumulative impact assessment could result in a value that is below the 98th percentile of the combined cumulative distribution and would, therefore, not be protective of the NAAQS. However, unlike the recommendations presented for $PM_{2.5}$, the modeled contribution to the cumulative ambient impact assessment for the 1-hour SO_2 standard should follow the form of the standard based on the 99th percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled. A "first tier" assumption that may be applied without further justification is to add the overall highest hourly background SO_2 concentration from a representative monitor to the modeled design value, based on the form of the standard, for comparison to the NAAQS. Additional refinements to this "first tier" approach based on some level of temporal pairing of modeled and monitored values may be considered on a case-by-case basis, subject to approval by the reviewing authority, with adequate justification and documentation.

Section 8.2.3 of Appendix W provides recommendations regarding the determination of background concentrations for multi-source areas. That section emphasizes the importance of professional judgment by the reviewing authority in the identification of nearby and other sources to be included in the modeled emission inventory, and establishes "a significant concentration gradient in the vicinity of the source" under consideration as the main criterion for this selection. Appendix W also indicates that "the number of such [nearby] sources is expected to be small except in unusual situations." See Section 8.2.3.b.

The representativeness of available ambient air quality data also plays an important role in determining which nearby sources should be included in the modeled emission inventory. Key issues to consider in this regard are the extent to which ambient air impacts of emissions from nearby sources are reflected in the available ambient measurements, and the degree to which emissions from those background sources during the monitoring period are representative of allowable emission levels under the existing permits. The professional judgments that are required in developing an appropriate inventory of background sources should strive toward the proper balance between adequately characterizing the potential for cumulative impacts of emission sources within the study area to cause or contribute to violations of the NAAQS, while minimizing the potential to overestimate impacts by double counting modeled source impacts that are also reflected in the ambient monitoring data.

We would also caution against the literal and uncritical application of very prescriptive procedures for identifying which background sources should be included in the modeled emission inventory for NAAQS compliance demonstrations, including those described in Chapter C, Section IV.C.1 of the draft *New Source Review Workshop Manual* (EPA, 1990), noting again that Appendix W emphasizes the importance of professional judgment in this process. While the draft workshop manual serves as a useful general reference that provides potential approaches for meeting the requirements of New Source Review (NSR) and PSD programs, it is not the only source of EPA modeling guidance. The procedures described in the manual may be appropriate in some circumstances for defining the spatial extent of sources whose emissions may need to be considered, but not in others. While the procedures described in the NSR Workshop Manual may appear very prescriptive, it should be recognized that "[i]t is not intended to be an official statement of policy and standards and does not establish binding regulatory requirements." See, Preface.

Given the range of issues involved in the determination of an appropriate inventory of emissions to include in a cumulative impact assessment, the PSD applicant should consult with the appropriate reviewing authority early in the process regarding the selection and proper application of appropriate monitored background concentrations and the selection and appropriate characterization of modeled background source emission inventories for use in demonstrating compliance with the new 1-hour SO_2 standard.

SUMMARY

To summarize, we emphasize the following points:

1. Current guidance in Appendix W for modeling to demonstrate compliance with the previous 24-hour and annual primary SO_2 standards, and 3-hour secondary SO_2 standard, is generally applicable for the new 1-hour SO_2 NAAQS.
2. While the 1-hour NAAQS for SO_2 is defined in terms of the 3-year average for monitored design values to determine attainment of the NAAQS, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data.

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Attachment B: Non-Criteria Regulated Pollutant Information

Nucor Corporation: West Virginia Steel Mill

Permit Number R14-0039: Facility ID 053-00085

Pollutant	CAS #	PTE (tons/yr)	Source	Known/Suspected Carcinogen	Classification	MACT[1]
Acetaldehyde	75-07-0	0.035	RICE	Yes	B2 - Probable Human Carcinogen[2]	ZZZZ
Acrolein	107-02-8	0.033	RICE	No	Inadequate Data[3]	ZZZZ
Benzene	71-43-2	0.013	RICE PNG Combustion	Yes	A - Known Human Carcinogen[4]	ZZZZ
Formaldehyde	50-00-0	0.416	RICE PNG Combustion	Yes	B1 - Probable Human Carcinogen[5]	ZZZZ
n-Hexane	110-54-3	4.427	RICE PNG Combustion	No	Inadequate Data[6]	ZZZZ
Hydrochloric Acid	7647-01-0	1.159	Pickling T10-T23	No	Not Assessed[7]	None
Methanol	67-56-1	0.013	RICE	No	Not Assessed[8]	ZZZZ
Tetrachloroethylene	127-18-4	0.010	T25-T29	Yes	Likely to be Carcinogen[9]	None
Toluene	108-88-3	0.012	RICE PNG Combustion	No	Inadequate Data[10]	ZZZZ
Lead	7439-92-1	0.675	EAFs	No	Not Assessed[11]	YYYYY
Manganese	7439-96-5	0.450	EAFs	No	D - Not Classifiable[12]	YYYYY
Mercury	7439-97-6	0.165	EAFs	No	D - Not Classifiable[13]	YYYYY

(1) Does a MACT apply to one of the emission units contributing emissions of this specific HAP? See "Regulatory Applicability" section for discussion.

(2) [**Acetaldehyde**] From IRIS: "*Based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.*"

(3) [**Acrolein**] From IRIS: "*Under the Draft Revised Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), the potential carcinogenicity of acrolein cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure. There are no adequate human studies of the carcinogenic potential of acrolein. Collectively, experimental studies provide inadequate evidence that acrolein causes cancer in laboratory animals.*"

(4) [**Benzene**] From IRIS: "*Benzene is classified as a "known" human carcinogen (Category A) under the Risk Assessment Guidelines of 1986. Under the proposed revised Carcinogen Risk Assessment Guidelines (U.S. EPA, 1996), benzene is characterized as a known human carcinogen for all routes of exposure based upon convincing human evidence as well as supporting evidence from animal studies. (U.S. EPA, 1979, 1985, 1998; ATSDR, 1997)..*"

(5) [**Formaldehyde**] From IRIS: "*Based on limited evidence in humans, and sufficient evidence in animals. Human data include nine studies that show statistically significant associations between site-specific respiratory neoplasms and exposure to formaldehyde or formaldehyde-containing products. An increased incidence of nasal squamous cell carcinomas was observed in long-term inhalation studies in rats and in mice. The classification is supported by in vitro genotoxicity data and formaldehyde's structural relationships to other carcinogenic aldehydes such as acetaldehyde.*"

(6) [**n-Hexane**] From IRIS: *"Under the Guidelines for Carcinogen Risk Assessment, there is inadequate information to assess the carcinogenic potential of n-hexane.*"

(7) [**Hydrochloric Acid**] No entry in the IRIS Database. Information on HCl toxicity at: https://www.ncbi.nlm.nih.gov/books/NBK230426/.

(8) [**Methanol**] From IRIS: "*Not assessed under the IRIS Program.*"

(9) [**Tetrachloroethylene**] From IRIS: "*Following EPA (2005a) Guidelines for Carcinogen Risk Assessment, tetrachloroethylene is "likely to be carcinogenic in humans by all routes of exposure.*"

(10) [**Toluene**] From IRIS: *"Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005), there is inadequate information to assess the carcinogenic potential of toluene because studies of humans chronically exposed to toluene are inconclusive, toluene was not carcinogenic in adequate inhalation cancer bioassays of rats and mice exposed for life (CIIT, 1980 NTP, 1990 Huff, 2003), and increased incidences of mammary cancer and leukemia were reported in a lifetime rat oral bioassay at a dose level of 500 mg/kg-day but not at 800 mg/kg-day (Maltoni et al., 1997).*"

(11) [**Lead**] No entry in the IRIS Database. Information on Lead toxicity at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4961898/.

(12) [**Manganese**] From IRIS: *"Existing studies are inadequate to assess the carcinogenicity of manganese.*"

(13) [**Mercury**] From IRIS: "*Based on inadequate human and animal data. Epidemiologic studies failed to show a correlation between exposure to elemental mercury vapor and carcinogenicity; the findings in these studies were confounded by possible or known concurrent exposures to other chemicals, including human carcinogens, as well as lifestyle factors (e.g., smoking). Findings from genotoxicity tests are severely limited and provide equivocal evidence that mercury adversely affects the number or structure of chromosomes in human somatic cells.*"

West Virginia Department of Environmental Protection
Harold D. Ward
Cabinet Secretary

Construction Permit

R14-0039

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.) and 45 C.S.R. 13 — Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation. The permittee identified at the facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:

Nucor Steel West Virginia LLC
West Virginia Steel Mill
053-00085

Laura M. Crowder
Director, Division of Air Quality

Issued: DRAFT

Facility Location:	Near Apple Grove, Mason County, WV
Mailing Address:	1915 Rexford Road, Charlotte, NC 28211
Facility Description:	Sheet Steel Mill
SIC/NAICS Code:	3312/331110
UTM Coordinates:	Easting: 398.20 km • Northing: 4,278.87 km • Zone: 17
Latitude/Longitude:	38.65536/-82.16853
Permit Type:	Construction
Description:	Construction of a 3,000,000 tons per year sheet steel mill.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

The facility is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

Table of Contents

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
Raw Material Storage & Handling					
Scrap Storage & Handling					
SCRAP-RAIL	Fugitives	Railcar Scrap Unloading	New	200 TPH	n/a
SCRAP-DOCK	Fugitives	Barge Scrap Unloading	New	600 TPH	n/a
SCRAP-BULK34	Fugitives	Barge Scrap Pile Loading	New	600 TPH	n/a
SCRAP-BULK35	Fugitives	Barge Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK36	Fugitives	Rail Scrap Pile Loading	New	120 TPH	n/a
SCRAP-BULK37	Fugitives	Rail Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK38	Fugitives	Truck Scrap Pile Loading	New	200 TPH	n/a
SCRAP-BULK39	Fugitives	Truck Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK40	Fugitives	Scrap Charging	New	220 TPH	n/a
SCRPSKP1	Fugitives	Scrap Metal Stockpile 1	New	81,809 ft^2	WS
SCRPSKP2	Fugitives	Scrap Metal Stockpile 2	New	81,809 ft^2	WS
SCRPSKP3	Fugitives	Scrap Metal Stockpile 3	New	81,809 ft^2	WS
Lime, Carbon, and Alloy Storage & Handling					
LIME-DUMP	LIME-DUMP-ST	Lime Dump Station	New	8 TPH	LIME-BH
	Fugitives				PE
CARBON-DUMP	CARBON-DUMP-ST	Carbon Dump Station	New	4 TPH	CARBON-BH
	Fugitives				PE
ALLOY-HANDLE	ALLOY-HANDLE-ST	Alloy Handling System	New	20 TPH	ALLOY-BH
	Fugitives				PE
LCB	LCB-ST	Lime, Carbon, and Alloy Silos	New	n/a	LCB-BH
Direct Reduced Iron (DRI) Storage & Handling					
DRI-DOCK	Fugitives	DRI Unloading Dock	New	500 TPH	PE
	DRI-DOCK-ST				DRI-DOCK-BH
DRI1	DRIVF1	DRI Storage Silo 1	New	64 TPH	DRI1-BH
	DRIBV1				DRI1-BV
DRI2	DRIVF2	DRI Storage Silo 2	New	64 TPH	DRI2-BH
	DRIBV2				DRI2-BV

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
DRI3	DRIVF3	DRI Storage Silo 3	New	64 TPH	DRI3-BH
	DRIBV3				DRI3-BV
DRI4	DRIVF4	DRI Storage Silo 4	New	64 TPH	DRI4-BH
	DRIBV4				DRI4-BV
DRI-DB1	DRI-DB1-BH	DRI Day Bin 1	New	64 TPH	DRI-DB1-BH
DRI-DB2	DRI-DB2-BH	DRI Day Bin 2	New	64 TPH	DRI-DB2-BH
BULK-DRI	BULK-DRI-1	DRI Silo 1 Loadout	New	64 TPH	PE
	BULK-DRI-2	DRI Silo 2 Loadout		64 TPH	PE
	BULK-EMG-1	DRI Conveyer 1 Emergency Chute		125 TPH	None
	BULK-EMG-2	DRI Silos Emergency Chute		800 TPH	None
DRI-CONV	DRI-CONV-BH	DRI Transfer Conveyers	New	64 TPH	DRI-CONV-BH
Haulraods					
FUGD-PAVED-01P through 10P	Fugitives	Paved Haulroads 1P - 10P	New	n/a	WS
FUGD-UNPAVED-1UP through 19U	Fugitives	Unpaved Haulroads 11U - 19U	New	n/a	WS
Melt Shop					
EAF1	BHST-1	Electric Arc Furnace 1	New	171 TPH, 22.18 mmBtu/hr[2]	EAF1-BH
	MSFUG				n/a
LMF1	BHST-1	Ladle Metallurgy Furnace 1	New	171 TPH	EAF1-BH
CAST1	BHST-1	Caster 1	New	171 TPH	EAF1-BH
	CASTFUG				n/a
EAF2	BHST-2	Electric Arc Furnace 2	New	171 TPH, 22.18 mmBtu/hr[2]	EAF2-BH
	MSFUG				n/a
LMF2	BHST-2	Ladle Metallurgy Furnace 2	New	171 TPH	EAF2-BH
CAST2	BHST-2	Caster 2	New	171 TPH	EAF2-BH
	CASTFUG				n/a
LD	MSFUG	Ladle Dryer	New	15 mmBtu/hr	n/a
EAFVF1	EAFVF1	EAF Baghouse 1 Dust Silo	New	0.84 TPH	EAFVF1-BV
EAFVF2	EAFVF2	EAF Baghouse 2 Dust Silo	New	0.84 TPH	EAFVF2-BV

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[(1)]
LPHTR1	MSFUG[(3)]	Horizontal Ladle Preheater 1	New	15 mmBtu/hr	n/a
LPHTR2	MSFUG[(3)]	Horizontal Ladle Preheater 2	New	15 mmBtu/hr	n/a
LPHTR3	MSFUG[(3)]	Horizontal Ladle Preheater 3	New	15 mmBtu/hr	n/a
LPHTR4	MSFUG[(3)]	Horizontal Ladle Preheater 4	New	15 mmBtu/hr	n/a
LPHTR5	MSFUG[(3)]	Horizontal Ladle Preheater 5	New	15 mmBtu/hr	n/a
LPHTR6	MSFUG[(3)]	Vertical Ladle Preheater 6	New	15 mmBtu/hr	n/a
LPHTR7	MSFUG[(3)]	Vertical Ladle Preheater 7	New	15 mmBtu/hr	n/a
TD	MSFUG[(3)]	Tundish Dryer 1	New	6 mmBtu/hr	n/a
TPHTR1	MSFUG[(3)]	Tundish Preheater 1	New	9 mmBtu/hr	n/a
TPHTR2	MSFUG[(3)]	Tundish Preheater 2	New	9 mmBtu/hr	n/a
SENPHTR1	MSFUG[(3)]	Subentry Nozzle (SEN) Preheater 1	New	1 mmBtu/hr	n/a
SENPHTR2	MSFUG[(3)]	Subentry Nozzle (SEN) Preheater 2	New	1 mmBtu/hr	n/a
VTD1	VTDST1	Vacuum Tank 1	New	269 lbs-CO/hr	VTG-Flare 1
VTD2	VTDST2	Vacuum Tank 2	New	269 lbs-CO/hr	VTG-Flare 2
Hot Mill					
TF1	TFST-1	Hot Mill Tunnel Furnace 1	New	150 mmBtu/hr	None
RM	RM-BH	Rolling Mill	New	342 TPH	RM-BH
Cold Mill					
PKLSB	PKLSB	Pickling Line Scale Breaker	New	342 TPH	PKLSB-BH
PKL-1	PLST-1	Pickling Line 1	New	171 TPH	PKL1-SCR
CGL1	CGL1-ST1	CGL1 - Cleaning Section	New	171 TPH	CGL-SCR1
	CGL1-ST2	CGL1 - Passivation Section		171 TPH	CGL-SCR2
CGL2	CGL2-ST1	CGL2 - Cleaning Section	New	171 TPH	CGL-SCR3
	CGL2-ST2	CGL2 - Passivation Section		171 TPH	CGL-SCR4
GALVFN1	GALVFN1-ST	Galvanizing Furnace 1	New	64 mmBtu/hr	None
GALVFN2	GALVFN2-ST	Galvanizing Furnace 2	New	64 mmBtu/hr	None
BOXANN1	GALVFUG[(4)]	Box Annealing Furnace 1	New	5 mmBtu/hr	None
BOXANN2	GALVFUG[(4)]	Box Annealing Furnace 2	New	5 mmBtu/hr	None
BOXANN3	GALVFUG[(4)]	Box Annealing Furnace 3	New	5 mmBtu/hr	None

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
BOXANN4	GALVFUG(4)	Box Annealing Furnace 4	New	5 mmBtu/hr	None
BOXANN5	GALVFUG(4)	Box Annealing Furnace 5	New	5 mmBtu/hr	None
BOXANN6	GALVFUG(4)	Box Annealing Furnace 6	New	5 mmBtu/hr	None
BOXANN7	GALVFUG(4)	Box Annealing Furnace 7	New	5 mmBtu/hr	None
BOXANN8	GALVFUG(4)	Box Annealing Furnace 8	New	5 mmBtu/hr	None
BOXANN9	GALVFUG(4)	Box Annealing Furnace 9	New	5 mmBtu/hr	None
BOXANN10	GALVFUG(4)	Box Annealing Furnace 10	New	5 mmBtu/hr	None
BOXANN11	GALVFUG(4)	Box Annealing Furnace 11	New	5 mmBtu/hr	None
BOXANN12	GALVFUG(4)	Box Annealing Furnace 12	New	5 mmBtu/hr	None
BOXANN13	GALVFUG(4)	Box Annealing Furnace 13	New	5 mmBtu/hr	None
BOXANN14	GALVFUG(4)	Box Annealing Furnace 14	New	5 mmBtu/hr	None
BOXANN15	GALVFUG(4)	Box Annealing Furnace 15	New	5 mmBtu/hr	None
BOXANN16	GALVFUG(4)	Box Annealing Furnace 16	New	5 mmBtu/hr	None
BOXANN17	GALVFUG(4)	Box Annealing Furnace 17	New	5 mmBtu/hr	None
BOXANN18	GALVFUG(4)	Box Annealing Furnace 18	New	5 mmBtu/hr	None
BOXANN19	GALVFUG(4)	Box Annealing Furnace 19	New	5 mmBtu/hr	None
BOXANN20	GALVFUG(4)	Box Annealing Furnace 20	New	5 mmBtu/hr	None
BOXANN21	GALVFUG(4)	Box Annealing Furnace 21	New	5 mmBtu/hr	None
BOXANN22	GALVFUG(4)	Box Annealing Furnace 22	New	5 mmBtu/hr	None
TCM	TCMST	Tandem Cold Mill	New	342 TPH	TCM-ME
STM	STM-BH	Standalone Temper Mill	New	342 TPH	STM-ME
SPM1	SPMST1	Skin Pass Mill 1	New	114 TPH	SPM1-BH
SPM2	SPMST2	Skin Pass Mill 2	New	114 TPH	SPM3-BH
Slag Processing					
SLGSKP1	Fugitives	Slag Storage Stockpile 1	New	32,541 ft^2	WS
SLGSKP2	Fugitives	Slag Storage Stockpile 2	New	32,541 ft^2	WS
SLGSKP3	Fugitives	Slag Storage Stockpile 3	New	32,541 ft^2	WS
SLGSKP4	Fugitives	Slag Storage Stockpile 4	New	32,541 ft^2	WS
SLAG-CUT	SLAG-CUT-NG	Slag Cutting Combustion	New	2.4 mmBtu/hr	None
	SLAG-CUT-BH	Slag Cutting		171 TPH	SLAG-CUT-BH

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
SCRAP-BULK1	SCRAP-BULK1	Dig Slag Inside Pot Barn	New	73 TPH	PE, WS
SCRAP-BULK2	SCRAP-BULK2	Loader Transport & Dump Slag Into Trench	New	73 TPH	PE, WS
SCRAP-BULK3	SCRAP-BULK3	Loader Transport & Dump Slag Into F1 Feed Hopper/Grizzly	New	73 TPH	PE, WS
SCRAP-BULK4	SCRAP-BULK4	TP: F1 Feed Hopper/Grizzly to P1 Oversize Storage(5)	New	73 TPH	PE, WS
SCRAP-BULK5	SCRAP-BULK5	TP: F1 Feed Hopper/Grizzly to C7 Crusher Conveyer	New	1.5 TPH	PE, WS
SCRAP-BULK6	SCRAP-BULK6	TP: F1 Feed Hopper/Grizzly to C1A Main Conveyer	New	22 TPH	PE, WS
SCRAP-BULK7	SCRAP-BULK7	TP: C7 to CR1 Crusher	New	50 TPH	PE, WS
SCRAP-BULK8	SCRAP-BULK8	TP: CR1 Crusher to C8 Conveyer	New	22 TPH	PE, WS
SCRAP-BULK9	SCRAP-BULK9	TP: CR1 Crusher to P2 Off-spec Storage(5)	New	19 TPH	PE, WS
SCRAP-BULK10	SCRAP-BULK10	TP: C8 Conveyer to C9 Conveyer	New	3.3 TPH	PE, WS
SCRAP-BULK11	SCRAP-BULK11	TP: C9 Conveyer to C1A Conveyer	New	19 TPH	PE, WS
SCRAP-BULK12	SCRAP-BULK12	TP: C1A Conveyer to B1 Surge Bin	New	19 TPH	PE, WS
SCRAP-BULK13	SCRAP-BULK13	TP: B1 Surge Bin to C1 Conveyer	New	68 TPH	PE, WS
SCRAP-BULK14	SCRAP-BULK14	TP: C1 Conveyor through M1 Mag Splitter to S1 Slag Screen	New	68 TPH	PE, WS
SCRAP-BULK15	SCRAP-BULK15	TP: C1 Conveyor through M1 Mag Splitter to S2 Slag Screen	New	66 TPH	PE, WS
SCRAP-BULK16	SCRAP-BULK16	TP: S2 Slag Screen to C6 Conveyor	New	2.4 TPH	PE, WS
SCRAP-BULK17	SCRAP-BULK17	TP: S2 Slag Screen to P3 Off-spec Storage(5)	New	2 TPH	PE, WS
SCRAP-BULK18	SCRAP-BULK18	TP: C6 Conveyor to P4 Off-spec Storage(5)	New	0.4 TPH	PE, WS
SCRAP-BULK19	SCRAP-BULK19	TP: S1 Slag Screen to C2 Conveyer	New	2 TPH	PE, WS

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
SCRAP-BULK20	SCRAP-BULK20	TP: C2 Conveyer to C5 Conveyer	New	26 TPH	PE, WS
SCRAP-BULK21	SCRAP-BULK21	TP: C5 Conveyer to SLGSKP1	New	26 TPH	PE, WS
SCRAP-BULK22	SCRAP-BULK22	TP: S1 Slag Screen to C4 Conveyer	New	26 TPH	PE, WS
SCRAP-BULK23	SCRAP-BULK23	TP: C4 Conveyer to SLGSKP3	New	20 TPH	PE, WS
SCRAP-BULK24	SCRAP-BULK24	TP: S1 Slag Screen to C3 Conveyer	New	20 TPH	PE, WS
SCRAP-BULK25	SCRAP-BULK25	TP: C3 Conveyer to SLGSKP2	New	13 TPH	PE, WS
SCRAP-BULK26	SCRAP-BULK26	TP: S1 Slag Screen to SLGSKP4	New	13 TPH	PE, WS
SCRAP-BULK27	SCRAP-BULK27	Loader transports & loads products into trucks to Product Stockpiles	New	6.6 TPH	PE, WS
SCRAP-BULK28	SCRAP-BULK28	Truck Dumps Products into Product Stockpiles	New	73 TPH	PE, WS
SCRAP-BULK29	SCRAP-BULK29	Loader Into trucks, Oversize to Drop Ball Crusher	New	73 TPH	PE, WS
SCRAP-BULK30	SCRAP-BULK30	Truck Dumps Oversize into Drop Ball Area	New	1.5 TPH	PE, WS
SCRAP-BULK31	SCRAP-BULK30	Truck Transports Ladle Lip/Meltshop Cleanup Materials & Dumps at Drop Ball Site	New	4.7 TPH	PE, WS
SCRAP-BULK32	SCRAP-BULK32	Truck Transports & Dumps Tundish at Lancing Station	New	2.6 TPH	PE, WS
SCRAP-BULK33	SCRAP-BULK33	Ball Drop Crusher	New	2.3 TPH	PE, WS
Auxiliary Operations/Equipment					
ASP	ASP-1	Water Bath Vaporizer	New	11 mmBtu/hr	None
Emergency Generators					
EMGEN1	EMGEN1	Emergency Generator 1	New	2,000 hp	TBD[6]
EMGEN2	EMGEN2	Emergency Generator 2	New	2,000 hp	TBD[6]
EMGEN3	EMGEN3	Emergency Generator 3	New	2,000 hp	TBD[6]
EMGEN4	EMGEN4	Emergency Generator 4	New	2,000 hp	TBD[6]

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
EMGEN5	EMGEN5	Emergency Generator 5	New	2,000 hp	TBD(6)
EMGEN6	EMGEN6	Emergency Generator 6	New	2,000 hp	TBD(6)
Cooling Towers					
CT1	CT1	Melt Shop ICW Cooling Tower	New	52,000 gpm	DE
CT2	CT2	Melt Shop DCW Cooling Tower	New	5,900 gpm	DE
CT3	CT3	Rolling Mill ICW Cooling Tower	New	8,500 gpm	DE
CT4	CT4	Rolling Mill DCW Cooling Tower	New	22,750 gpm	DE
CT5	CT5	Rolling Mill Quench/ACC Cooling Tower	New	90,000 gpm	DE
CT6	CT6	Light Plate DCW System	New	8,000 gpm	DE
CT7	CT7	Heavy Plate DCW System	New	3,000 gpm	DE
CT8	CT8	Air Separation Plant Cooling Tower	New	14,000 gpm	DE
Fixed Roof Storage Tanks					
T1	T1	Diesel Tank	New	5,000 gallon	None
T2	T2	Diesel Tank	New	1,000 gallon	None
T3	T3	Diesel Tank	New	1,000 gallon	None
T4	T4	Diesel Tank	New	1,000 gallon	None
T5	T5	Diesel Tank	New	2,000 gallon	None
T6	T6	Diesel Tank	New	2,000 gallon	None
T7	T7	Gasoline Tank	New	1,000 gallon	None
T8	T8	Caster Hydraulic Oil Tank	New	5,000 gallon	None
T9	T9	Hot Mill Hydraulic Oil Tank	New	5,000 gallon	None
T10	T10	HCL Tank 1	New	26,400 gallon	None
T11	T11	HCL Tank 2	New	26,400 gallon	None
T12	T12	HCL Tank 3	New	26,400 gallon	None
T13	T13	HCL Tank 4	New	26,400 gallon	None
T14	T14	HCL Tank 5	New	26,400 gallon	None
T15	T15	HCL Tank 6	New	26,400 gallon	None
T16	T16	SPL Tank 1	New	26,400 gallon	None

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
T17	T17	SPL Tank 2	New	26,400 gallon	None
T18	T18	SPL Tank 3	New	26,400 gallon	None
T19	T19	SPL Tank 4	New	26,400 gallon	None
T20	T20	SPL Tank 5	New	26,400 gallon	None
T21	T21	SPL Tank 6	New	26,400 gallon	None
T22	T22	SPL Tank 7	New	26,400 gallon	None
T23	T23	SPL Tank 8	New	26,400 gallon	None
T24	T24	Used Oil Tank	New	5,000 gallon	None
Other Tanks					
T25	T25	Cold Degreaser Tank[7]	New	80 gallon	None
T26	T26	Cold Degreaser Tank[7]	New	80 gallon	None
T27	T27	Cold Degreaser Tank[7]	New	80 gallon	None
T28	T28	Cold Degreaser Tank[7]	New	80 gallon	None
T29	T29	Cold Degreaser Tank[7]	New	80 gallon	None

(1) This column does note include pollution prevention technologies/procedures such as Low-NO_x Burners or Good Combustion Practices. BH - Baghouse; BV - Bin Vent; DE - Drift Eliminator; ME - Mist Eliminator; SCR - Scrubber; TBD - To Be Determined; WS - Water Sprays/Wet Suppression
(2) This heat input reflects the size of the natural gas-fired oxyfuel burners.
(3) Natural gas combustion exhaust emissions that vent inside the Melt Shop building and are assumed all emitted from building openings.
(4) Natural gas combustion exhaust emissions that vent inside the Cold Mill building and are assumed all emitted from building openings.
(5) P1, P2, P3, and P4 Storage are small temporary indoor areas of screen/crusher reject.
(6) These engines are required to be in compliance with 40 CFR 60, Subpart JJJJ. Oxidation catalysts may be necessary on some engines to meet the applicable standards.
(7) These tanks are open during use (see Section 4.1.7(f)).

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR § 30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments	**NSPS**	New Source Performance Standards
CBI	Confidential Business Information	**PM**	Particulate Matter
CEM	Continuous Emission Monitor	**$PM_{2.5}$**	Particulate Matter less than 2.5µm in diameter
CES	Certified Emission Statement	**PM_{10}**	Particulate Matter less than 10µm in diameter
C.F.R. ***or*** **CFR**	Code of Federal Regulations	**Ppb**	Pounds per Batch
CO	Carbon Monoxide	**pph**	Pounds per Hour
C.S.R. ***or*** **CSR**	Codes of State Rules	**ppm**	Parts per Million
DAQ	Division of Air Quality	**Ppmv or ppmv**	Parts per million by volume
DEP	Department of Environmental Protection	**PSD**	Prevention of Significant Deterioration
dscm	Dry Standard Cubic Meter	**psi**	Pounds per Square Inch
FOIA	Freedom of Information Act	**SIC**	Standard Industrial Classification
HAP	Hazardous Air Pollutant	**SIP**	State Implementation Plan
HON	Hazardous Organic NESHAP	**SO_2**	Sulfur Dioxide
HP	Horsepower	**TAP**	Toxic Air Pollutant
lbs/hr	Pounds per Hour	**TPY**	Tons per Year
LDAR	Leak Detection and Repair	**TRS**	Total Reduced Sulfur
M	Thousand	**TSP**	Total Suspended Particulate
MACT	Maximum Achievable Control Technology	**USEPA**	United States Environmental Protection Agency
MDHI	Maximum Design Heat Input	**UTM**	Universal Transverse Mercator
MM	Million	**VEE**	Visual Emissions Evaluation
MMBtu/hr ***or*** **mmbtu/hr**	Million British Thermal Units per Hour	**VOC**	Volatile Organic Compounds
MMCF/hr ***or*** **mmcf/hr**	Million Cubic Feet per Hour	**VOL**	Volatile Organic Liquids
NA	Not Applicable		
NAAQS	National Ambient Air Quality Standards		
NESHAPS	National Emissions Standards for Hazardous Air Pollutants		
NO_x	Nitrogen Oxides		

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Law W.Va. Code §§22-5-1 et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation.*

2.4. Term and Renewal

2.4.1. This permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any applicable legislative rule.

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Application R14-0039 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.10 and 13-10.3]

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses and/or approvals from other agencies; i.e., local, state and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10. Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is 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 (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.

2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

b. The permitted facility was at the time being properly operated;

c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and,

d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emission, and corrective actions taken.

2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13.
[45CSR§13-10.1]

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§34]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1 State-Enforceable only.]

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45 C.S.R. 11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

3.2.1. **Emission Limit Averaging Time.** Unless otherwise specified, compliance with all annual limits shall be based on a rolling twelve (12) month total. A rolling twelve month total shall be the sum of the measured parameter of the previous twelve (12) calendar months. Compliance with all hourly emission limits shall be based, unless otherwise specified, on the applicable NAAQS averaging times or, where applicable, as given in any approved performance test method.

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

1. The permit or rule evaluated, with the citation number and language;
2. The result of the test for each permit or rule condition; and,
3. A statement of compliance or noncompliance with each permit or rule condition.

[WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State-Enforceable only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class or by private carrier with postage prepaid to the address(es), or submitted in electronic format by email as set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

If to the DAQ:

Director
WVDEP
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304-2345

If to the US EPA:

Section Chief
U.S. Environmental Protection Agency, Region III
Enforcement and Compliance Assurance Division
Air Section (3ED21)
1650 Arch Street
Philadelphia, PA 19103-2029

DAQ Compliance and Enforcement[1]:
DEPAirQualityReports@wv.gov

[1] For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, notice of Compliance Status Reports, Initial Notifications, etc.

3.5.4. **Operating Fee.**

3.5.4.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a Certified Emissions Statement (CES) and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.4.2. In accordance with 45CSR30 – Operating Permit Program, enclosed with this permit is a Certified Emissions Statement (CES) Invoice, from the date of initial startup through the following June 30. Said invoice and the appropriate fee shall be submitted to this office no later than 30 days prior to the date of initial startup. For any startup date other than July 1, the permittee shall pay a fee or prorated fee in accordance with the Section 4.5 of 45CSR22. A copy of this schedule may be found attached to the Certified Emissions Statement (CES) Invoice.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements

4.1. Limitations and Standards

4.1.1. Only those emission units/sources as identified in Table 1.0, with the exception of any *de minimis* sources as identified under Table 45-13B of 45CSR13, are authorized at the permitted facility by this permit. In accordance with the information filed in Permit Application R14-0039, the emission units/sources identified under Table 1.0 of this permit shall be installed, maintained, and operated so as to minimize any fugitive escape of pollutants, shall not exceed the listed maximum design capacities, shall use the specified control devices, and comply with any other information provided under Table 1.0.

4.1.2. The aggregate production of sheet steel in the EAFs (EAF-1 and EAF-2) shall not, on a rolling 12-month basis, exceed 3,000,000 tons per year as measured as the total tons of molten metal sent to the casters (CAST1 and CAST2).

4.1.3. **Material Handling & Storage Operations**
The handling of: (1) slag, (2) raw materials used in the production of steel: scrap steel, direct reduced iron (DRI) and other scrap substitutes, carbons, alloys, and lime, and (3) EAF Baghouse Dust shall be in accordance with the following requirements:

a. The permittee shall not exceed the specified maximum annual throughputs of the following materials:

Table 4.1.3(a): Maximum Annual Throughputs

Material	Limit	Units
Scrap Steel	1,925,000	TPY(1)
DRI(2)	557,500	TPY(1)
Alloys	62,000	TPY(1)
Carbon	35,000	TPY(1)
Lime	70,000	TPY(1)
Slag	262,500	TPY(3)

(1) As measured prior to charging in the EAF/LMF.
(2) DRI may include the following scrap substitutes: pig iron and hot briquetted Iron (HBI).
(3) As measured processed through the F1 Slag Feed Hopper.

b. The permittee shall not exceed the specified maximum design capacities of the following equipment:

Table 4.1.3(b): Maximum Design Capacity

Emission Unit ID	Description	Limit	Units
CR1	Slag Crusher	50	TPH
S1	Slag Screen 1	68	TPH
S2	Slag Screen 2	66	TPH

c. The permittee shall not exceed the maximum emission limits for the material handling stack/vent emission points as given under Appendix A: Table A-1 and the material handling non-stack/vent emission points (including open stockpiles) as given under Appendix A: Table A-2;

d. The permittee shall meet the following additional control device/mitigation requirements for the material handling operations:

(1) The permittee shall perform all slag handling operations (including conveying, crushing, screening, and storing) only on slag that is wetted sufficiently (BACT) to mitigate the emissions of particulate matter; and

(2) The permittee shall locate and enclose (where applicable) each material handling operation as described in the Bulk Materials Transfer/Process Inputs and Assumptions Table in the permit application so as to achieve the minimum control efficiency listed therein.

e. A visible and/or audible warning device shall be installed on each of the EAF Baghouse Storage Silos to warn operators when the silos are full so that silos are not overloaded. The silos shall not be overloaded at any time. All particulate material retrieved from any of the EAF Baghouses shall be handled in a manner that will prevent excess material from becoming airborne into the atmosphere;

f. **Outdoor Open Storage Piles**
All outdoor open feedstock material storage shall be in accordance with the following:

(1) The permittee is authorized to operate three (3) open scrap steel stockpiles (SCRPSKP1 through SCRPSKP3) that shall each not exceed a base of 81,809 ft^2 and four (4) open slag stockpiles (SLGSKP1 through SLGSKP4) that shall each not exceed a base of 32,541 ft^2. The permittee shall manage on-pile activity so as to minimize the release of emissions from all open stockpiles;

(2) The permittee shall utilize water sprays as necessary on all open storage piles to keep the to mitigate any significant release of fugitive dust emissions from the piles both during periods of activity on the pile and from wind erosion;

(3) The permittee shall properly install, operate and maintain winterization systems for all water sprays in a manner that the water sprays will remain effective and functional, to the maximum extent practicable, during winter months and cold weather. At all times, including periods of cold weather, the permittee shall comply with the water spray requirements of this section; and

(4) All other feedstock material (DRI and other scrap substitutes, carbon, alloys, and lime) shall be stored in silos or enclosed bins.

g. **Haulroads and Mobile Work Areas**
Fugitive particulate emissions resulting from use of haulroads and mobile work areas shall be minimized by the following:

(1) The permittee shall perform all necessary tasks to adequately maintain paved haulroads and paved mobile work areas (including a reasonable shoulder area) within the plant boundary;

(2) All unpaved roads and mobile work areas shall be graded with gravel, slag, or a mixture of the two so as to provide a suitable surface for the use of trucks and other heavy equipment. Unpaved roads and mobile work areas shall be provided with additional slag or gravel as needed to maintain the road surface;

(3) The permittee shall, in a timely fashion, collect material spilled on paved haulroads that could become airborne if it dried or were subject to vehicle traffic and shall maintain access to a vacuum sweeper truck in good operating condition, and shall utilize same as needed to remove excess dirt and dust from all paved haulroads and mobile work areas. If needed, the haulroads and mobile work areas shall be flushed with water prior to vacuum sweeping to remove larger pieces of debris;

(4) The permittee shall maintain a water truck on site and in good operating condition, and shall utilize same to apply a mixture of water and an environmentally acceptable dust control additive, hereinafter referred to as solution, as often as is necessary in order to minimize the atmospheric entrainment of fugitive particulate emissions that may be generated from haulroads and other work areas where mobile equipment is used. The spraybar shall be equipped with commercially available spray nozzles, of sufficient size and number, so as to provide adequate coverage to the area being treated.

The pump delivering the water/solution shall be of sufficient size and capacity so as to be capable of delivering to the spray nozzle(s) an adequate quantity of solution, and at a sufficient pressure, so as to assure that the treatment process will minimize the atmospheric entrainment of fugitive particulate emissions generated from the haulroads and work areas where mobile equipment is used.

The permittee shall properly install, operate and maintain winterization systems for all water trucks in a manner that the water truck will remain effective and functional, to the maximum extent practicable, during winter months and cold weather. At all times, including periods of cold weather, the permittee shall comply with the water truck requirements of this permit; and

(5) A maximum speed limit of 15 miles per hour shall be maintained on all unpaved haulroads. Clear and visible signs shall be posted displaying this speed limit wherever necessary to ensure compliance with this requirement.

h. **45CSR7**
The material handling sources identified under 4.1.3(c) shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in

excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

4.1.4. **Melt Shop**
The emission units/sources in the Melt Shop shall meet the following requirements:

a. **EAFs/LMFs**
The EAFs (identified as EAF-1 and EAF-2) and LMFs (identified as LMF1 and LMF2) shall each not exceed the aggregate emission limits in the following table, as emitted from the associated baghouse (EAF1-BH and EAF2-BH), and shall utilize the specified BACT Technology, as given in the following table (the emission limits are in effect during all periods of operation):

Table 4.1.4(a): EAF/LMF Emission Limits

Pollutant	BACT Limit	BACT Technology[1]		PPH	TPY
CO	2.02 lb/ton-steel[2]	GCP[3]		328.15	1,439.00
NO_x	0.35 lb/ton-steel[4]	EAFs	Oxyfuel Burners	56.86	249.38
		LMFs	GCP		
$PM_{2.5}/PM_{10}$[5]	0.0052 gr/dscf	Baghouse		49.19	215.45
PM[6]	0.0018 gr/dscf	Baghouse		17.03	74.58
SO_2	0.24 lb/ton-steel[7]	Scrap Management/ Lime Fluxing[8]		38.99	171.00
VOCs	0.098 lb/ton-steel[9]	EAFs	GCP	15.92	69.83
			Scrap Management Plan[10]		
		LMFs			
Lead	0.00045 lb/ton-steel	Baghouse		0.07	0.32
Fluoride	0.00350 lb/ton-steel	Baghouse		0.57	2.49
Total HAPs	n/a	n/a		0.25	1.06
CO_2e	TPY Limit	OxyFuel Burners, See 4.1.4(c)(5)		47,813	179,357

(1) LNB = Low NO_x Burner; GCP = Good Combustion Practices
(2) Aggregated limit based on an EAF emission rate of 2.00 lb/ton-steel and LMF emission rate of 0.02 lb/ton-steel. Compliance based on a 30-day rolling average.
(3) For the purposes of this permit, "Good Combustion Practices (GCP)" are defined to include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control emissions through proper combustion tuning, temperature, and air/fuel mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge,

performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

(4) Aggregated limit based on an EAF emission rate of 0.30 lb/ton-steel and LMF emission rate of 0.05 lb/ton-steel. Compliance based on a 30-day rolling average.

(5) Includes condensables.

(6) Filterable only.

(7) Aggregated limit based on an EAF emission rate of 0.20 lb/ton-steel and LMF emission rate of 0.04 lb/ton-steel. Compliance based on a 30-day rolling average.

(8) The permittee shall limit the sulfur content of the EAF feedstock materials utilizing scrap management and/or shall add appropriate fluxes to the charge so as to meet the SO_2 emission limit given in this Table.

(9) Aggregated limit based on an EAF emission rate of 0.093 lb/ton-steel and LMF emission rate of 0.05 lb/ton-steel. Compliance based on a 30-day rolling average.

(10) For the purposes of this permit, "Scrap Management Plan" is defined as being in compliance with the Scrap Management Requirements under 40 CFR 63, Subpart YYYYY and the use of commercially available low residue, pre-processed, and inspected scrap.

b. **Melt Shop Fugitive Emissions**

The aggregate uncaptured fugitive emissions from the both EAFs/LMFs (identified as EAF-1 and EAF-2) and both the Casters (identified as CAST-1 and CAST-2) shall not exceed the limits given in the following table (these limits do not include the natural gas combustion exhaust emissions from various sources listed under Table 4.1.5(a)):

Table 4.1.4(b): EAFs/LMFs/Casters Fugitive Emission Limits[(1)(2)(3)(4)]

Pollutant	Source	PPH	TPY
CO	EAF-1/EAF-2	34.54	151.50
NO_x	EAF-1/EAF-2	5.99	26.25
$PM_{2.5}/PM_{10}$[(5)]	EAF-1/EAF-2	0.94	4.12
	CAST-1/CAST-2	0.21	0.90
PM[(6)]	EAF-1/EAF-2	1.62	7.10
	CAST-1/CAST-2	0.21	0.90
SO_2	EAF-1/EAF-2	4.10	18.00
VOCs	EAF-1/EAF-2	1.68	7.35
Lead	EAF-1/EAF-2	0.0077	0.0338
Fluoride	EAF-1/EAF-2	0.060	0.263
Total HAPs	EAF-1/EAF-2	0.040	0.066
CO_2e	EAF-1/EAF-2	5,033	18,880

(1) With the exception of CO_2e, the PPH limits in this table represent the BACT emission limits and the particulate matter capture methods and control efficiencies given under 4.1.3(c) below represent the associated control method/technology. The BACT limit for CO_2e is the TPY limit.

(2) EAF/LMF fugitive non-particulate matter emissions based on 5% of total uncontrolled emissions (not captured by the DEC). Particulate Matter emissions based on 0.025% of uncontrolled emissions when the furnace hood is closed (96% of the time) - using capture efficiency of DEC (95%), Canopy Hood (95%), and Melt Shop building (90%) - and based on 0.5% of uncontrolled emissions when the furnace hood is open (4% of the time) - using capture efficiency of Canopy Hood (95%) and Melt Shop building (90%).

(3) Casters fugitives are only particulate matter emissions and based on 0.50% of total uncontrolled emissions - using capture efficiency of Canopy Hood (95%) and Melt Shop building (90%).

(4) All other natural gas combustion sources that exhaust in the Melt Shop building are considered fugitive and emitted from building openings. These limits are given under Table 4.1.5(a).
(5) Includes condensables.
(6) Filterable only.

c. **EAF/LMF/Casting Operating Requirements**
The EAFs/LMFs shall be operated according to the following requirements:

(1) Each EAF will not exceed an aggregate oxyfuel burner heat input of 22.18 mmBtu/hr and the burners shall be fired only by pipeline quality natural gas (PNG);

(2) During melting operations, when the roof is closed, the permittee shall utilize a direct-shell evacuation control (DEC) system designed and operated to achieve a minimum capture efficiency of 95% of all potential particulate matter emissions from the EAFs and LMFs and evacuate the exhaust to each associated EAF baghouse. Pursuant to 40 CFR 60, Subpart AAa, a DEC system means a system that maintains a negative pressure within the EAF above the slag or metal and ducts emissions to the EAF baghouse;

(3) The permittee shall utilize a roof canopy hood designed and operated to achieve a minimum capture efficiency of 95% of all potential fugitive particulate matter emissions from the EAFs/LMFs and Casters (CAST-1 and CAST-2);

(4) The permittee shall operate control equipment and/or implement work practice standards as reasonable precautions to prevent particulate matter from becoming airborne and exiting any opening from the Melt Shop building into the open air so as to achieve a minimum capture efficiency of 90% of all potential fugitive particulate matter emissions from the EAFs/LMFs and Casters (CAST-1 and CAST-2). Reasonable precautions include, but are not limited to the following:

(i) Downdraft and/or plastic strip air curtains at Melt Shop openings with the potential for fugitive particulate emissions;

(ii) Keeping other doors closed except for pass-through traffic;

(iii) The scrap charge bay door shall be maintained at all times with a plastic strip air curtain covering the top 15 feet of the opening; and

(iv) After removal from the EAFs, all molten slag shall be deposited into slag carrying pots and transported to the designated slag processing area.

(5) To comply with GHG BACT on the EAFs, the permittee shall meet the following design and operational requirements:

(i) Install and maintain seals and modern insulation media to minimize heat losses from EAF doors, roof, and any openings around the burners or other equipment traversing through the furnace shell;

(ii) Install, operate, and maintain oxyfuel burners in accordance with manufacturer's specifications to maximize heat transfer, reduce heat losses, and reduce electrode consumption resulting in high thermal efficiency and reduced electrical energy consumption;

(iii) Employ foamy slag practices to reduce radiation heat losses and increases the electric power efficiency of the EAFs;

(iv) Optimize process control operations to reduce electricity consumption through monitoring integration of real-time monitoring of process variables along with realtime control systems for carbon injection and lance oxygen practices; and

(v) Implement a preventative maintenance program that is consistent with the manufacturer's instructions for routine and long-term maintenance of equipment important to the operation, including EAF doors, burners, etc.

d. **Vacuum Tank Degassers Requirements**
The Vacuum Tank Degassers (VTGs), identified as VTD1 and VTD2, shall be operated according to the following requirements:

(1) Once the ladle is enclosed in the VTGs and a vacuum is drawn, all gas from the units shall be pulled through a particulate filter and combusted in the associated VTG Flare. The flare shall be designed and operated according to the requirements given under 4.1.10(e);

(2) The VTGs shall not be operated simultaneously;

(3) The emissions from each VTG, as controlled by the VTG Flare, shall not exceed the limits given in the following table (Emission Points VTGST-1 and VTGST-2):

Table 4.1.4(d)(3): VTG/Flaring Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	PPH Limit	Flaring	5.38	14.93
NO_x	PPH Limit	§60.18 Flare Design	0.84	3.69
$PM_{2.5}/PM_{10}$(1)	0.0083 gr/scf (pre flare)	Particulate Filter(2) §60.18 Flare Design	0.08	0.33
PM(3)	0.0083 gr/scf (pre flare)	Particulate Filter §60.18 Flare Design	0.08	0.33
SO_2(4)	PPH Limit	§60.18 Flare Design	0.01	0.03
VOCs	PPH Limit	§60.18 Flare Design	1.73	7.60
Total HAPs	n/a	n/a	0.02	0.10
CO_2e	TPY Limit	§60.18 Flare Design	1,863	7,504

(1) Includes condensables.
(2) The Particulate Filter is located prior to the flare and captures emissions generated by the VTG. It does not control the trace amount of particulate matter generated by the flare's combustion exhaust.
(3) Filterable only.
(4) SO_2 emissions are based on the natural gas combustion emission factor as a conservative estimate of possible emissions from the flare, No substantive amount of sulfur compounds are expected in the waste gas.

(4) The particulate matter filter controlling the offgases from each VTG (prior to combustion in the flare) shall not exceed an exit loading rate of 0.0083 gr/dscf (defined as BACT).

e. **45CSR7**
The EAFs, LMFs, Casters, and VTGs shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

f. **45CSR10**
The Emission Points BHST-1 and BHST-2 are subject to the applicable limitations and standards under 45CSR10, including the requirements given below:

(1) No person shall cause, suffer, allow or permit the emission into the open air from any source operation an in-stack sulfur dioxide concentration exceeding 2,000 parts per million by volume from existing source operations, except as provided in subdivisions 4.1.a through 4.1.e.
[45CSR§10-4.1]

(2) Compliance with the allowable sulfur dioxide concentration limitations from manufacturing process source operation(s) set forth in this rule shall be based on a block three (3) hour averaging time.
[45CSR§10-4.2]

g. **40 CFR 60, Subpart AAa**
The EAFs shall comply with all applicable requirements of 40 CFR 60, Subpart AAa including, but not limited to, the following standards:

(1) **§ 60.272a Standard for particulate matter.**

(i) On and after the date of which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause

to be discharged into the atmosphere from an EAF or an AOD vessel any gases which:
[40 CFR§60.272a(a)]

(A) Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf);
[40 CFR§60.272a(a)(1)]

(B) Exit from a control device and exhibit 3 percent opacity or greater; and
[40 CFR§60.272a(a)(2)]

(C) Exit from a shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.
[40 CFR§60.272a(a)(3)]

(ii) On and after the date on which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from the dust-handling system any gases that exhibit 10 percent opacity or greater.
[40 CFR§60.272a(b)]

h. **40 CFR 63, Subpart YYYYY**
The EAFs shall comply with all applicable requirements of 40 CFR 63, Subpart YYYYY including, but not limited to, the following standards:

(1) **§63.10685 What are the requirements for the control of contaminants from scrap?**

(i) **Chlorinated plastics, lead, and free organic liquids.** For metallic scrap utilized in the EAF at your facility, you must comply with the requirements in either paragraph (a)(1) or (2) of this section. You may have certain scrap at your facility subject to paragraph (a)(1) of this section and other scrap subject to paragraph (a)(2) of this section provided the scrap remains segregated until charge make-up.
[40 CFR§63.10685(a)]

(A) **Pollution prevention plan**. For the production of steel other than leaded steel, you must prepare and implement a pollution prevention plan for metallic scrap selection and inspection to minimize the amount of chlorinated plastics, lead, and free organic liquids that is charged to the furnace. For the production of leaded steel, you must prepare and implement a pollution prevention plan for scrap selection and inspection to minimize the amount of chlorinated plastics and free organic liquids in the scrap that is charged to the furnace. You must submit the scrap pollution prevention plan to the permitting authority for approval. You must operate according to the plan as submitted during the review and approval process, operate according to the approved plan at all times after approval, and address any deficiency identified by the permitting authority within 60 days following disapproval of a plan. You may request approval to revise the plan and may operate according to the revised plan unless and until the revision is disapproved by the permitting authority. You must keep a copy of the plan onsite, and you must provide training on the plan's requirements to all plant personnel with materials acquisition or inspection duties. Each plan must include the information in paragraphs (a)(1)(i) through (iii) of this section:
[40 CFR§63.10685(a)(1)]

(1) Specifications that scrap materials must be depleted (to the extent practicable) of undrained used oil filters, chlorinated plastics, and free organic liquids at the time of charging to the furnace.
[40 CFR§63.10685(a)(1)(i)]

(2) A requirement in your scrap specifications for removal (to the extent practicable) of lead-containing components (such as batteries, battery cables, and wheel weights) from the scrap, except for scrap used to produce leaded steel.
[40 CFR§63.10685(a)(1)(ii)]

(3) Procedures for determining if the requirements and specifications in paragraph (a)(1) of this section are met (such as visual inspection or periodic audits of scrap providers) and procedures for taking corrective actions with vendors whose shipments are not within specifications.
[40 CFR§63.10685(a)(1)(iii)]

(4) The requirements of paragraph (a)(1) of this section do not apply to the routine recycling of baghouse bags or other internal process or maintenance materials in the furnace. These exempted materials must be identified in the pollution prevention plan.
[40 CFR§63.10685(a)(1)(iv)]

(B) **Restricted metallic scrap.** For the production of steel other than leaded steel, you must not charge to a furnace metallic scrap that contains scrap from motor vehicle bodies, engine blocks, oil filters, oily turnings, machine shop borings, transformers or capacitors containing polychlorinated biphenyls, lead-containing components, chlorinated plastics, or free organic liquids. For the production of leaded steel, you must not charge to the furnace metallic scrap that contains scrap from motor vehicle bodies, engine blocks, oil filters, oily turnings, machine shop borings, transformers or capacitors containing polychlorinated biphenyls, chlorinated plastics, or free organic liquids. This restriction does not apply to any post-consumer engine blocks, post-consumer oil filters, or oily turnings that are processed or cleaned to the extent practicable such that the materials do not include lead components, chlorinated plastics, or free organic liquids. This restriction does not apply to motor vehicle scrap that is charged to recover the chromium or nickel content if you meet the requirements in paragraph (b)(3) of this section.
[40 CFR§63.10685(a)(2)]

(ii) **Mercury requirements.** For scrap containing motor vehicle scrap, you must procure the scrap pursuant to one of the compliance options in paragraphs (b)(1), (2), or (3) of this section for each scrap provider, contract, or shipment. For scrap that does not contain motor vehicle scrap, you must procure the scrap pursuant to the requirements in paragraph (b)(4) of this section for each scrap provider, contract, or shipment. You may have one scrap provider, contract, or shipment subject to one compliance provision and others subject to another compliance provision.
[40 CFR§63.10685(b)]

(A) **Site-specific plan for mercury switches**. You must comply with the requirements in paragraphs (b)(1)(i) through (v) of this section.
[40 CFR§63.10685(b)(1)]

(1) You must include a requirement in your scrap specifications for removal of mercury switches from vehicle bodies used to make the scrap.
[40 CFR§63.10685(b)(1)(i)]

(2) You must prepare and operate according to a plan demonstrating how your facility will implement the scrap specification in paragraph (b)(1)(i) of this section for removal of mercury switches. You must submit the plan to the permitting authority for approval. You must operate according to this plan as submitted during the review and approval process, operate according to the approved plan at all times after approval, and address any deficiency identified by the permitting authority within 60 days following disapproval of a plan. You may request approval to revise the plan and may operate according to the revised plan unless and until the revision is disapproved by the permitting authority. The permitting authority may change the approval status of the plan upon 90-days written notice based upon the semiannual compliance report or other information. The plan must include:
[40 CFR§63.10685(b)(1)(ii)]

(A) A means of communicating to scrap purchasers and scrap providers the need to obtain or provide motor vehicle scrap from which mercury switches have been removed and the need to ensure the proper management of the mercury switches removed from that scrap as required under the rules implementing subtitle C of the Resource Conservation and Recovery Act (RCRA) (40 CFR parts 261 through 265 and 268). The plan must include documentation of direction to appropriate staff to communicate to suppliers throughout the scrap supply chain the need to promote the removal of mercury switches from end-of-life vehicles. Upon the request of the permitting authority, you must provide examples of materials that are used for outreach to suppliers, such as letters, contract language, policies for purchasing agents, and scrap inspection protocols;
[40 CFR§63.10685(b)(1)(ii)(A)]

(B) Provisions for obtaining assurance from scrap providers that motor vehicle scrap provided to the facility meet the scrap specification;
[40 CFR§63.10685(b)(1)(ii)(B)]

(C) Provisions for periodic inspections or other means of corroboration to ensure that scrap providers and dismantlers are implementing appropriate steps to minimize the presence of mercury switches in motor vehicle scrap and that the mercury switches removed are being properly managed, including the minimum frequency such means of corroboration will be implemented; and
[40 CFR§63.10685(b)(1)(ii)(C)]

(D) Provisions for taking corrective actions (i.e., actions resulting in scrap providers removing a higher percentage of mercury switches or other mercury-containing components) if needed, based on the results of procedures implemented in paragraph (b)(1)(ii)(C) of this section).
[40 CFR§63.10685(b)(1)(ii)(D)]

(3) You must require each motor vehicle scrap provider to provide an estimate of the number of mercury switches removed from motor vehicle scrap sent to your facility during the previous year and the basis for the estimate. The permitting authority may request documentation or additional information at any time. **[40 CFR§63.10685(a)(1)(iii)]**

(4) You must establish a goal for each scrap provider to remove at least 80 percent of the mercury switches. Although a site-specific plan approved under paragraph (b)(1) of this section may require only the removal of convenience light switch mechanisms, the permitting authority will credit all documented and verifiable mercury-containing components removed from motor vehicle scrap (such as sensors in anti-locking brake systems, security systems, active ride control, and other applications) when evaluating progress towards the 80 percent goal.
[40 CFR§63.10685(a)(1)(iv)]

(5) For each scrap provider, you must submit semiannual progress reports to the permitting authority that provide the number of mercury switches removed or the weight of mercury recovered from the switches, the estimated number of vehicles processed, an estimate of the percent of mercury switches removed, and certification that the removed mercury switches were recycled at RCRA-permitted facilities or otherwise properly managed pursuant to RCRA subtitle C regulations referenced in paragraph (b)(1)(ii)(A) of this section. This information can be submitted in aggregated form and does not have to be submitted for each scrap provider, contract, or shipment. The permitting authority may change the approval status of a site-specific plan following 90-days notice based on the progress reports or other information.
[40 CFR§63.10685(a)(1)(v)]

(B) **Option for approved mercury programs.** You must certify in your notification of compliance status that you participate in and purchase motor vehicle scrap only from scrap providers who participate in a program for removal of mercury switches that has been approved by the Administrator based on the criteria in paragraphs (b)(2)(i) through (iii) of this section. If you purchase motor vehicle scrap from a broker, you must certify that all scrap received from that broker was obtained from other scrap providers who participate in a program for the removal of mercury switches that has been approved by the Administrator based on the criteria in paragraphs (b)(2)(i) through (iii) of this section. The National Vehicle Mercury Switch Recovery Program and the Vehicle Switch Recovery Program mandated by Maine State law are EPA-approved programs under paragraph (b)(2) of this section unless and until the Administrator disapproves the program (in part or in whole) under paragraph (b)(2)(iii) of this section.
[40 CFR§63.10685(b)(2)]

(1) The program includes outreach that informs the dismantlers of the need for removal of mercury switches and provides training and guidance for removing mercury switches;
[40 CFR§63.10685(b)(2)(i)]

(2) The program has a goal to remove at least 80 percent of mercury switches from the motor vehicle scrap the scrap provider processes. Although a program approved under paragraph (b)(2) of this section may require only the removal

of convenience light switch mechanisms, the Administrator will credit all documented and verifiable mercury-containing components removed from motor vehicle scrap (such as sensors in anti-locking brake systems, security systems, active ride control, and other applications) when evaluating progress towards the 80 percent goal; and
[40 CFR§63.10685(b)(2)(ii)]

(3) The program sponsor agrees to submit progress reports to the Administrator no less frequently than once every year that provide the number of mercury switches removed or the weight of mercury recovered from the switches, the estimated number of vehicles processed, an estimate of the percent of mercury switches recovered, and certification that the recovered mercury switches were recycled at facilities with permits as required under the rules implementing subtitle C of RCRA (40 CFR parts 261 through 265 and 268). The progress reports must be based on a database that includes data for each program participant; however, data may be aggregated at the State level for progress reports that will be publicly available. The Administrator may change the approval status of a program or portion of a program (e.g., at the State level) following 90-days notice based on the progress reports or on other information.
[40 CFR§63.10685(b)(2)(iii)]

(4) You must develop and maintain onsite a plan demonstrating the manner through which your facility is participating in the EPA-approved program.
[40 CFR§63.10685(b)(1)(iv)]

(A) The plan must include facility-specific implementation elements, corporate-wide policies, and/or efforts coordinated by a trade association as appropriate for each facility.
[40 CFR§63.10685(b)(2)(iv)(A)]

(B) You must provide in the plan documentation of direction to appropriate staff to communicate to suppliers throughout the scrap supply chain the need to promote the removal of mercury switches from end-of-life vehicles. Upon the request of the permitting authority, you must provide examples of materials that are used for outreach to suppliers, such as letters, contract language, policies for purchasing agents, and scrap inspection protocols.
[40 CFR§63.10685(b)(2)(iv)(B)]

(C) You must conduct periodic inspections or provide other means of corroboration to ensure that scrap providers are aware of the need for and are implementing appropriate steps to minimize the presence of mercury in scrap from end-of-life vehicles.
[40 CFR§63.10685(b)(2)(iv)(C)]

(2) **§63.10686 What are the requirements for electric arc furnaces and argon-oxygen decarburization vessels?**

(i) You must install, operate, and maintain a capture system that collects the emissions from each EAF (including charging, melting, and tapping operations) and argon-oxygen decarburization (AOD) vessel and conveys the collected emissions to a control device for the removal of particulate matter (PM). **[40 CFR§63.10686(a)]**

(ii) Except as provided in paragraph (c) of this section, you must not discharge or cause the discharge into the atmosphere from an EAF or AOD vessel any gases which:
[40 CFR§63.10686(b)]

(A) Exit from a control device and contain in excess of 0.0052 grains of PM per dry standard cubic foot (gr/dscf); and
[40 CFR§63.10686(b)(1)]

(B) Exit from a melt shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.
[40 CFR§63.10686(b)(2)]

4.1.5. **Natural Gas Combustion Units**

The natural gas-fired units identified in Appendix A: Table A-3 shall operate according to the following requirements:

a. Each unit shall be fired by PNG, shall not exceed the MDHI as given under Table 1.0 of this permit, shall not exceed the maximum emission limits for the specified process heaters given under Appendix A: Table A-3, and shall comply with the BACT requirements given in the following table;

Table 4.1.5(a): Natural Gas Combustion BACT

<table>
<tr><th>Pollutant</th><th>Emission Units</th><th>BACT Limit</th><th>BACT Technology(1)</th></tr>
<tr><td>CO</td><td>All Units in Table A-3</td><td>0.082 lb/mmBtu</td><td>Good Combustion Practices</td></tr>
<tr><td rowspan="3">NO_x</td><td>LD, TD
LPHTR1 - 7
TPHTR1 - 2
SENPHTR1 - 2
SLAG-CUT
ASP</td><td>0.098 lb/mmBtu</td><td rowspan="3">LNB,
Good Combustion Practices</td></tr>
<tr><td>BOXANN1 - 22
GALVFN1/2</td><td>0.05 lb/mmBtu</td></tr>
<tr><td>TF1</td><td>0.07 lb/mmBtu</td></tr>
<tr><td>$PM_{2.5}$/PM_{10}(2)</td><td>All Units in Table A-3</td><td>0.00745 lb/mmBtu</td><td rowspan="2">Use of PNG, Good Combustion Practices</td></tr>
<tr><td>PM(3)</td><td>All Units in Table A-3</td><td>0.00186 lb/mmBtu</td></tr>
<tr><td>SO_2</td><td>All Units in Table A-3</td><td>0.00059 lb/mmBtu</td><td>Use of PNG</td></tr>
<tr><td>VOCs</td><td>All Units in Table A-3</td><td>0.0054 lb/mmBtu</td><td>Good Combustion Practices</td></tr>
<tr><td>CO_2e</td><td>All Units in Table A-3</td><td>TPY Limits in Table A-3</td><td>Use of PNG,
Good Combustion Practices</td></tr>
</table>

(1) LNB = Low-NO_x Burning Technology. For the purposes of this permit, "Good Combustion Practices" are defined to include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control emissions through proper combustion tuning, temperature, and air/fuel

mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

(2) Includes Condensables.
(3) Filterable Only.

b. As the annual emission limits of all natural gas-fired combustion units listed under Table A-3 are based on operating at MDHI for 8,760 hours of operation, there are no annual limit on hours of operation or natural gas combusted on an annual basis for these units.

c. **45CSR2**
The Water Bath Vaporizer (ASP) is subject to the applicable limitations and standards under 45CSR2, including the requirements as given below under (1) through (3).

(1) The permittee shall not cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from the fuel burning units which is greater than ten (10) percent opacity based on a six minute block average.
[45CSR§2-3.1]

(2) The permittee shall not cause, suffer, allow or permit the discharge of particulate matter into the open air from the fuel burning units, measured in terms of pounds per hour in excess of the amount determined as follows:

(i) The product of 0.09 and the total design heat input for the fuel burning units in million British Thermal Units (B.T.U.'s) per hour, provided however that no more than twelve hundred (1200) pounds per hour of particulate matter shall be discharged into the open air.
[45CSR§2-4.1a]

(3) The visible emission standards set forth in section 3 of 45CSR2 shall apply at all times except in periods of start-ups, shutdowns and malfunctions. Where the Director believes that start-ups and shutdowns are excessive in duration and/or frequency, the Director may require an owner or operator to provide a written report demonstrating that such frequent start-ups and shutdowns are necessary. **[45CSR§2-9.1]**

d. **45CSR10**
The Water Bath Vaporizer (ASP) is subject to the applicable limitations and standards under 45CSR10, including the requirement as given below:

(1) The permittee shall not cause, suffer, allow or permit the discharge of sulfur dioxide into the open air from the fuel burning units measured in terms of pounds per hour, in excess of the product of 3.2 and the total design heat of the boilers in million BTU's per hour.
[45CSR§10-3.1]

(2) No person shall cause, suffer, allow or permit the combustion of any refinery process gas stream or any other process gas stream that contains hydrogen sulfide in a concentration greater than 50 grains per 100 cubic feet of gas except in the case of a person operating in compliance with an emission control and mitigation plan approved by the Director and U. S. EPA. In certain cases very small units may be considered exempt from this requirement if, in the opinion of the Director, compliance would be economically unreasonable and if the contribution of the unit to the surrounding air quality could be considered negligible.
[45CSR§10-5.1]

e. **40 CFR 60, Subpart Dc**
The Water Bath Vaporizer (ASP) is subject to the applicable record-keeping and reporting requirements given under 40 CFR §60.48c.

4.1.6. **<u>Hot Mill and Cold Mill</u>**
The Hot Mill and the Cold Mill shall operate according to the following requirements:

a. The permittee shall not exceed the maximum particulate matter emission limits for the Hot Mill and Cold Mill stack/vent emission points as given under Appendix A: Table A -4;

b. **Pickling and Galvanizing Line**
The Pickling Line (PKL-1) and Galvanizing Line shall be operated according to the following requirements:

(1) The pickling line tanks shall be covered and vented to the appropriate Pickling Line Scrubber (PKL1-SCR);

(2) The outlet concentration of HCl from the Pickling Line Scrubber Stack (PLST-1) shall not exceed a BACT concentration of 6 parts per million by volume (ppm_v);

(3) Mass emissions of HCL from Pickling Line 1 Scrubber Stack (PLST-1) shall not exceed 0.25 lbs/hr and 1.09 tons/yr (as based on a maximum flow rate of 7,185 dscfm);

(4) Spillage of acid, caustic, or other process materials shall be cleaned up as soon as practical and contained to minimize fugitive emissions;

(5) During non-operational periods, either a fume suppressant shall be used in the pickling bath, or the pickling bath shall be covered to reduce evaporative losses;

(6) Hydrogen gas cleaning shall be used to prepare the steel for galvanizing to prevent fumes from the zinc pot. The use of fluxing agents in the Galvanizing Line is not authorized; and

(7) **45CSR7 - Acid Mist Source**
The emissions of HCl from the Pickling Lines shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(i) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **45CSR7 - Particulate Matter Sources**
The Hot Mill and Cold Mill particulate matter sources, excluding those that meet the exemption requirements given under 45CSR§7-10.5 and those that particulate matter is generated solely from the combustion of natural gas, shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

4.1.7. **Storage Tanks**

Use of the fixed roof and open storage tanks shall be in accordance with the following:

a. Tank capacity shall be limited as specified under Table 1.0 of this permit;

b. The aggregate emissions of VOCs from all fixed roof storage tanks (T1 - T9, T24) shall not exceed a BACT Limit of 0.46 tons/year. The aggregate emissions of VOCs from all open Cold Degreaser Tanks (T25 - T29) shall not exceed a BACT Limit of 1.46 tons/year;

c. The aggregate emissions of HCl from all HCL Storage Tanks (T10 - T15) and the Spent Pickle Liquor Tanks (T16 - T23) shall not exceed a limit of 0.07 tons/year;

d. Material stored shall be as specified and the aggregate annual storage tank throughputs shall not exceed those given in the following table:

Table 4.1.7(d): Fixed Roof Storage Tanks Annual Throughput Limits

Tank ID	Material Stored	Gallons(1)
T1 - T6	Diesel	2,190,000
T7	Gasoline	120,000(2)
T8 -T9	Hydraulic Oil	730,000
T10 - T15	HCl	7,200,000
T16 - T23	Spent Pickle Liquor	7,200,000
T24	Used Oil	365,000

(1) This number represents the aggregate limit for all specified storage tanks.
(2) The permittee has chosen to comply with the 40 CFR 63, Subpart CCCCCC requirements for facilities with less than monthly throughput of less than 10,000 gallons of gasoline.

e. For all fixed roof storage tanks with the potential to emit VOCs (does not include T10 through T23 or T25 - T29), the permittee shall, for purposes **of** BACT, meet the following requirements:

(1) Utilize good operating practices in the operation of the storage tanks. Good operating practices shall mean maintaining and operating the storage tanks according to manufacturers recommendations and regularly inspecting the tanks for areas of disrepair or failure that would allow the escape of pollutant-containing vapors.

(2) Maintain a white or aluminum color on all storage tank surfaces that are exposed to the sun to mitigate heat absorption of the tanks; and

(3) Utilize submerged fill on all tanks.

f. Operation of the Cold Degreaser Tanks shall be in accordance with the following:

(1) The cover of each degreaser tank shall be closed if not handling parts in the cleaner;

(2) The operation of a cold cleaner using a solvent with a vapor pressure that exceeds one (1.0) mmHg (0.019 psi) measured at 20° C (68° F) is prohibited; and

(3) Work area fans shall be positioned so that air is not directed across the opening of the tanks so as to facilitate volatization.

g. **40 CFR 63, Subpart CCCCCC**
The "gasoline dispensing facility" located at facility, as defined under §63.11132, shall comply with all applicable requirements of 40 CFR 63, Subpart CCCCCC including, but not limited to, the following standards:

(1) **§ 63.11116 Requirements for facilities with monthly throughput of less than 10,000 gallons of gasoline.**

(i) You must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:
[40 CFR§63.11116(a)]

(A) Minimize gasoline spills;
[40 CFR§63.11116(a)(1)]

(B) Clean up spills as expeditiously as practicable;
[40 CFR§63.11116(a)(2)]

(C) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use;
[40 CFR§63.11116(a)(3)]

(D) Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.
[40 CFR§63.11116(a)(4)]

4.1.8. Cooling Towers

The Cooling Towers shall operate in accordance with the following requirements:

a. The Cooling Towers shall use the control device specified under Section 1.0 at all times in operation, shall not exceed the specified maximum design and operational limits, and shall not exceed the emission limits in the following table:

Table 4.1.8(a): Cooling Tower Specifications

ID No.	Max Design Capacity Water Circulation Pump (gal/min)	Total Dissolved Solids (ppm)	Mist Eliminator Max Drift Rate (%)(1)	$PM_{2.5}/PM_{10}/PM$	
				PPH	TPY
CT1	52,000	1,500	0.0005	0.20	0.86
CT2	5,900	1,500	0.0005	0.02	0.10
CT3	8,500	1,500	0.0005	0.03	0.14
CT4	22,750	1,500	0.0005	0.09	0.37
CT5	90,000	1,500	0.0005	0.34	1.48
CT6	8,000	1,500	0.0005	0.03	0.13
CT7	3,000	1,500	0.0005	0.01	0.05
CT8	14,000	1,500	0.0005	0.05	0.23

(1) As based on manufacturer or vendor guarantee or applicable product literature.

b. BACT for all Cooling Towers listed under Table 4.1.8(a) is the PPH limit as based on the use of a High Efficiency Drift Eliminator with a maximum drift rate of 0.0005%.

4.1.9. <u>**Emergency Engines**</u>

The Emergency Engines, identified as EMGEN1 through EMGEN6, shall meet the following requirements:

a. Each unit shall not exceed 2,000 horsepower, shall be fired only with PNG, and shall not operate in excess of 100 hours per year nor exceed one (1) hour in any 24-hour period during times not defined as emergencies. Only one (1) engine shall be operated at a time during times not defined as emergencies;

b. The maximum emissions from each Emergency Engine shall not exceed the limits given in the following table:

Table 4.1.9(b): Emergency Engine Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	2.0 g/hp-hr	Subpart JJJJ Certification Annual Hrs of Op(3) Limit	17.64	0.88
NO_x	4.0 g/hp-hr	Subpart JJJJ Certification Annual Hrs of Op(3) Limit	8.82	0.44
$PM_{2.5(1)}$	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
$PM_{10(1)}$	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
PM(2)	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
SO_2	PPH	Annual Hrs of Op(3) Limit	8.23e-03	4.12e-04

Pollutant	BACT Limit	BACT Technology	PPH	TPY
VOCs	1.0 g/hp-hr	Subpart JJJJ Certification, Annual Hrs of Op(3) Limit	4.41	0.22
CO_2e	TPY	Annual Hrs of Op(3) Limit	1,639	82

(1) Includes Condensables.
(2) Filterable Only.
(3) Non-emergency hours of operation.

c. **40 CFR 60, Subpart JJJJ**
Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE. For owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 100 HP (except gasoline and rich burn engines that use LPG) manufactured prior to January 1, 2011 that were certified to the certification emission standards in 40 CFR part 1048 applicable to engines that are not severe duty engines, if such stationary SI ICE was certified to a carbon monoxide (CO) standard above the standard in Table 1 to this subpart, then the owners and operators may meet the CO certification (not field testing) standard for which the engine was certified.
[40 CFR §60.4233(e)]

Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards					
			g/HP-hr			ppmvd at 15% O_2		
			NO_x	CO	VOC(d)	NO_x	CO	VOC(d)
Emergency	HP≥130	1/1/2009	2.0	4.0	1.0	160	540	86

(a) Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O_2.
(d) For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.
[40 CFR60, Subpart JJJJ, Table 1]

d. **40 CFR 63, Subpart ZZZZ**
An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.
[40 CFR §63.6590(c)]

(1) A new or reconstructed stationary RICE located at an area source;
[40 CFR §63.6590(c)(1)]

4.1.10. Control Devices

a. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in

this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11.]

b. **Fabric Filters/Bin Vents/Baghouses**
Use of Fabric Filters/Bin Vents/Baghouses shall be in accordance with the following requirements:

(1) The permittee shall continuously monitor the differential pressure drop of baghouses EAF1-BH, EAF2-BH, and RM-BH so as to ensure proper continuous operation of the baghouses according to the following requirements:

(i) The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The range of acceptable pressure drops shall be based on the range recommended by the baghouse manufacturer or as defined during the most recent stack test; and

(ii) The frequency of data recording shall be, at a minimum, once every 15 minutes.

(2) Baghouses EAF1-BH and EAF2-BH shall meet all applicable requirements given under 40 CFR 60, Subpart AAa; and

(3) The filter material of all Fabric Filters/Bin Vents/Baghouses shall be replaced on a schedule as determined by the manufacturer.

c. **Melt Shop Collection Systems**
All hooding, duct, and collection systems shall be effective in capturing emissions from the intended equipment and in preventing excess fugitive emissions from the building. The hooding and duct systems shall be maintained free of holes, cracks, and other conditions that would substantially reduce the collection efficiency of the emission capture system.

d. **Wet Scrubbers/Mist Eliminators**
Use of Wet Scrubbers/Mist Eliminators shall be in accordance with the following requirements:

(1) Each scrubber/mist eliminator shall be designed, operated, and maintained according to good engineering practices or manufacturing recommendations so as to achieve, at a minimum, compliance with the particulate matter emission limits given under Appendix A, Table A-4 and, for scrubber PKL-1, the HCl emission limits given under 4.1.6(b)(2) and (3);

(2) The permittee shall continuously monitor the differential pressure drop of scrubber TCM-ME so as to ensure proper continuous operation of the scrubber according to the following requirements:

(i) The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The range of acceptable pressure drops shall be based on the range recommended by the scrubber manufacturer or as defined during the most recent stack test; and

(ii) The frequency of data recording shall be, at a minimum, once every 15 minutes.

(3). The liquor flow rate to the scrubbers/mist eliminators shall be set at a rate as determined by manufacturer's recommendation or site-specific testing so as achieve compliance with the associated emission limit. Any media or entrapment lattice used in the mist elimination process shall be maintained/repaired/replaced according to manufacturer's recommendations.

e. **Flares**
The flares, identified as VTG-Flare 1 and VTG-Flare 2, shall operate according to the following requirements:

(1) Each flare have a MDHI that does not exceed 12.37 mmBtu/hr, shall be air-assisted, and shall be designed and operated according to the requirements specified in 40 CFR 60, Section §60.18;

(2) Each flare shall be designed, operated, and maintained according to good engineering practices or manufacturing recommendations so as to achieve, at a minimum, a carbon monoxide and hydrocarbon DRE of 98.0%;

(3) Each flare shall be operated with a flame present at all times the VTGs are in operation, as determined by the methods specified in 4.2.10(b);

(4) The permittee shall operate and maintain each flare according to the manufacturer's specifications for operating and maintenance requirements to maintain the minimum guaranteed control efficiency listed under 4.1.10(e)(2); and

(5) **45CSR6**
Each flare is subject to 45CSR6. The requirements of 45CSR6 include but are not limited to the following:

(i) The permittee shall not cause, suffer, allow or permit particulate matter to be discharged from the flares into the open air in excess of the quantity determined by use of the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

[45CSR§6-4.1]

(ii) No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is twenty (20%) percent opacity or greater.
[45CSR6 §4.3]

(iii) The provisions of subsection 4.3 shall not apply to smoke which is less than forty percent (40%) opacity, for a period or periods aggregating no more than eight (8) minutes per start-up, or six (6) minutes in any sixty (60)-minute period for stoking operations.
[45CSR6 §4.4]

(iv) No person shall cause or allow the emission of particles of unburned or partially burned refuse or ash from any incinerator which are large enough to be individually

distinguished in the open air.
[45CSR6 §4.5]

(v) Incinerators, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.
[45CSR6 §4.6]

(vi) Due to unavoidable malfunction of equipment, emissions exceeding those provided for in this rule may be permitted by the Director for periods not to exceed five (5) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.
[45CSR6 §8.2]

4.1.11 **Additional GHG BACT Requirements**
In addition to the GHG BACT requirements specified elsewhere in this permit, the permittee shall meet the following requirements:

a. Develop and implement training programs and good housekeeping programs help to decrease energy consumption throughout the plant;

b. Develop and implement energy monitoring and management systems help provide for optimal energy recovery and distribution between processes at the plant; and

c. Across all plant operations, utilize where possible energy efficient devices (e.g., motors, drives, pumps, fans, compressors, controls);

d. Unless approved by the Director to remove, modify, or replace a specific control strategy, the permittee shall implement the GHG Mitigation and Efficiency strategies listed under Table 4-66 of the permit application for the specifically listed emission units; and

e. The permittee shall, within 60 days of plant startup, submit to the Director a GHG BACT Implementation Plan that describes the method of implementation of the requirements given under (a) through (d) above. The plan will include specifics on actions taken to meet the requirements including training methods, use of specific energy efficient devices, O&M procedures, etc. This plan will thereafter be maintained on-site and updated as needed.

4.1.12. **Applicable Rules**
The permittee shall meet all applicable requirements, including those not specified above, as given under 45CSR2, 45CSR6, 45CSR7, 45CSR10, 40 CFR 60, Subparts Dc, AAa, and JJJJ, and 40 CFR 63, Subparts ZZZZ, YYYYY, and CCCCCC. Any final revisions made to the above rules will, where applicable, supercede those sections specifically cited in this permit.

4.1.13. **Stack Parameters**
The emission point stack parameters (Inner Diameter, Emission Point Elevation, and UTM Coordinates) shall be in accordance with the specifications as given on the Emission Points Data Sheet (Attachment J) in the most updated version of Permit Application R14-0039. If needed, and granted prior approval by the Director, the permittee may provide information to show that as-built variations in the stack parameters will not result in any substantive changes to the results of the air impacts analysis required under §45-14-9 and §45-14-10.

4.2. Monitoring, Compliance Demonstration, Recording and Reporting Requirements

4.2.1. **Maximum Design Capacity Compliance**
Compliance with the maximum design capacity limitations as given under Table 1.0 and Section 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) or processing line in question is limited by design to a throughput or production rate that does not exceed the specified value under Table 1.0 and Section 4.1.

4.2.2. **Maximum Design Heat Input Compliance**
Compliance with the various combustion unit MDHI limitations as given under Table 1.0 and Section 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) in question is limited by design to an MDHI that does not exceed the specified value under Table 1.0 and Section 4.1.

4.2.3. **Quantities Monitored/Recorded**
To determine continuous compliance with maximum production, throughputs, and other limits given in Section 4.1 of the permit, the permittee shall monitor and record the following:

Table 4.2.3: Facility Quantities Monitored/Recorded

Quantity Monitored/Recorded	Emission Unit(s)	Permit Citation	Units	Period
Steel Production	EAF/LMFs	4.1.2	Tons	Monthly, 12-Month Rolling Total
Scrap Steel DRI Carbon Alloys Lime Slag	Various	4.1.3(a)	Tons	Monthly, 12-Month Rolling Total
Storage Tank Throughputs				
Diesel	T1-T6	4.1.7(d)	Gallons	Monthly, 12-Month Rolling Total
Gasoline	T7			
Hydraulic Oil	T8-T9			
HCl	T10-T15			
Spent Pickle Liquor	T16-T23			
Used Oil	T24			
Fuel Usage[(1)]	ASP	4.2.5	mmscf	Monthly
Non-Emergency Hours of Operation	EMGEN1 - 6	4.1.9(a)	Hours	Monthly, 12-Month Rolling Total

(1) Pursuant to 45CSR§2A-7.1(a)(1).

4.2.4. **EAFs/LMFs CEMS (BHST-1, BHST-2)**
Within 60 days after achieving the maximum design steel production rate at which the facility will be operated, but not later than 180 days after initial startup, the permittee shall, to show continuous

compliance with the CO, NO_x, and SO_2 emission limits as given under Table 4.1.4(a), install and operate a Continuous Emissions Monitoring System (CEMS) for monitoring the emissions of CO, NO_x, and SO_2 from BHST-1 and BHST-2. The CEMS shall be installed, maintained and operated according to the manufacturers design, specifications, and recommendations, of which a protocol shall be developed by the permittee and approved by the Director prior to operation. The CEMS shall meet the applicable performance specifications required by 40 Part 60, Appendix B, the applicable quality assurance procedures required in 40 CFR Part 60, Appendix F, and the requirements of 40 CFR 60.13. In lieu of the requirements of 40 CFR Part 60, Appendix F, 5.1.1, 5.1.3, and 5.1.4, the permittee may conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) on the CEMS at least once every three (3) years. The permittee shall conduct Cylinder Gas Audits (CGA) each calendar quarter during which a RAA or a RATA is not performed. Data recorded by the CEMS shall be kept for a period not less than three (3) years and shall be made available to the Director or his/her representative upon request.

4.2.5. **45CSR2**
The Water Bath Vaporizer (ASP) is subject to the applicable record-keeping requirements under 45CSR2A, including the requirements as given below under (a).

a. The owner or operator of a fuel burning unit(s) shall maintain records of the operating schedule, and the quality and quantity of fuel burned in each fuel burning unit as specified in paragraphs 7.1.a.1 through 7.1.a.6, as applicable.
[45CSR§2A-7.1(a)]

(1) For fuel burning unit(s) which burn only pipeline quality natural gas, such records shall include, but not be limited to, the date and time of start-up and shutdown, and the quantity of fuel consumed on a monthly basis.
[45CSR§2A-7.1(a)(1)]

4.2.6. **40 CFR 60, Subpart AAa**
The EAFs shall comply with all applicable Monitoring, Compliance Demonstration, Recording and Reporting Requirements of 40 CFR 60, Subpart AAa including, but not limited to, the following requirements:

a. **§ 60.273a Emissions Monitoring.**

(1) Except as provided under paragraphs (b) and (c) of this section, a continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) shall be installed, calibrated, maintained, and operated by the owner or operator subject to the provisions of this subpart.
[40 CFR§60.273a(a)]

(2) No continuous monitoring system shall be required on any control device serving the dust-handling system.
[40 CFR§60.273a(b)]

(3) A continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) is not required on any modular, multi-stack, negative-pressure or positive-pressure fabric filter if observations of the opacity of the visible emissions from the control device are performed by a certified visible emission observer; or on any single-stack fabric filter if visible emissions from the control device are performed by a certified visible emission observer and the owner installs and continuously operates a bag leak detection system according to paragraph (e) of this section. Visible emission

observations shall be conducted at least once per day for at least three 6-minute periods when the furnace is operating in the melting and refining period. All visible emissions observations shall be conducted in accordance with Method 9. If visible emissions occur from more than one point, the opacity shall be recorded for any points where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of the visible emission, only one set of three 6-minute observations will be required. In that case, the Method 9 observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident. Records shall be maintained of any 6-minute average that is in excess of the emission limit specified in § 60.272a(a).
[40 CFR§60.273a(c)]

(4) A furnace static pressure monitoring device is not required on any EAF equipped with a DEC system if observations of shop opacity are performed by a certified visible emission observer as follows: Shop opacity observations shall be conducted at least once per day when the furnace is operating in the meltdown and refining period. Shop opacity shall be determined as the arithmetic average of 24 consecutive 15-second opacity observations of emissions from the shop taken in accordance with Method 9. Shop opacity shall be recorded for any point(s) where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of visible emissions, only one observation of shop opacity will be required. In this case, the shop opacity observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident.
[40 CFR§60.273a(d)]

(5) A bag leak detection system must be installed and continuously operated on all single-stack fabric filters if the owner or operator elects not to install and operate a continuous opacity monitoring system as provided for under paragraph (c) of this section. In addition, the owner or operator shall meet the visible emissions observation requirements in paragraph (c) of this section. The bag leak detection system must meet the specifications and requirements of [*40 CFR§60.273a(e)(1) through (8)*].
[40 CFR§60.273a(e)]

(6) For each bag leak detection system installed according to paragraph (e) of this section, the owner or operator shall initiate procedures to determine the cause of all alarms within 1 hour of an alarm. Except as provided for under paragraph (g) of this section, the cause of the alarm must be alleviated within 3 hours of the time the alarm occurred by taking whatever corrective action(s) are necessary. Corrective actions may include, but are not limited to [*the requirements given under 40 CFR§60.273a(f)(1) through (6)*].
[40 CFR§60.273a(f)]

(7) In approving the site-specific monitoring plan required in paragraph (e)(4) of this section, the Administrator or delegated authority may allow owners or operators more than 3 hours to alleviate specific conditions that cause an alarm if the owner or operator identifies the condition that could lead to an alarm in the monitoring plan, adequately explains why it is not feasible to alleviate the condition within 3 hours of the time the alarm occurred, and demonstrates that the requested additional time will ensure alleviation of the condition as expeditiously as practicable.
[40 CFR§60.273a(g)]

b. **§ 60.274a Monitoring of operations.**

(1) The owner or operator subject to the provisions of this subpart shall maintain records of the following information:
[40 CFR§60.274a(a)]

(A) All data obtained under paragraph (b) of this section; and
[40 CFR§60.274a(a)(1)]

(B) All monthly operational status inspections performed under paragraph © of this section.
[40 CFR§60.274a(a)(2)]

(2) Except as provided under paragraph (e) of this section, the owner or operator subject to the provisions of this subpart shall check and record on a once-per-shift basis the furnace static pressure (if DEC system is in use, and a furnace static pressure gauge is installed according to paragraph (f) of this section) and either: check and record the control system fan motor amperes and damper position on a once-per-shift basis; install, calibrate, and maintain a monitoring device that continuously records the volumetric fl ow rate through each separately ducted hood; or install, calibrate, and maintain a monitoring device that continuously records the volumetric fl ow rate at the control device inlet and check and record damper positions on a once-per-shift basis. The monitoring device(s) may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring device(s) shall have an accuracy of ±10 percent over its normal operating range and shall be calibrated according to the manufacturer's instructions. The Administrator may require the owner or operator to demonstrate the accuracy of the monitoring device(s)relative to Methods 1 and 2 of appendix A of this part.
[40 CFR§60.274a(b)]

(3) When the owner or operator of an affected facility is required to demonstrate compliance with the standards under §60.272a(a)(3) and at any other time that the Administrator may require (under section 114 of the CAA, as amended) either: the control system fan motor amperes and all damper positions, the volumetric flow rate through each separately ducted hood, or the volumetric flow rate at the control device inlet and all damper positions shall be determined during all periods in which a hood is operated for the purpose of capturing emissions from the affected facility subject to paragraph (b) of this section. The owner or operator may petition the Administrator for reestablishment of these parameters whenever the owner or operator can demonstrate to the Administrator's satisfaction that the affected facility operating conditions upon which the parameters were previously established are no longer applicable. The values of these parameters as determined during the most recent demonstration of compliance shall be maintained at the appropriate level for each applicable period. Operation at other than baseline values may be subject to the requirements of §60.276a(c).
[40 CFR§60.274a(c)]

4.2.7. **Cooling Tower**
For the purposes of demonstrating initial and continuing compliance with the operational limits set forth in Table 4.1.8(a), the permittee shall, for all cooling towers, within 180 days of startup, take an initial grab sample of the cooling tower circulating water and analyze such to determine the total solids content of the cooling tower circulating water. Thereafter, the permittee shall test for solids content on an annual basis (with no more than 14 months between tests).

4.2.8. **RICE Oxidation Catalysts**

If applicable, the permittee shall meet the following requirements for use of Oxidation Catalysts on the Emergency Engines:

a. The permittee shall regularly inspect, properly maintain and/or replace catalytic reduction devices to ensure functional and effective operation of each engine's physical and operational design. The permittee shall ensure proper operation, maintenance and performance of catalytic reduction devices by:

(1) Maintaining proper operation of the automatic air/fuel ratio controller or automatic feedback controller; and

(2) Following the catalyst manufacturer emissions related operating and maintenance recommendations, or develop, implement, or follow a site-specific maintenance plan.

b. To demonstrate compliance with section 4.2.8, the permittee shall maintain records of the maintenance performed on each RICE and/or generator and shall maintain a copy of the site specific maintenance plan or manufacturer maintenance plan.

4.2.9. **Baghouse/Fabric Filter Compliance Demonstrations**

Unless specifically requested by the Secretary under 4.3.1. or listed in Table 4.3.2., compliance with all baghouse and fabric filter mass emission limits that have BACT outlet grain loading limits shall be based on vendor information or vendor guarantees that show the maximum outlet grain loading emissions from the baghouse/fabric filter is in compliance with the specific limit.

4.2.10. **Flares**

The permittee shall meet the following Monitoring, Compliance Demonstration, Recording and Reporting Requirements for the VTG Flare 1 and VTG Flare 2:

a. To demonstrate compliance with 4.1.10(e)(2), the permittee shall maintain records of all substantive actions undertaken in compliance with the manufacturer's specifications for operation and maintenance to maintain the minimum control efficiency;

b. To demonstrate compliance with the pilot flame requirements of 4.1.10(e)(3), the presence of a pilot flame shall be continuously monitored using a thermocouple or any other equivalent device to detect the presence of a flame when emissions are vented to it. The pilot shall be equipped such that it sounds an alarm, or initiates notification via remote alarm to the control room, when the pilot light is out;

c. For any absence of pilot flame, or other indication of smoking or improper equipment operation, the permittee must ensure the equipment is returned to proper operation as soon as practicable after the event occurs. At a minimum, the permittee must: (1) Check the air vent for obstruction. If an obstruction is observed, you must clear the obstruction as soon as practicable. (2) Check for liquid reaching the flare;

d. The permittee shall maintain records of the times and duration of all periods when the pilot flame was not present and vapors were vented to the device. The permittee shall maintain records of any inspections made pursuant to 4.2.10; and

e. Any time the flare is not operating when emissions are vented to it, shall be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days of the discovery.

4.2.11. **Control Device Monitoring**
The permittee shall install, maintain, and operate instrumentation to continuously monitor and record the control device parameters as required under 4.1.10 of this permit including, at a minimum, the following:

Table 4.2.11: Control Device Parameters Monitored/Recorded(1)

Control Device Description	Control Device ID	Parameter(s)
EAF Baghouses	EAF1-BH EAF2-BH	Pressure Drop
Rolling Mill Baghouse	RM-BH	Pressure Drop
Pickling Line Scrubber	PKL1-SCR	Liquid Flow Rate
Tandem Cold Mill Mist Eliminator	TCM-ME	Pressure Drop

(1) Does not include any monitoring as required by 40 CFR 60, Subpart AAa or 40 CFR 63, Subpart YYYYY.

4.2.12. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

a. The opacity limitations and the associated compliance determinations are given in the following table for sources of particulate matter:

Table 4.2.12(a): Visible Emissions Compliance Demonstrations

Emission Point(s)	Opacity Limit (%)(1)	Rule Citation	Compliance Demonstration
Melt Shop			
BHST-1/2	3%	40 CFR§60.272a(a)(2)	Section 4.2.12(b)
MSFUG CASTFUG	6%	40 CFR§60.272a(a)(3) 40 CFR§63.10686(b)(2)	
EAFVF1/2	10%	40 CFR§60.272a(b)	
45CSR2 Applicable Emission Points			
ASP-1	10%	40CSR§2-3.1	Section 4.2.12(c)(2)(i)
Flares (45CSR6 Applicability)			
VTDST1/2	20%(2)	45CSR§6-4.3 and 4.4	Section 4.2.12(c)(2)(ii)
45CSR7 Applicable Emission Points (Non-Material Handling)			
RM-BH TCMST	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iii)

Emission Point(s)	Opacity Limit (%)(1)	Rule Citation	Compliance Demonstration
PLST-1 PKLSB STM-BH SPMST1/2 CGL1-ST1/2 CGL2-ST1/2 SLAG-CUT-BH	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
45CSR7 Applicable Emission Points (Material Handling Stack/Vent)			
LCB-ST DRI-DOCK-ST DRIVF1/2/3/4 DRIBF1/2/3/4 DRI-DB1-BH DRI-DB2-BH DRI-CONV-BH LIME-DUMP-ST CARBON-DUMP-ST ALLOY-HANDLE-ST	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
45CSR7 Applicable Emission Points (Material Handling Non-Stack/Vent)			
DRI-DOCK-FUG BULK-DRI-1/2 DRI-EMG-1/2 SCRAP-DOCK-FUG SCRAP-RAIL-FUG SCRAP-BULK1 - 39 SLGSKP1 -3 SCRPSKP1 -4 LIME-DUMP-FUG CARBON-DUMP-FUG ALLOY-HANDLE-FUG Haulroads	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
Cooling Towers			
CT1 - 8	20%(3)	45CSR§7-3.1 and 3.2	Not Required(4)
Other Natural Gas Combustion			
TFST-1/2 GALVFN1-ST GALVFN2-ST GALVFUG SLAG-CUT-NG EMGEN1 - 6	None(5)	n/a	n/a

(1) Where multiple opacity limits apply, the more restrictive is listed.

(2) Shall not apply to smoke which is less than forty (40%) percent opacity, for a period or periods aggregating no more than eight (8) minutes per start-up.

(3) Shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.

(4) Due to the nature of the particulate matter emissions from the Cooling Towers (entrained in droplets), a compliance demonstration for the Cooling Towers is not practical.
(5) Natural gas combustion does not meet the definition of a "source operation" pursuant to 45CSR§7-2.38.

b. **40 CFR 60, Subpart AAa/40 CFR 63, Subpart YYYYY**
For Emission Points BHST-1/2, MSFUG, and CASTFUG, the permittee shall show compliance with the opacity requirements of 40 CFR 60, Subpart AAa, §60.272a(a) and 40 CFR 63, Subpart YYYYY, §63.10686, pursuant to the applicable requirements of Subpart AAa and Subpart YYYYY, respectively. Compliance with the opacity requirements of Subpart AAa shall show compliance with the opacity requirements of 45CSR7;

c. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

(1) The visible emission check shall determine the presence or absence of visible emissions. The observations shall be conducted according to Section 11 of EPA Method 22. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 which may include online web-based training as supplied by a Method 9 training company; and

(2) Specific emission points shall meet the following visible emissions monitoring requirements:

(i) **45CSR2**
Upon request by the Secretary, compliance with the visible emission requirements of Sections 3.1 and 3.2 of 45CSR2 as applicable to Emission Point ASP-1 shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 or by using measurements from continuous opacity monitoring systems approved by the Secretary. The Secretary may require the installation, calibration, maintenance and operation of continuous opacity monitoring systems and may establish policies for the evaluation of continuous opacity monitoring results and the determination of compliance with the visible emission requirements of 3.1 of 45CSR2;

(ii) **45CSR6**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to Emission Points VTDST1/2 shall be in accordance with the following: Visible emission checks shall be conducted at least once every seven (7) calendar days and these checks shall be performed for a sufficient time interval, but no less than a 6-minute interval, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions. If one year of weekly Method 22 readings show that there are no visible emissions, then the frequency of observations can be reduced to quarterly. If, during quarterly checks, visible emissions are observed, then the frequency of observations shall be returned to weekly;

(iii) **45CSR7**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to Emission Points RM-BH and TCMST shall be in accordance with the

following: Visible emission checks shall be conducted at least once per seven (7) calendar days. These checks shall be performed for a sufficient time interval, but no less than three (3) 6-minute intervals, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions; and

(iv) **45CSR7**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to all other emission points, excluding those identified under 4.2.9(c)(2)(iii), subject to 45CSR7 as shown under Table 4.2.9 above shall be in accordance with the following: Visible emission checks shall be conducted at least quarterly. These checks shall be performed for a sufficient time interval, but no less than a 6-minute interval, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions.

(3) If visible emissions are present at a source(s), the permittee shall perform Method 9 readings to confirm that visible emissions are within the applicable limits of this permit. Said Method 9 readings shall be taken as soon as practicable, but within twenty-four (24) hours of the Method 22 emission check.

e. For the purpose of demonstrating compliance with the visible emissions and opacity requirements, the permittee shall maintain records of the visible emission opacity tests and checks. The permittee shall maintain records of all monitoring data required by 4.2.12 documenting the date and time of each visible emission check, the emission point or equipment/ source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6-10 mph NE wind) during the visual emission check(s). Should a visible emission observation be required to be performed per the requirements specified in Method 9, the data records of each observation shall be maintained per the requirements of Method 9. For an emission unit out of service during the evaluation, the record of observation may note "out of service" (O/S) or equivalent; and

f. Any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40 CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

4.2.13. **Emission Point Map**
The permittee shall prepare and maintain an emission point map of the facility. This map shall consist of a diagram of the location and identification of all emission points at the facility that vent to ambient air. A legend shall be prepared with the map that identifies the emission point type and source(s) contributing to that emission point. This map shall be prepared within 180 days of startup and thereafter be updated as necessary to reflect current facility operations. The map(s) shall be retained on-site and be made available to the Director or his/her duly authorized representative upon request.

4.2.14. **Vendor Guarantees**
The permittee shall, at the time of initial startup, maintain on-site and have readily available to be made available to the Director or his/her representative upon request, a copy of the all current vendor guarantees relevant to the air emissions associated with the facility. This includes information relating to the performance of both emission units and control devices.

4.3. Performance Testing Requirements

4.3.1. **General Performance Testing**
At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of this permit, the permittee shall conduct or have conducted test(s) to determine compliance with the emission limitations established in this permit and/or applicable regulations.

4.3.2. **Specific Emissions Point Performance Testing**
Within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit, the permittee shall conduct, or have conducted, in accordance with a protocol submitted pursuant to 3.3.1(c), performance tests on the emission units (as emitted from the listed emission points) to show compliance with the specified pollutants as given in the following table:

Table 4.3.2.: Performance Testing Requirements

Emission Unit(s)	Emission Point(s)	Pollutants	Limit(1)
EAF1/LMF1/CAST1	BHST-1(2)	All Pollutants under Table 4.1.4(a) with the exception of Total HAPs, and CO_2e.	PPH gr/dcsf (PM)
EAF2/LMF2/CAST2	BHST-2(2)		
TF1	TFST-1	CO and NO_x	PPH
GALVFN1 GALVFN2(3)	GALVFN1-ST GALVFN2-ST		
ASP	ASP-1		
RM	RM-BH	$PM_{2.5}$, PM_{10}, PM(4)	PPH(4) gr/dscf
SPM1 SPM2(3)	SPMST1 SPMST2		

(1) Where applicable, test results will also be used to show compliance with lb/ton, lb/mmBtu, or other BACT performance limits.
(2) Initial and periodic performance testing on PM emitted from BHST-1 and BHST-2 shall be in accordance with the procedures outlined under §60.18 and §60.275a.
(3) Permittee may choose one of the identical listed units to test.
(4) Filterable Only.

4.3.3 With respect to the performance testing required above under Section 4.3.2, the permittee shall, after the initial performance test, periodically conduct additional performance testing on the specified sources according to the following schedule:

Table 4.3.3.: Performance Testing Schedule

Test	Test Results	Retesting Frequency
Initial Baseline	<50% of weight emission standard	Once/3 years
Initial Baseline	between 50% and 80 % of weight emission standard	Once/2 years
Initial Baseline	>80% of weight emission standard	Annual
Annual	after three successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Annual	after two successive tests indicate mass emission rates <80 % of weight emission standard	Once/2 years
Annual	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/2 years	After two successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Once/2 years	any tests indicates a mass emission rate <80 % of weight emission standard	Once/2 years
Once/2 years	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/3 years	any tests indicates a mass emission rate <50% of weight emission standard	Once/3 years
Once/3 years	any test indicates mass emission rates between 50% and 80 % of weight emission standard	Once/2 years
Once/3 years	any test indicates a mass emission rate >80% of weight emission standard	Annual

4.3.4. Performance testing for pollutants monitored by CEMS (CO, NO_x, and SO_2, as emitted from the Emission Point BHST-1 and BHST-2) are not subject to the performance testing schedule given under Table 4.3.3 and any performance testing shall, unless at such other reasonable time(s) as the Secretary may designate, be conducted on a schedule consistent with the required RATA testing.

4.3.5. The permittee shall use the test methods specified in Table 4.3.5. unless granted approval in writing by the Director to use an alternative test method in a protocol submitted pursuant to 3.3.1(c).

Table 4.3.5: Performance Test Methods

Pollutant	Test Method[(1)]
CO	Method 10
NO_x	Method 7E
$PM_{2.5}$ (filterable only)	Method 201A
PM_{10}/PM (filterable only)	Method 5
$PM_{2.5}$/PM_{10} (condensable)	Method 202
SO_2	Method 6C

Pollutant	Test Method(1)
VOCs	Method 18/25A
Lead	Method 12
HCl	Method 26A
Fluoride	Method 13

(1) All test methods refer to those given under 40 CFR 60, Appendix A

4.3.6. **40 CFR 60, Subpart AAa**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 60, Subpart AAa, Section §60.275a.

4.3.7. **40 CFR 63, Subpart YYYYY**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 63, Subpart YYYYY, Section §63.10686(d).

4.3.8. **40 CFR 60, Subpart JJJJ**
The permittee shall meet all applicable Performance Testing requirements for the emergency engines as given under 40 CFR 60, Subpart JJJJ, Section §60.4244.

4.4. Recordkeeping Requirements

4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit and time of sampling or measurements;

b. The date(s) analyses were performed;

c. The company or entity that performed the analyses;

d. The analytical techniques or methods used;

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

4.5. Additional Reporting Requirements

4.5.1. The permittee shall submit the following information to the DAQ according to the specified schedules:

a. The permittee shall submit reports of all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports; and

b. The permittee shall submit to the Director on or before March 15, a certification of compliance with all requirements of this permit for the previous calendar year ending on December 31. If, during the previous annual period, the permittee had been out of compliance with any part of this permit, it shall be noted along with the following information: 1) the source/equipment/process

that was non-compliant and the specific requirement of this permit that was not met, 2) the date the permitted discovered that the source/ equipment/process was out of compliance, 3) the date the Director was notified, 4) the corrective measures to get the source/equipment/process back into compliance, and 5) the date the source began to operate in compliance. The submission of any non-compliance report shall give no enforcement action immunity to episodes of non-compliance contained therein.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached ____, representing the period beginning ________________________________ and ending ________________________________, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] ____ ____________________________
(please use blue ink) Responsible Official or Authorized Representative Date

Name and Title ____ _________________________________
(please print or type) Name Title

Telephone No. ___________________________________ Fax No. _____________________________________

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[1] This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The 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 a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

   (I) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

   (ii) the delegation of authority to such representative is approved in advance by the Director;

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of USEPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.

Table A-1 : Material Handling Stack/Vent Emission Limits

Emission Point ID	Description	Flow Rate(1)	Filter Outlet (gr/dscf)(2)		Hourly Emissions (lb/hr)(3)		Annual Emissions (ton/yr)	
		dscf/min	$PM_{2.5}$	PM/PM_{10}	$PM_{2.5}$	PM/PM_{10}	$PM_{2.5}$	PM/PM_{10}
LCB-ST	Lime, Carbon, and Briquetter Silos	38,000	0.0050	0.0050	1.63	1.63	7.13	7.13
DRI-DOCK-ST	DRI Unloading Dock (two units)	4,000	0.0005	0.0010	0.017	0.034	0.074	0.150
DRIVF1	DRI Storage Silo 1 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV1	DRI Storage Silo 1 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRIVF2	DRI Storage Silo 2 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV2	DRI Storage Silo 2 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRIVF3	DRI Storage Silo 3 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV3	DRI Storage Silo 3 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRIVF4	DRI Storage Silo 4 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV4	DRI Storage Silo 4 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRI-DB1-BH	DRI Day Bin #1	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRI-DB2-BH	DRI Day Bin #2	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRI-CONV-BH	DRI Transfer Conveyors	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
SLAG-CUT-BH	Slag Cutting	100,000	0.0010	0.0010	0.857	0.857	3.754	3.754
EAFVF1	EAF Baghouse 1 Dust Silo	1,000	0.0100	0.0100	0.086	0.086	0.375	0.375
EAFVF2	EAF Baghouse 2 Dust Silo	1,000	0.0100	0.0100	0.086	0.086	0.375	0.375
LIME-DUMP-ST	Lime Dump Station	2,000	0.0050	0.0050	0.086	0.086	0.375	0.375
CARBON-DUMP-ST	Carbon Dump Station	2,000	0.0050	0.0050	0.086	0.086	0.375	0.375
ALLOY-HANDLE-ST	Alloy Handling System	3,800	0.0050	0.0050	0.163	0.163	0.713	0.713

(1) Air flow rates represent the modeled mechanical flow rate through the listed particulate matter control device during steady-state operation.

(2) gr/dscf = grains/dry standard cubic feet. For these emission points, baghouse/fabric filter is the BACT technology and the outlet loading is $PM_{2.5}$/PM_{10}/PM(filterable) BACT limit for the specified emission points.

(3) Hourly emission limits are based on a 24-hour average.

Table A-2 : Material Handling Non-Stack/Vent Emission Limits

Emission Point ID	Description	Material	Control Technology[(1)(2)(3)]	Hourly Emissions (lb/hr)[(3)]			Annual Emissions (ton/yr)		
				$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
DRI-DOCK-FUG	DRI Unloading Dock - Fugitives	DRI	Good Housekeeping Practices Enclosure	1.40E-02	9.26E-02	1.96E-01	7.82E-03	5.16E-02	1.09E-01
BULK-DRI-1	DRI Silo #1 Loadout	DRI	Good Housekeeping Practices Enclosure	1.79E-03	1.18E-02	2.49E-02	7.82E-03	5.16E-02	1.09E-01
BULK-DRI-2	DRI Silo #2 Loadout	DRI	Good Housekeeping Practices Enclosure	1.79E-03	1.18E-02	2.49E-02	7.82E-03	5.16E-02	1.09E-01
DRI-EMG-1	DRI Conveyor #1 Emergency Chute	DRI	Good Housekeeping Practices	1.40E-02	9.26E-02	1.96E-01	2.80E-05	1.85E-04	3.92E-04
DRI-EMG-2	DRI Silos Emergency Chute	DRI	Good Housekeeping Practices	8.98E-02	5.93E-01	1.25E+00	8.08E-04	5.33E-03	1.13E-02
LIME-DUMP-FUG	Lime Dump Station Fugitives	Lime		0.003	0.017	0.050	0.012	0.076	0.219
CARBON-DUMP-FUG	Carbon Dump Station Fugitives	Carbon	Good Housekeeping Practices Enclosure	0.001	0.009	0.025	0.006	0.038	0.109
ALLOY-HANDLE-FUG	Alloy Handling System Fugitives	Alloy		0.007	0.044	0.125	0.010	0.067	0.194
SCRAP-DOCK-FUG	Barge Scrap Unloading	Scrap	Good Housekeeping Practices	0.026	0.090	0.180	0.031	0.108	0.217
SCRAP-RAIL-FUG	Rail Scrap Unloading	Scrap	Good Housekeeping Practices	0.009	0.030	0.060	0.004	0.014	0.029
SCRAP-BULK34	Barge Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.039	0.259	0.548	0.047	0.312	0.659
SCRAP-BULK35	Barge Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.018	0.119	0.251	0.047	0.312	0.659
SCRAP-BULK36	Rail Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.008	0.052	0.110	0.006	0.042	0.088
SCRAP-BULK37	Rail Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.018	0.119	0.251	0.006	0.042	0.088
SCRAP-BULK38	Truck Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.013	0.086	0.183	0.009	0.062	0.132
SCRAP-BULK39	Truck Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.018	0.119	0.251	0.009	0.062	0.132
SCRAP-BULK40	Scrap Charging	Scrap	Good Housekeeping Practices	0.014	0.095	0.201	0.063	0.416	0.879
SCRAP-BULK1	Dig Slag Inside Pot Barn	Slag		0.029	0.078	0.160	0.053	0.141	0.289
SCRAP-BULK2	Loader Transport & Dump Slag Into Trench	Slag		0.029	0.078	0.160	0.053	0.141	0.289
SCRAP-BULK3	Loader Transport & Dump Slag Into F1 Feed Hopper/Grizzly	Slag		0.012	0.031	0.064	0.021	0.056	0.116
SCRAP-BULK4	TP: F1 Feed Hopper/Grizzly to P1 Oversize Pile	Slag		0.026	0.026	0.075	0.047	0.047	0.135
SCRAP-BULK5	TP: F1 Feed Hopper/Grizzly to C7 Crusher Conveyer	Slag		0.001	0.001	0.001	0.001	0.001	0.003
SCRAP-BULK6	TP: F1 Feed Hopper/Grizzly to C1A Main Conveyer	Slag		0.008	0.008	0.022	0.014	0.014	0.040
SCRAP-BULK7	TP: C7 to CR1 Crusher	Slag	Good Housekeeping Practices	0.002	0.002	0.006	0.004	0.004	0.011
SCRAP-BULK8	TP: CR1 Crusher to C8 Conveyer	Slag		0.012	0.012	0.026	0.021	0.021	0.047
SCRAP-BULK9	TP: CR1 Crusher to P2 Off-spec Storage	Slag	Enclosure	0.010	0.010	0.022	0.018	0.018	0.040
SCRAP-BULK10	TP: C8 Conveyer to C9 Conveyer	Slag		0.000	0.000	0.000	0.000	0.000	0.001
SCRAP-BULK11	TP: C9 Conveyer to C1A Conveyer	Slag	Wet Suppression	0.001	0.001	0.002	0.002	0.002	0.004
SCRAP-BULK12	TP: C1A Conveyer to B1 Surge Bin	Slag		0.001	0.001	0.002	0.002	0.002	0.004
SCRAP-BULK13	TP: B1 Surge Bin to C1 Conveyer	Slag		0.003	0.003	0.008	0.006	0.006	0.015
SCRAP-BULK14	TP: C1 Conveyor through M1 Mag Splitter to S1 Slag Screen	Slag		0.003	0.003	0.008	0.006	0.006	0.015
SCRAP-BULK15	TP: C1 Conveyor through M1 Mag Splitter to S2 Scrap Screen	Slag		0.003	0.003	0.008	0.005	0.005	0.015
SCRAP-BULK16	TP: S2 Scrap Screen to C6 Conveyor	Slag		0.0017	0.0017	0.0050	0.0031	0.0031	0.0090
SCRAP-BULK17	TP: S2 Scrap Screen to P3 Off-spec Storage	Slag		0.0015	0.0015	0.0043	0.0027	0.0027	0.0077
SCRAP-BULK18	TP: C6 Conveyor to P4 Off-spec Storage	Slag		0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
SCRAP-BULK19	TP: S1 Slag Screen to C2 Conveyer	Slag		0.0015	0.0015	0.0043	0.0027	0.0027	0.0077
SCRAP-BULK20	TP: C2 Conveyer to C5 Conveyer	Slag		0.0012	0.0012	0.0032	0.0021	0.0021	0.0058
SCRAP-BULK21	TP: C5 Conveyer to SLGSKP1	Slag		0.0012	0.0012	0.0032	0.0021	0.0021	0.0058

Table A-2 : Material Handling Non-Stack/Vent Emission Limits (Continued)

Emission Point ID	Description	Material	Control Technology	Hourly Emissions (lb/hr)(3)			Annual Emissions (ton/yr)		
				$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
SCRAP-BULK22	TP: S1 Slag Screen to C4 Conveyer	Slag	Good Housekeeping Practices Enclosure Wet Suppression	0.0192	0.0192	0.0553	0.0346	0.0346	0.0995
SCRAP-BULK23	TP: C4 Conveyer to SLGSKP3	Slag		0.0009	0.0009	0.0024	0.0016	0.0016	0.0044
SCRAP-BULK24	TP: S1 Slag Screen to C3 Conveyer	Slag		0.0144	0.0144	0.0414	0.0260	0.0260	0.0746
SCRAP-BULK25	TP: C3 Conveyer to SLGSKP2	Slag		0.0006	0.0006	0.0016	0.0011	0.0011	0.0029
SCRAP-BULK26	TP: S1 Slag Screen to SLGSKP4	Slag		0.0096	0.0096	0.0276	0.0173	0.0173	0.0497
SCRAP-BULK27	Loader transports & loads products into trucks to product stockpiles	Slag		0.0011	0.0028	0.0058	0.0019	0.0051	0.0104
SCRAP-BULK28	Truck Dumps Products into Product Stockpiles	Slag		0.0117	0.0314	0.0642	0.0210	0.0564	0.1155
SCRAP-BULK29	Loader Into trucks, Oversize to Drop Ball Crusher	Slag		0.0117	0.0314	0.0642	0.0210	0.0564	0.1155
SCRAP-BULK30	Truck Dumps Oversize into Drop Ball Area	Slag		0.0002	0.0006	0.0013	0.0004	0.0011	0.0023
SCRAP-BULK31	Truck Transports Ladle Lip/Meltshop Cleanup Materials & Dumps at Drop Ball Site	Slag		0.0008	0.0020	0.0042	0.0014	0.0037	0.0075
SCRAP-BULK32	Truck Transports & Dumps Tundish at Lancing Station	Slag		0.0004	0.0011	0.0022	0.0007	0.0020	0.0040
SCRAP-BULK33	Ball Drop Crusher	Slag		0.0012	0.0012	0.0028	0.0022	0.0022	0.0050
SLGSKP1	Slag Stockpile 1	Slag	Water Sprays/Wet Suppression	0.01	0.06	0.12	0.04	0.26	0.54
SLGSKP2	Slag Stockpile 2	Slag		0.01	0.06	0.12	0.04	0.26	0.54
SLGSKP3	Slag Stockpile 3	Slag		0.01	0.06	0.12	0.04	0.26	0.54
SLGSKP4	Slag Stockpile 4	Slag		0.01	0.06	0.12	0.04	0.26	0.54
SCRPSKP1	Scrap Metal Stockpile 1	Scrap		0.02	0.15	0.31	0.10	0.64	1.36
SCRPSKP2	Scrap Metal Stockpile 2	Scrap		0.02	0.15	0.31	0.10	0.64	1.36
SCRPSKP3	Scrap Metal Stockpile 3	Scrap		0.02	0.15	0.31	0.10	0.64	1.36

(1) For the purposes of this permit, "Good Housekeeping Practices" are defined as maintaining all enclosures free of holes and cleaning spilled particulate matter from exposed areas where fugitive entrainment may easily occur.

(2) For the purposes of this permit, "Wet Supression" is defined as maintaining the mositure content of the material at a level that mitigates fugitive entrainment of particulate matter from the surface of the material.

(3) The enclsoures shall be as described in the Bulk Materials Transfer/Process Inputs and Assumptions Table in the permit application.

(4) Hourly emission limits are based on a 24-hour average and are the BACT limits for the listed emission sources.

Appendix A: Table A-3
Nucor Steel West Virginia LLC: WV Steel Plant
R14-0039: 053-00085

Table A-3: Natural Gas Combustion Emission Limits

Emission Point ID	Emission Unit ID	Description	MDHI	CO		NO_x		$PM_{2.5}/PM_{10}$ (1)		PM (2)		SO_2		VOCs		CO_2e		Total HAPs	
			mmBtu/hr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
MSFUG	LD	Ladle Dryer	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR1	Horizontal Ladle Preheater 1	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR2	Horizontal Ladle Preheater 2	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR3	Horizontal Ladle Preheater 3	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR4	Horizontal Ladle Preheater 4	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR5	Horizontal Ladle Preheater 5	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR6	Vertical Ladle Preheater 6	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR7	Vertical Ladle Preheater 7	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	TD	Tundish Dryer 1	6.00	0.49	2.16	0.59	2.58	0.04	0.20	0.011	0.049	0.004	0.015	0.03	0.14	703	3,077	0.011	0.048
MSFUG	TPHTR1	Tundish Preheater 1	9.00	0.74	3.25	0.88	3.86	0.07	0.29	0.017	0.073	0.005	0.023	0.05	0.21	1,054	4,616	0.017	0.073
MSFUG	TPHTR2	Tundish Preheater 2	9.00	0.74	3.25	0.88	3.86	0.07	0.29	0.017	0.073	0.005	0.023	0.05	0.21	1,054	4,616	0.017	0.073
MSFUG	SENPHTR1	Subentry Nozzle (SEN) Preheater 1	1.00	0.08	0.36	0.10	0.43	0.007	0.033	0.002	0.008	0.001	0.003	0.01	0.02	117	513	0.002	0.008
MSFUG	SENPHTR2	Subentry Nozzle (SEN) Preheater 2	1.00	0.08	0.36	0.10	0.43	0.007	0.033	0.002	0.008	0.001	0.003	0.01	0.02	117	513	0.002	0.008
GALVFN1-ST	GALVFN1	Galvanizing Furnace #1	64.00	5.27	23.09	3.20	14.02	0.48	2.09	0.119	0.522	0.038	0.165	0.35	1.51	7,494	32,825	0.118	0.517
GALVFN2-ST	GALVFN2	Galvanizing Furnace #2	64.00	5.27	23.09	3.20	14.02	0.48	2.09	0.119	0.522	0.038	0.165	0.35	1.51	7,494	32,825	0.118	0.517
GALVFUG	BOXANN1	Box Annealing Furnace #1	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN2	Box Annealing Furnace #2	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN3	Box Annealing Furnace #3	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN4	Box Annealing Furnace #4	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN5	Box Annealing Furnace #5	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN6	Box Annealing Furnace #6	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN7	Box Annealing Furnace #7	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN8	Box Annealing Furnace #8	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN9	Box Annealing Furnace #9	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN10	Box Annealing Furnace #10	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN11	Box Annealing Furnace #11	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN12	Box Annealing Furnace #12	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN13	Box Annealing Furnace #13	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN14	Box Annealing Furnace #14	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN15	Box Annealing Furnace #15	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN16	Box Annealing Furnace #16	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN17	Box Annealing Furnace #17	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN18	Box Annealing Furnace #18	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN19	Box Annealing Furnace #19	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN20	Box Annealing Furnace #20	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN21	Box Annealing Furnace #21	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN22	Box Annealing Furnace #22	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
TFST-1	TF1	Hot Mill Tunnel Furnace 1	150.00	12.35	54.11	10.50	45.99	1.12	4.90	0.279	1.224	0.088	0.386	0.81	3.54	17,565	76,933	0.277	1.212
SLAG-CUT-NG	SLAG-CUT	Slag Cutting	2.40	0.20	0.87	0.24	1.03	0.02	0.08	0.004	0.020	0.001	0.006	0.01	0.06	281	1,231	0.004	0.019
ASP-1	ASP	Water Bath Vaporizer	11.00	0.91	3.97	1.08	4.72	0.08	0.36	0.020	0.090	0.006	0.028	0.06	0.26	1,288	5,642	0.020	0.089

(1) Inlcudes Condensables
(2) Filterable Only.

Table A-1 : Hot Mill and Cold Mill Stack/Vent Emission Limits

Emission Point ID	Description	Control Device	Flow Rate[1] dscf/min	Filter/Scrubber Outlet (gr/dscf)[2]			Hourly Emissions (lb/hr)[3]			Annual Emissions (ton/yr)		
				$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
RM-BH	Rolling Mill	Baghouse	117,716	0.0100	0.0100	0.0050	5.04	10.09	10.09	22.10	44.19	44.19
PLST-1	Pickling Line 1	Scrubber	7,185	0.0100	0.0100	0.0100	0.62	0.62	0.62	2.70	2.70	2.70
PKLSB	Pickle Line Scale Breaker	Baghouse	52,972	0.0030	0.0030	0.0030	1.36	1.36	1.36	5.97	5.97	5.97
TCMST	Tandem Cold Mill	Mist Eliminator	202,162	0.0066	0.0066	0.0100	11.44	11.44	17.33	50.09	50.09	75.90
STM-BH	Standalone Temper Mill	Mist Eliminator	45,000	0.0013	0.0024	0.0025	0.50	0.93	0.96	2.20	4.05	4.22
SPMST1	Skin Pass Mill #1	Baghouse	24,587	0.0050	0.0100	0.0100	1.05	2.11	2.11	4.62	9.23	9.23
SPMST2	Skin Pass Mill #2	Baghouse	24,587	0.0050	0.0100	0.0100	1.05	2.11	2.11	4.62	9.23	9.23
CGL1-ST1	CGL1 - Cleaning Section	Scrubber	6,123	0.0030	0.0030	0.0030	0.16	0.16	0.16	0.69	0.69	0.69
CGL1-ST2	CGL1 - Passivation Section	Scrubber	9,350	0.0030	0.0030	0.0030	0.24	0.24	0.24	1.05	1.05	1.05
CGL2-ST1	CGL2 - Cleaning Section	Scrubber	6,123	0.0030	0.0030	0.0030	0.16	0.16	0.16	0.69	0.69	0.69
CGL2-ST2	CGL2 - Passivation Section	Scrubber	9,350	0.0030	0.0030	0.0030	0.24	0.24	0.24	1.05	1.05	1.05

(1) Air flow rates represent the modeled mechanical flow rate through the listed particulate matter control device during steady-state operation.

(2) gr/dscf = grains/dry standard cubic feet. For these emission points, the listed control device is the BACT technology and the outlet loading is PM2.5/PM10/PM(filterable) BACT limit for the specified emission points.

(3) Hourly emission limits are based on a 24-hour average.

AIR QUALITY PERMIT NOTICE

Notice of Intent to Approve

On January 21, 2022, Nucor Steel West Virginia LLC (Nucor) applied to the WV Department of Environmental Protection (DEP), Division of Air Quality (DAQ) for a permit to construct a steel mill located near Apple Grove, Mason County, WV at latitude 38.65536 and longitude -82.16853. A preliminary evaluation has determined that all State and Federal air quality requirements will be met by the proposed facility. The DAQ is providing notice to the public of its preliminary determination to issue the permit as R14-0039.

The following potential emissions will be authorized by this permit action: Particulate Matter less than 2.5 microns, 570.10 tons per year (TPY); Particulate Matter less than 10 microns, 617.54 TPY; (total) Particulate Matter, 690.89 TPY; Sulfur Dioxide, 361.48 TPY; Oxides of Nitrogen, 701.59 TPY; Carbon Monoxide, 3,263 TPY; Volatile Organic Compounds, 178.36 TPY; Total Hazardous Air Pollutants, 7.48 TPY, Greenhouse Gases (CO_2e), 673,848 TPY.

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The DAQ has scheduled a public meeting for 6:00 p.m. on Thursday, April 7, 2022. The public meeting will be held virtually to prevent the spread of COVID-19. Instructions for providing written comments and for providing oral comments at the virtual public meeting are provided below.

The purpose of the public review process is to accept public comments on air quality issues relevant to this determination. Only written comments or comments presented orally at the scheduled public meeting will be considered prior to final action on the permit. All such comments will become part of the public record.

Written comments must be received by 5:00 p.m. on Friday, April 29, 2022:

- Email written comments to Joseph.R.Kessler@wv.gov with "Nucor Steel West Virginia Comments" in the subject line, or
- Mail hard copy comments to Mr. Joseph Kessler, WV Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304.

Public meeting participation:

- To participate online or by telephone, registration is required by 5:00 p.m. on Thursday, April 7, 2022. To register, please complete the registration form at: https://forms.gle/kfQMFrrhfRXDMWQw7.

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Additional information, including copies of the draft permit, application, and all other supporting materials relevant to the permit decision may be obtained by contacting the engineer listed below or downloaded at:

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Joe Kessler, PE
Engineer
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 41271
Email: joseph.r.kessler@wv.gov

Kessler, Joseph R <joseph.r.kessler@wv.gov>

WV Air Permit (PSD) Public Notice

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Wed, Mar 30, 2022 at 8:19 AM
To: andrew.hall@epa.ohio.gov, jennifer.vanvlerah@epa.ohio.gov
Cc: Joseph R Kessler <joseph.r.kessler@wv.gov>

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§45-14-17.5

The Secretary shall send a copy of the advertisement to the applicant, to the Administrator, and to officials and agencies having cognizance over the location where the proposed construction would occur as follows: any other State or local air pollution control agencies, the chief executives of the city and county where the source would be located; any comprehensive regional land use planning agency, any State and Federal Land Managers whose lands may be affected by emissions from the source or modification.

Please forward this e-mail, if needed, to someone more appropriate in your organization.

If you have any questions or comments concerning this matter, please feel free to contact me.

Thank You,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

R14-0039 Public Notice.pdf
54K

FAX

To:	Ms. Diana Cromley Mason County Clerk	From:	Joe Kessler, Engineer WV Division of Air Quality
Fax:	304-675-2521	Fax:	
Phone:	304-675-1997	Phone:	304-926-0499 x41271
No. Pages:	3	Date:	3/30/22
Subject:	WV Air Permit (PSD) Public Notice		

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Engineer
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 41271
Email: joseph.r.kessler@wv.gov

To: **Ms. Diana Cromley, Mason County Clerk**
Company:
Fax: 304-675-2521
Phone:

From:
Company:
Fax:
Phone:
Email: Stephanie.R.Mink@wv.gov

Sent: 3/30/2022 9:43:47 AM
Duration: 00:02:05
Number dialed: 93046752521
Remote ID: 3046752521
Result: Success
Pages: 4

FAX

To: **Ms. Diana Cromley, Mason County Clerk**
Company:
Fax: 304-675-2521
Phone:

From:
Fax:
Phone:
E-mail: Stephanie.R.Mink@wv.gov

NOTES:

Please see the following information being forwarded to you on behalf of Joe Kessler, Engineer, WV Division of Air Quality.

Thank you
Stephanie Mink
Environmental Resources Associate
West Virginia Department of Environmental Protection
Division of Air Quality, Title V Permitting
601 57th Street SE
Charleston, WV 25304
Phone: 304-926-0499 x41281

Date and time of transmission: 3/30/2022 9:43:30 AM
Number of pages including this cover sheet: 4

Confirmation receipt generated by E006589 on 3/30/2022 9:49:22 AM.

-- E006244264AA874 --

9:43 AM 3/30/2022 Conversion Record
[Mason County Clerk Fax.pdf]
Type: application/pdf
G3 to TIFF attempt 1: Success (91ms)
GhostScript TIFF attempt 1: Success (263ms)
(OTB6RIGHTFAX01V:WORKSRV1)

9:43 AM 3/30/2022 Conversion Record
Successfully created cover sheet.
Type: application/msword
G3 to TIFF attempt 1: Success (529ms)
Image Optimization attempt 1: Success (249ms)
PCL6 attempt 1: Success (396ms)
Resubmitted [application/x-pcl]
Word Automation attempt 1: Success (918ms)
(OTB6RIGHTFAX01V:WORKSRV1)

9:43 AM 3/30/2022 Transmission Record
Sent to: Ms. Diana Cromley, Mason County Clerk
Phone: 93046752521
Billing information: '', ''
Remote ID: 3046752521
Unique ID: "E006244264AA874"
Elapsed time: 2 minutes, 5 seconds.
Used channel 22 on server "OTB6RIGHTFAX01V".
No ANI data.
No AOC data.
Resulting status code (0/339; 0/0): Success
Pages sent: 1 - 4
Delegate ID: ""

9:46 AM 3/30/2022 View Record
Viewed by: E006589

Kessler, Joseph R <joseph.r.kessler@wv.gov>

WV Air Permit (PSD) Public Notice

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Wed, Mar 30, 2022 at 8:19 AM
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Joseph.r.kessler@wv.gov

R14-0039 Public Notice.pdf
54K

Kessler, Joseph R <joseph.r.kessler@wv.gov>

WV Draft Permit R14-0039 for Nucor Steel West Virginia, LLC; West Virginia Steel Mill

1 message

Mink, Stephanie R <stephanie.r.mink@wv.gov> Wed, Mar 30, 2022 at 7:27 AM
To: "Supplee, Gwendolyn" <supplee.gwendolyn@epa.gov>, Weinelt.Eva@epa.gov, leary.justin@epa.gov, sean.alteri@nucor.com, BBruscino@trinityconsultants.com
Cc: "Crowder, Laura M" <Laura.M.Crowder@wv.gov>, "McKeone, Beverly D" <Beverly.D.Mckeone@wv.gov>, "McCumbers, Carrie" <Carrie.McCumbers@wv.gov>, "Hammonds, Stephanie E" <Stephanie.E.Hammonds@wv.gov>, "Kessler, Joseph R" <Joseph.R.Kessler@wv.gov>, "Johnson, Rebecca H" <Rebecca.H.Johnson@wv.gov>, Alexia.Prosperi@usda.gov, Andrea_Stacy <andrea_stacy@nps.gov>

Please find attached the Draft Permit R14-0039, Preliminary Determination and Public Notice for Nucor Steel West Virginia, LLC's West Virginia Steel Mill located in Mason County.

The public notice will be published in the Point Pleasant Register on Wednesday, March 30, 2022 and the thirty day comment period will end on Friday, April 29, 2022.

Should you have any questions or comments, please contact the permit writer, Joe Kessler, at 304-926-0499 ext. 41271 or joseph.r.kessler@wv.gov.

--

Stephanie Mink

Environmental Resources Associate

West Virginia Department of Environmental Protection

Division of Air Quality, Title V Permitting

601 57th Street SE

Charleston, WV 25304

Phone: 304-926-0499 x41281

3 attachments

- **R14-0039 Draft Permit (w Appendix A).pdf**
  903K
- **R14-0039 Preliminary Determination (signed).pdf**
  13427K
- **R14-0039 Public Notice.pdf**
  54K

West Virginia Department of Environmental Protection
Harold D. Ward
Cabinet Secretary

Construction Permit

R14-0039

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.) and 45 C.S.R. 13 — Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation. The permittee identified at the facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:

Nucor Steel West Virginia LLC
West Virginia Steel Mill
053-00085

Laura M. Crowder
Director, Division of Air Quality

Issued: DRAFT

Facility Location:	Near Apple Grove, Mason County, WV
Mailing Address:	1915 Rexford Road, Charlotte, NC 28211
Facility Description:	Sheet Steel Mill
SIC/NAICS Code:	3312/331110
UTM Coordinates:	Easting: 398.20 km • Northing: 4,278.87 km • Zone: 17
Latitude/Longitude:	38.65536/-82.16853
Permit Type:	Construction
Description:	Construction of a 3,000,000 tons per year sheet steel mill.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

The facility is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

Table of Contents

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
Raw Material Storage & Handling					
Scrap Storage & Handling					
SCRAP-RAIL	Fugitives	Railcar Scrap Unloading	New	200 TPH	n/a
SCRAP-DOCK	Fugitives	Barge Scrap Unloading	New	600 TPH	n/a
SCRAP-BULK34	Fugitives	Barge Scrap Pile Loading	New	600 TPH	n/a
SCRAP-BULK35	Fugitives	Barge Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK36	Fugitives	Rail Scrap Pile Loading	New	120 TPH	n/a
SCRAP-BULK37	Fugitives	Rail Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK38	Fugitives	Truck Scrap Pile Loading	New	200 TPH	n/a
SCRAP-BULK39	Fugitives	Truck Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK40	Fugitives	Scrap Charging	New	220 TPH	n/a
SCRPSKP1	Fugitives	Scrap Metal Stockpile 1	New	81,809 ft^2	WS
SCRPSKP2	Fugitives	Scrap Metal Stockpile 2	New	81,809 ft^2	WS
SCRPSKP3	Fugitives	Scrap Metal Stockpile 3	New	81,809 ft^2	WS
Lime, Carbon, and Alloy Storage & Handling					
LIME-DUMP	LIME-DUMP-ST	Lime Dump Station	New	8 TPH	LIME-BH
	Fugitives				PE
CARBON-DUMP	CARBON-DUMP-ST	Carbon Dump Station	New	4 TPH	CARBON-BH
	Fugitives				PE
ALLOY-HANDLE	ALLOY-HANDLE-ST	Alloy Handling System	New	20 TPH	ALLOY-BH
	Fugitives				PE
LCB	LCB-ST	Lime, Carbon, and Alloy Silos	New	n/a	LCB-BH
Direct Reduced Iron (DRI) Storage & Handling					
DRI-DOCK	Fugitives	DRI Unloading Dock	New	500 TPH	PE
	DRI-DOCK-ST				DRI-DOCK-BH
DRI1	DRIVF1	DRI Storage Silo 1	New	64 TPH	DRI1-BH
	DRIBV1				DRI1-BV
DRI2	DRIVF2	DRI Storage Silo 2	New	64 TPH	DRI2-BH
	DRIBV2				DRI2-BV

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
DRI3	DRIVF3	DRI Storage Silo 3	New	64 TPH	DRI3-BH
	DRIBV3				DRI3-BV
DRI4	DRIVF4	DRI Storage Silo 4	New	64 TPH	DRI4-BH
	DRIBV4				DRI4-BV
DRI-DB1	DRI-DB1-BH	DRI Day Bin 1	New	64 TPH	DRI-DB1-BH
DRI-DB2	DRI-DB2-BH	DRI Day Bin 2	New	64 TPH	DRI-DB2-BH
BULK-DRI	BULK-DRI-1	DRI Silo 1 Loadout	New	64 TPH	PE
	BULK-DRI-2	DRI Silo 2 Loadout		64 TPH	PE
	BULK-EMG-1	DRI Conveyer 1 Emergency Chute		125 TPH	None
	BULK-EMG-2	DRI Silos Emergency Chute		800 TPH	None
DRI-CONV	DRI-CONV-BH	DRI Transfer Conveyers	New	64 TPH	DRI-CONV-BH
<u>Haulraods</u>					
FUGD-PAVED-01P through 10P	Fugitives	Paved Haulroads 1P - 10P	New	n/a	WS
FUGD-UNPAVED-1UP through 19U	Fugitives	Unpaved Haulroads 11U - 19U	New	n/a	WS
<u>Melt Shop</u>					
EAF1	BHST-1	Electric Arc Furnace 1	New	171 TPH, 22.18 mmBtu/hr[2]	EAF1-BH
	MSFUG				n/a
LMF1	BHST-1	Ladle Metallurgy Furnace 1	New	171 TPH	EAF1-BH
CAST1	BHST-1	Caster 1	New	171 TPH	EAF1-BH
	CASTFUG				n/a
EAF2	BHST-2	Electric Arc Furnace 2	New	171 TPH, 22.18 mmBtu/hr[2]	EAF2-BH
	MSFUG				n/a
LMF2	BHST-2	Ladle Metallurgy Furnace 2	New	171 TPH	EAF2-BH
CAST2	BHST-2	Caster 2	New	171 TPH	EAF2-BH
	CASTFUG				n/a
LD	MSFUG	Ladle Dryer	New	15 mmBtu/hr	n/a
EAFVF1	EAFVF1	EAF Baghouse 1 Dust Silo	New	0.84 TPH	EAFVF1-BV
EAFVF2	EAFVF2	EAF Baghouse 2 Dust Silo	New	0.84 TPH	EAFVF2-BV

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
LPHTR1	MSFUG[3]	Horizontal Ladle Preheater 1	New	15 mmBtu/hr	n/a
LPHTR2	MSFUG[3]	Horizontal Ladle Preheater 2	New	15 mmBtu/hr	n/a
LPHTR3	MSFUG[3]	Horizontal Ladle Preheater 3	New	15 mmBtu/hr	n/a
LPHTR4	MSFUG[3]	Horizontal Ladle Preheater 4	New	15 mmBtu/hr	n/a
LPHTR5	MSFUG[3]	Horizontal Ladle Preheater 5	New	15 mmBtu/hr	n/a
LPHTR6	MSFUG[3]	Vertical Ladle Preheater 6	New	15 mmBtu/hr	n/a
LPHTR7	MSFUG[3]	Vertical Ladle Preheater 7	New	15 mmBtu/hr	n/a
TD	MSFUG[3]	Tundish Dryer 1	New	6 mmBtu/hr	n/a
TPHTR1	MSFUG[3]	Tundish Preheater 1	New	9 mmBtu/hr	n/a
TPHTR2	MSFUG[3]	Tundish Preheater 2	New	9 mmBtu/hr	n/a
SENPHTR1	MSFUG[3]	Subentry Nozzle (SEN) Preheater 1	New	1 mmBtu/hr	n/a
SENPHTR2	MSFUG[3]	Subentry Nozzle (SEN) Preheater 2	New	1 mmBtu/hr	n/a
VTD1	VTDST1	Vacuum Tank 1	New	269 lbs-CO/hr	VTG-Flare 1
VTD2	VTDST2	Vacuum Tank 2	New	269 lbs-CO/hr	VTG-Flare 2
Hot Mill					
TF1	TFST-1	Hot Mill Tunnel Furnace 1	New	150 mmBtu/hr	None
RM	RM-BH	Rolling Mill	New	342 TPH	RM-BH
Cold Mill					
PKLSB	PKLSB	Pickling Line Scale Breaker	New	342 TPH	PKLSB-BH
PKL-1	PLST-1	Pickling Line 1	New	171 TPH	PKL1-SCR
CGL1	CGL1-ST1	CGL1 - Cleaning Section	New	171 TPH	CGL-SCR1
	CGL1-ST2	CGL1 - Passivation Section		171 TPH	CGL-SCR2
CGL2	CGL2-ST1	CGL2 - Cleaning Section	New	171 TPH	CGL-SCR3
	CGL2-ST2	CGL2 - Passivation Section		171 TPH	CGL-SCR4
GALVFN1	GALVFN1-ST	Galvanizing Furnace 1	New	64 mmBtu/hr	None
GALVFN2	GALVFN2-ST	Galvanizing Furnace 2	New	64 mmBtu/hr	None
BOXANN1	GALVFUG[4]	Box Annealing Furnace 1	New	5 mmBtu/hr	None
BOXANN2	GALVFUG[4]	Box Annealing Furnace 2	New	5 mmBtu/hr	None
BOXANN3	GALVFUG[4]	Box Annealing Furnace 3	New	5 mmBtu/hr	None

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
BOXANN4	GALVFUG[4]	Box Annealing Furnace 4	New	5 mmBtu/hr	None
BOXANN5	GALVFUG[4]	Box Annealing Furnace 5	New	5 mmBtu/hr	None
BOXANN6	GALVFUG[4]	Box Annealing Furnace 6	New	5 mmBtu/hr	None
BOXANN7	GALVFUG[4]	Box Annealing Furnace 7	New	5 mmBtu/hr	None
BOXANN8	GALVFUG[4]	Box Annealing Furnace 8	New	5 mmBtu/hr	None
BOXANN9	GALVFUG[4]	Box Annealing Furnace 9	New	5 mmBtu/hr	None
BOXANN10	GALVFUG[4]	Box Annealing Furnace 10	New	5 mmBtu/hr	None
BOXANN11	GALVFUG[4]	Box Annealing Furnace 11	New	5 mmBtu/hr	None
BOXANN12	GALVFUG[4]	Box Annealing Furnace 12	New	5 mmBtu/hr	None
BOXANN13	GALVFUG[4]	Box Annealing Furnace 13	New	5 mmBtu/hr	None
BOXANN14	GALVFUG[4]	Box Annealing Furnace 14	New	5 mmBtu/hr	None
BOXANN15	GALVFUG[4]	Box Annealing Furnace 15	New	5 mmBtu/hr	None
BOXANN16	GALVFUG[4]	Box Annealing Furnace 16	New	5 mmBtu/hr	None
BOXANN17	GALVFUG[4]	Box Annealing Furnace 17	New	5 mmBtu/hr	None
BOXANN18	GALVFUG[4]	Box Annealing Furnace 18	New	5 mmBtu/hr	None
BOXANN19	GALVFUG[4]	Box Annealing Furnace 19	New	5 mmBtu/hr	None
BOXANN20	GALVFUG[4]	Box Annealing Furnace 20	New	5 mmBtu/hr	None
BOXANN21	GALVFUG[4]	Box Annealing Furnace 21	New	5 mmBtu/hr	None
BOXANN22	GALVFUG[4]	Box Annealing Furnace 22	New	5 mmBtu/hr	None
TCM	TCMST	Tandem Cold Mill	New	342 TPH	TCM-ME
STM	STM-BH	Standalone Temper Mill	New	342 TPH	STM-ME
SPM1	SPMST1	Skin Pass Mill 1	New	114 TPH	SPM1-BH
SPM2	SPMST2	Skin Pass Mill 2	New	114 TPH	SPM3-BH
Slag Processing					
SLGSKP1	Fugitives	Slag Storage Stockpile 1	New	32,541 ft^2	WS
SLGSKP2	Fugitives	Slag Storage Stockpile 2	New	32,541 ft^2	WS
SLGSKP3	Fugitives	Slag Storage Stockpile 3	New	32,541 ft^2	WS
SLGSKP4	Fugitives	Slag Storage Stockpile 4	New	32,541 ft^2	WS
SLAG-CUT	SLAG-CUT-NG	Slag Cutting Combustion	New	2.4 mmBtu/hr	None
	SLAG-CUT-BH	Slag Cutting		171 TPH	SLAG-CUT-BH

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[(1)]
SCRAP-BULK1	SCRAP-BULK1	Dig Slag Inside Pot Barn	New	73 TPH	PE, WS
SCRAP-BULK2	SCRAP-BULK2	Loader Transport & Dump Slag Into Trench	New	73 TPH	PE, WS
SCRAP-BULK3	SCRAP-BULK3	Loader Transport & Dump Slag Into F1 Feed Hopper/Grizzly	New	73 TPH	PE, WS
SCRAP-BULK4	SCRAP-BULK4	TP: F1 Feed Hopper/Grizzly to P1 Oversize Storage[(5)]	New	73 TPH	PE, WS
SCRAP-BULK5	SCRAP-BULK5	TP: F1 Feed Hopper/Grizzly to C7 Crusher Conveyer	New	1.5 TPH	PE, WS
SCRAP-BULK6	SCRAP-BULK6	TP: F1 Feed Hopper/Grizzly to C1A Main Conveyer	New	22 TPH	PE, WS
SCRAP-BULK7	SCRAP-BULK7	TP: C7 to CR1 Crusher	New	50 TPH	PE, WS
SCRAP-BULK8	SCRAP-BULK8	TP: CR1 Crusher to C8 Conveyer	New	22 TPH	PE, WS
SCRAP-BULK9	SCRAP-BULK9	TP: CR1 Crusher to P2 Off-spec Storage[(5)]	New	19 TPH	PE, WS
SCRAP-BULK10	SCRAP-BULK10	TP: C8 Conveyer to C9 Conveyer	New	3.3 TPH	PE, WS
SCRAP-BULK11	SCRAP-BULK11	TP: C9 Conveyer to C1A Conveyer	New	19 TPH	PE, WS
SCRAP-BULK12	SCRAP-BULK12	TP: C1A Conveyer to B1 Surge Bin	New	19 TPH	PE, WS
SCRAP-BULK13	SCRAP-BULK13	TP: B1 Surge Bin to C1 Conveyer	New	68 TPH	PE, WS
SCRAP-BULK14	SCRAP-BULK14	TP: C1 Conveyor through M1 Mag Splitter to S1 Slag Screen	New	68 TPH	PE, WS
SCRAP-BULK15	SCRAP-BULK15	TP: C1 Conveyor through M1 Mag Splitter to S2 Slag Screen	New	66 TPH	PE, WS
SCRAP-BULK16	SCRAP-BULK16	TP: S2 Slag Screen to C6 Conveyor	New	2.4 TPH	PE, WS
SCRAP-BULK17	SCRAP-BULK17	TP: S2 Slag Screen to P3 Off-spec Storage[(5)]	New	2 TPH	PE, WS
SCRAP-BULK18	SCRAP-BULK18	TP: C6 Conveyor to P4 Off-spec Storage[(5)]	New	0.4 TPH	PE, WS
SCRAP-BULK19	SCRAP-BULK19	TP: S1 Slag Screen to C2 Conveyer	New	2 TPH	PE, WS

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
SCRAP-BULK20	SCRAP-BULK20	TP: C2 Conveyer to C5 Conveyer	New	26 TPH	PE, WS
SCRAP-BULK21	SCRAP-BULK21	TP: C5 Conveyer to SLGSKP1	New	26 TPH	PE, WS
SCRAP-BULK22	SCRAP-BULK22	TP: S1 Slag Screen to C4 Conveyer	New	26 TPH	PE, WS
SCRAP-BULK23	SCRAP-BULK23	TP: C4 Conveyer to SLGSKP3	New	20 TPH	PE, WS
SCRAP-BULK24	SCRAP-BULK24	TP: S1 Slag Screen to C3 Conveyer	New	20 TPH	PE, WS
SCRAP-BULK25	SCRAP-BULK25	TP: C3 Conveyer to SLGSKP2	New	13 TPH	PE, WS
SCRAP-BULK26	SCRAP-BULK26	TP: S1 Slag Screen to SLGSKP4	New	13 TPH	PE, WS
SCRAP-BULK27	SCRAP-BULK27	Loader transports & loads products into trucks to Product Stockpiles	New	6.6 TPH	PE, WS
SCRAP-BULK28	SCRAP-BULK28	Truck Dumps Products into Product Stockpiles	New	73 TPH	PE, WS
SCRAP-BULK29	SCRAP-BULK29	Loader Into trucks, Oversize to Drop Ball Crusher	New	73 TPH	PE, WS
SCRAP-BULK30	SCRAP-BULK30	Truck Dumps Oversize into Drop Ball Area	New	1.5 TPH	PE, WS
SCRAP-BULK31	SCRAP-BULK30	Truck Transports Ladle Lip/Meltshop Cleanup Materials & Dumps at Drop Ball Site	New	4.7 TPH	PE, WS
SCRAP-BULK32	SCRAP-BULK32	Truck Transports & Dumps Tundish at Lancing Station	New	2.6 TPH	PE, WS
SCRAP-BULK33	SCRAP-BULK33	Ball Drop Crusher	New	2.3 TPH	PE, WS
Auxiliary Operations/Equipment					
ASP	ASP-1	Water Bath Vaporizer	New	11 mmBtu/hr	None
Emergency Generators					
EMGEN1	EMGEN1	Emergency Generator 1	New	2,000 hp	TBD[6]
EMGEN2	EMGEN2	Emergency Generator 2	New	2,000 hp	TBD[6]
EMGEN3	EMGEN3	Emergency Generator 3	New	2,000 hp	TBD[6]
EMGEN4	EMGEN4	Emergency Generator 4	New	2,000 hp	TBD[6]

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
EMGEN5	EMGEN5	Emergency Generator 5	New	2,000 hp	TBD[6]
EMGEN6	EMGEN6	Emergency Generator 6	New	2,000 hp	TBD[6]
Cooling Towers					
CT1	CT1	Melt Shop ICW Cooling Tower	New	52,000 gpm	DE
CT2	CT2	Melt Shop DCW Cooling Tower	New	5,900 gpm	DE
CT3	CT3	Rolling Mill ICW Cooling Tower	New	8,500 gpm	DE
CT4	CT4	Rolling Mill DCW Cooling Tower	New	22,750 gpm	DE
CT5	CT5	Rolling Mill Quench/ACC Cooling Tower	New	90,000 gpm	DE
CT6	CT6	Light Plate DCW System	New	8,000 gpm	DE
CT7	CT7	Heavy Plate DCW System	New	3,000 gpm	DE
CT8	CT8	Air Separation Plant Cooling Tower	New	14,000 gpm	DE
Fixed Roof Storage Tanks					
T1	T1	Diesel Tank	New	5,000 gallon	None
T2	T2	Diesel Tank	New	1,000 gallon	None
T3	T3	Diesel Tank	New	1,000 gallon	None
T4	T4	Diesel Tank	New	1,000 gallon	None
T5	T5	Diesel Tank	New	2,000 gallon	None
T6	T6	Diesel Tank	New	2,000 gallon	None
T7	T7	Gasoline Tank	New	1,000 gallon	None
T8	T8	Caster Hydraulic Oil Tank	New	5,000 gallon	None
T9	T9	Hot Mill Hydraulic Oil Tank	New	5,000 gallon	None
T10	T10	HCL Tank 1	New	26,400 gallon	None
T11	T11	HCL Tank 2	New	26,400 gallon	None
T12	T12	HCL Tank 3	New	26,400 gallon	None
T13	T13	HCL Tank 4	New	26,400 gallon	None
T14	T14	HCL Tank 5	New	26,400 gallon	None
T15	T15	HCL Tank 6	New	26,400 gallon	None
T16	T16	SPL Tank 1	New	26,400 gallon	None

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
T17	T17	SPL Tank 2	New	26,400 gallon	None
T18	T18	SPL Tank 3	New	26,400 gallon	None
T19	T19	SPL Tank 4	New	26,400 gallon	None
T20	T20	SPL Tank 5	New	26,400 gallon	None
T21	T21	SPL Tank 6	New	26,400 gallon	None
T22	T22	SPL Tank 7	New	26,400 gallon	None
T23	T23	SPL Tank 8	New	26,400 gallon	None
T24	T24	Used Oil Tank	New	5,000 gallon	None
Other Tanks					
T25	T25	Cold Degreaser Tank[7]	New	80 gallon	None
T26	T26	Cold Degreaser Tank[7]	New	80 gallon	None
T27	T27	Cold Degreaser Tank[7]	New	80 gallon	None
T28	T28	Cold Degreaser Tank[7]	New	80 gallon	None
T29	T29	Cold Degreaser Tank[7]	New	80 gallon	None

(1) This column does note include pollution prevention technologies/procedures such as Low-NO_x Burners or Good Combustion Practices. BH - Baghouse; BV - Bin Vent; DE - Drift Eliminator; ME - Mist Eliminator; SCR - Scrubber; TBD - To Be Determined; WS - Water Sprays/Wet Suppression
(2) This heat input reflects the size of the natural gas-fired oxyfuel burners.
(3) Natural gas combustion exhaust emissions that vent inside the Melt Shop building and are assumed all emitted from building openings.
(4) Natural gas combustion exhaust emissions that vent inside the Cold Mill building and are assumed all emitted from building openings.
(5) P1, P2, P3, and P4 Storage are small temporary indoor areas of screen/crusher reject.
(6) These engines are required to be in compliance with 40 CFR 60, Subpart JJJJ. Oxidation catalysts may be necessary on some engines to meet the applicable standards.
(7) These tanks are open during use (see Section 4.1.7(f)).

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR § 30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments
CBI	Confidential Business Information
CEM	Continuous Emission Monitor
CES	Certified Emission Statement
C.F.R. *or* **CFR**	Code of Federal Regulations
CO	Carbon Monoxide
C.S.R. *or* **CSR**	Codes of State Rules
DAQ	Division of Air Quality
DEP	Department of Environmental Protection
dscm	Dry Standard Cubic Meter
FOIA	Freedom of Information Act
HAP	Hazardous Air Pollutant
HON	Hazardous Organic NESHAP
HP	Horsepower
lbs/hr	Pounds per Hour
LDAR	Leak Detection and Repair
M	Thousand
MACT	Maximum Achievable Control Technology
MDHI	Maximum Design Heat Input
MM	Million
MMBtu/hr *or* **mmbtu/hr**	Million British Thermal Units per Hour
MMCF/hr *or* **mmcf/hr**	Million Cubic Feet per Hour
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides

NSPS	New Source Performance Standards
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter less than 2.5µm in diameter
PM_{10}	Particulate Matter less than 10µm in diameter
Ppb	Pounds per Batch
pph	Pounds per Hour
ppm	Parts per Million
Ppmv or ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration
psi	Pounds per Square Inch
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
TPY	Tons per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VEE	Visual Emissions Evaluation
VOC	Volatile Organic Compounds
VOL	Volatile Organic Liquids

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Law W.Va. Code §§22-5-1 et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation.*

2.4. Term and Renewal

2.4.1. This permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any applicable legislative rule.

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Application R14-0039 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.10 and 13-10.3]

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses and/or approvals from other agencies; i.e., local, state and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10. Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is 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 (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.

2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

b. The permitted facility was at the time being properly operated;

c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and,

d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emission, and corrective actions taken.

2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13.
[45CSR§13-10.1]

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§34]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1 State-Enforceable only.]

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45 C.S.R. 11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

3.2.1. **Emission Limit Averaging Time.** Unless otherwise specified, compliance with all annual limits shall be based on a rolling twelve (12) month total. A rolling twelve month total shall be the sum of the measured parameter of the previous twelve (12) calendar months. Compliance with all hourly emission limits shall be based, unless otherwise specified, on the applicable NAAQS averaging times or, where applicable, as given in any approved performance test method.

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

1. The permit or rule evaluated, with the citation number and language;
2. The result of the test for each permit or rule condition; and,
3. A statement of compliance or noncompliance with each permit or rule condition.

[WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State-Enforceable only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class or by private carrier with postage prepaid to the address(es), or submitted in electronic format by email as set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

If to the DAQ:

Director
WVDEP
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304-2345

If to the US EPA:

Section Chief
U.S. Environmental Protection Agency, Region III
Enforcement and Compliance Assurance Division
Air Section (3ED21)
1650 Arch Street
Philadelphia, PA 19103-2029

DAQ Compliance and Enforcement[1]:
DEPAirQualityReports@wv.gov

[1] For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, notice of Compliance Status Reports, Initial Notifications, etc.

3.5.4. **Operating Fee.**

3.5.4.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a Certified Emissions Statement (CES) and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.4.2. In accordance with 45CSR30 – Operating Permit Program, enclosed with this permit is a Certified Emissions Statement (CES) Invoice, from the date of initial startup through the following June 30. Said invoice and the appropriate fee shall be submitted to this office no later than 30 days prior to the date of initial startup. For any startup date other than July 1, the permittee shall pay a fee or prorated fee in accordance with the Section 4.5 of 45CSR22. A copy of this schedule may be found attached to the Certified Emissions Statement (CES) Invoice.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements

4.1. Limitations and Standards

4.1.1. Only those emission units/sources as identified in Table 1.0, with the exception of any *de minimis* sources as identified under Table 45-13B of 45CSR13, are authorized at the permitted facility by this permit. In accordance with the information filed in Permit Application R14-0039, the emission units/sources identified under Table 1.0 of this permit shall be installed, maintained, and operated so as to minimize any fugitive escape of pollutants, shall not exceed the listed maximum design capacities, shall use the specified control devices, and comply with any other information provided under Table 1.0.

4.1.2. The aggregate production of sheet steel in the EAFs (EAF-1 and EAF-2) shall not, on a rolling 12-month basis, exceed 3,000,000 tons per year as measured as the total tons of molten metal sent to the casters (CAST1 and CAST2).

4.1.3. **Material Handling & Storage Operations**

The handling of: (1) slag, (2) raw materials used in the production of steel: scrap steel, direct reduced iron (DRI) and other scrap substitutes, carbons, alloys, and lime, and (3) EAF Baghouse Dust shall be in accordance with the following requirements:

a. The permittee shall not exceed the specified maximum annual throughputs of the following materials:

Table 4.1.3(a): Maximum Annual Throughputs

Material	Limit	Units
Scrap Steel	1,925,000	TPY(1)
DRI(2)	557,500	TPY(1)
Alloys	62,000	TPY(1)
Carbon	35,000	TPY(1)
Lime	70,000	TPY(1)
Slag	262,500	TPY(3)

(1) As measured prior to charging in the EAF/LMF.
(2) DRI may include the following scrap substitutes: pig iron and hot briquetted Iron (HBI).
(3) As measured processed through the F1 Slag Feed Hopper.

b. The permittee shall not exceed the specified maximum design capacities of the following equipment:

Table 4.1.3(b): Maximum Design Capacity

Emission Unit ID	Description	Limit	Units
CR1	Slag Crusher	50	TPH
S1	Slag Screen 1	68	TPH
S2	Slag Screen 2	66	TPH

c. The permittee shall not exceed the maximum emission limits for the material handling stack/vent emission points as given under Appendix A: Table A-1 and the material handling non-stack/vent emission points (including open stockpiles) as given under Appendix A: Table A-2;

d. The permittee shall meet the following additional control device/mitigation requirements for the material handling operations:

(1) The permittee shall perform all slag handling operations (including conveying, crushing, screening, and storing) only on slag that is wetted sufficiently (BACT) to mitigate the emissions of particulate matter; and

(2) The permittee shall locate and enclose (where applicable) each material handling operation as described in the Bulk Materials Transfer/Process Inputs and Assumptions Table in the permit application so as to achieve the minimum control efficiency listed therein.

e. A visible and/or audible warning device shall be installed on each of the EAF Baghouse Storage Silos to warn operators when the silos are full so that silos are not overloaded. The silos shall not be overloaded at any time. All particulate material retrieved from any of the EAF Baghouses shall be handled in a manner that will prevent excess material from becoming airborne into the atmosphere;

f. **Outdoor Open Storage Piles**
All outdoor open feedstock material storage shall be in accordance with the following:

(1) The permittee is authorized to operate three (3) open scrap steel stockpiles (SCRPSKP1 through SCRPSKP3) that shall each not exceed a base of 81,809 ft^2 and four (4) open slag stockpiles (SLGSKP1 through SLGSKP4) that shall each not exceed a base of 32,541 ft^2. The permittee shall manage on-pile activity so as to minimize the release of emissions from all open stockpiles;

(2) The permittee shall utilize water sprays as necessary on all open storage piles to keep the to mitigate any significant release of fugitive dust emissions from the piles both during periods of activity on the pile and from wind erosion;

(3) The permittee shall properly install, operate and maintain winterization systems for all water sprays in a manner that the water sprays will remain effective and functional, to the maximum extent practicable, during winter months and cold weather. At all times, including periods of cold weather, the permittee shall comply with the water spray requirements of this section; and

(4) All other feedstock material (DRI and other scrap substitutes, carbon, alloys, and lime) shall be stored in silos or enclosed bins.

g. **Haulroads and Mobile Work Areas**
Fugitive particulate emissions resulting from use of haulroads and mobile work areas shall be minimized by the following:

(1) The permittee shall perform all necessary tasks to adequately maintain paved haulroads and paved mobile work areas (including a reasonable shoulder area) within the plant boundary;

(2) All unpaved roads and mobile work areas shall be graded with gravel, slag, or a mixture of the two so as to provide a suitable surface for the use of trucks and other heavy equipment. Unpaved roads and mobile work areas shall be provided with additional slag or gravel as needed to maintain the road surface;

(3) The permittee shall, in a timely fashion, collect material spilled on paved haulroads that could become airborne if it dried or were subject to vehicle traffic and shall maintain access to a vacuum sweeper truck in good operating condition, and shall utilize same as needed to remove excess dirt and dust from all paved haulroads and mobile work areas. If needed, the haulroads and mobile work areas shall be flushed with water prior to vacuum sweeping to remove larger pieces of debris;

(4) The permittee shall maintain a water truck on site and in good operating condition, and shall utilize same to apply a mixture of water and an environmentally acceptable dust control additive, hereinafter referred to as solution, as often as is necessary in order to minimize the atmospheric entrainment of fugitive particulate emissions that may be generated from haulroads and other work areas where mobile equipment is used. The spraybar shall be equipped with commercially available spray nozzles, of sufficient size and number, so as to provide adequate coverage to the area being treated.

The pump delivering the water/solution shall be of sufficient size and capacity so as to be capable of delivering to the spray nozzle(s) an adequate quantity of solution, and at a sufficient pressure, so as to assure that the treatment process will minimize the atmospheric entrainment of fugitive particulate emissions generated from the haulroads and work areas where mobile equipment is used.

The permittee shall properly install, operate and maintain winterization systems for all water trucks in a manner that the water truck will remain effective and functional, to the maximum extent practicable, during winter months and cold weather. At all times, including periods of cold weather, the permittee shall comply with the water truck requirements of this permit; and

(5) A maximum speed limit of 15 miles per hour shall be maintained on all unpaved haulroads. Clear and visible signs shall be posted displaying this speed limit wherever necessary to ensure compliance with this requirement.

h. **45CSR7**
The material handling sources identified under 4.1.3(c) shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in

excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

4.1.4. **Melt Shop**
The emission units/sources in the Melt Shop shall meet the following requirements:

a. **EAFs/LMFs**
The EAFs (identified as EAF-1 and EAF-2) and LMFs (identified as LMF1 and LMF2) shall each not exceed the aggregate emission limits in the following table, as emitted from the associated baghouse (EAF1-BH and EAF2-BH), and shall utilize the specified BACT Technology, as given in the following table (the emission limits are in effect during all periods of operation):

Table 4.1.4(a): EAF/LMF Emission Limits

<table>
<tr><th>Pollutant</th><th>BACT Limit</th><th colspan="2">BACT Technology[1]</th><th>PPH</th><th>TPY</th></tr>
<tr><td>CO</td><td>2.02 lb/ton-steel[2]</td><td colspan="2">GCP[3]</td><td>328.15</td><td>1,439.00</td></tr>
<tr><td rowspan="2">NO_x</td><td rowspan="2">0.35 lb/ton-steel[4]</td><td>EAFs</td><td>Oxyfuel Burners</td><td rowspan="2">56.86</td><td rowspan="2">249.38</td></tr>
<tr><td>LMFs</td><td>GCP</td></tr>
<tr><td>$PM_{2.5}/PM_{10}$[5]</td><td>0.0052 gr/dscf</td><td colspan="2">Baghouse</td><td>49.19</td><td>215.45</td></tr>
<tr><td>PM[6]</td><td>0.0018 gr/dscf</td><td colspan="2">Baghouse</td><td>17.03</td><td>74.58</td></tr>
<tr><td>SO_2</td><td>0.24 lb/ton-steel[7]</td><td colspan="2">Scrap Management/ Lime Fluxing[8]</td><td>38.99</td><td>171.00</td></tr>
<tr><td rowspan="3">VOCs</td><td rowspan="3">0.098 lb/ton-steel[9]</td><td rowspan="2">EAFs</td><td>GCP</td><td rowspan="3">15.92</td><td rowspan="3">69.83</td></tr>
<tr><td rowspan="2">Scrap Management Plan[10]</td></tr>
<tr><td>LMFs</td></tr>
<tr><td>Lead</td><td>0.00045 lb/ton-steel</td><td colspan="2">Baghouse</td><td>0.07</td><td>0.32</td></tr>
<tr><td>Fluoride</td><td>0.00350 lb/ton-steel</td><td colspan="2">Baghouse</td><td>0.57</td><td>2.49</td></tr>
<tr><td>Total HAPs</td><td>n/a</td><td colspan="2">n/a</td><td>0.25</td><td>1.06</td></tr>
<tr><td>CO_2e</td><td>TPY Limit</td><td colspan="2">OxyFuel Burners, See 4.1.4(c)(5)</td><td>47,813</td><td>179,357</td></tr>
</table>

(1) LNB = Low NO_x Burner; GCP = Good Combustion Practices
(2) Aggregated limit based on an EAF emission rate of 2.00 lb/ton-steel and LMF emission rate of 0.02 lb/ton-steel. Compliance based on a 30-day rolling average.
(3) For the purposes of this permit, "Good Combustion Practices (GCP)" are defined to include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control emissions through proper combustion tuning, temperature, and air/fuel mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge,

performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

(4) Aggregated limit based on an EAF emission rate of 0.30 lb/ton-steel and LMF emission rate of 0.05 lb/ton-steel. Compliance based on a 30-day rolling average.
(5) Includes condensables.
(6) Filterable only.
(7) Aggregated limit based on an EAF emission rate of 0.20 lb/ton-steel and LMF emission rate of 0.04 lb/ton-steel. Compliance based on a 30-day rolling average.
(8) The permittee shall limit the sulfur content of the EAF feedstock materials utilizing scrap management and/or shall add appropriate fluxes to the charge so as to meet the SO_2 emission limit given in this Table.
(9) Aggregated limit based on an EAF emission rate of 0.093 lb/ton-steel and LMF emission rate of 0.05 lb/ton-steel. Compliance based on a 30-day rolling average.
(10) For the purposes of this permit, "Scrap Management Plan" is defined as being in compliance with the Scrap Management Requirements under 40 CFR 63, Subpart YYYYY and the use of commercially available low residue, pre-processed, and inspected scrap.

b. **Melt Shop Fugitive Emissions**

The aggregate uncaptured fugitive emissions from the both EAFs/LMFs (identified as EAF-1 and EAF-2) and both the Casters (identified as CAST-1 and CAST-2) shall not exceed the limits given in the following table (these limits do not include the natural gas combustion exhaust emissions from various sources listed under Table 4.1.5(a)):

Table 4.1.4(b): EAFs/LMFs/Casters Fugitive Emission Limits(1)(2)(3)(4)

Pollutant	Source	PPH	TPY
CO	EAF-1/EAF-2	34.54	151.50
NO_x	EAF-1/EAF-2	5.99	26.25
$PM_{2.5}/PM_{10}$(5)	EAF-1/EAF-2	0.94	4.12
	CAST-1/CAST-2	0.21	0.90
PM(6)	EAF-1/EAF-2	1.62	7.10
	CAST-1/CAST-2	0.21	0.90
SO_2	EAF-1/EAF-2	4.10	18.00
VOCs	EAF-1/EAF-2	1.68	7.35
Lead	EAF-1/EAF-2	0.0077	0.0338
Fluoride	EAF-1/EAF-2	0.060	0.263
Total HAPs	EAF-1/EAF-2	0.040	0.066
CO_2e	EAF-1/EAF-2	5,033	18,880

(1) With the exception of CO_2e, the PPH limits in this table represent the BACT emission limits and the particulate matter capture methods and control efficiencies given under 4.1.3(c) below represent the associated control method/technology. The BACT limit for CO_2e is the TPY limit.
(2) EAF/LMF fugitive non-particulate matter emissions based on 5% of total uncontrolled emissions (not captured by the DEC). Particulate Matter emissions based on 0.025% of uncontrolled emissions when the furnace hood is closed (96% of the time) - using capture efficiency of DEC (95%), Canopy Hood (95%), and Melt Shop building (90%) - and based on 0.5% of uncontrolled emissions when the furnace hood is open (4% of the time) - using capture efficiency of Canopy Hood (95%) and Melt Shop building (90%).
(3) Casters fugitives are only particulate matter emissions and based on 0.50% of total uncontrolled emissions - using capture efficiency of Canopy Hood (95%) and Melt Shop building (90%).

(4) All other natural gas combustion sources that exhaust in the Melt Shop building are considered fugitive and emitted from building openings. These limits are given under Table 4.1.5(a).
(5) Includes condensables.
(6) Filterable only.

c. **EAF/LMF/Casting Operating Requirements**
The EAFs/LMFs shall be operated according to the following requirements:

(1) Each EAF will not exceed an aggregate oxyfuel burner heat input of 22.18 mmBtu/hr and the burners shall be fired only by pipeline quality natural gas (PNG);

(2) During melting operations, when the roof is closed, the permittee shall utilize a direct-shell evacuation control (DEC) system designed and operated to achieve a minimum capture efficiency of 95% of all potential particulate matter emissions from the EAFs and LMFs and evacuate the exhaust to each associated EAF baghouse. Pursuant to 40 CFR 60, Subpart AAa, a DEC system means a system that maintains a negative pressure within the EAF above the slag or metal and ducts emissions to the EAF baghouse;

(3) The permittee shall utilize a roof canopy hood designed and operated to achieve a minimum capture efficiency of 95% of all potential fugitive particulate matter emissions from the EAFs/LMFs and Casters (CAST-1 and CAST-2);

(4) The permittee shall operate control equipment and/or implement work practice standards as reasonable precautions to prevent particulate matter from becoming airborne and exiting any opening from the Melt Shop building into the open air so as to achieve a minimum capture efficiency of 90% of all potential fugitive particulate matter emissions from the EAFs/LMFs and Casters (CAST-1 and CAST-2). Reasonable precautions include, but are not limited to the following:

(i) Downdraft and/or plastic strip air curtains at Melt Shop openings with the potential for fugitive particulate emissions;

(ii) Keeping other doors closed except for pass-through traffic;

(iii) The scrap charge bay door shall be maintained at all times with a plastic strip air curtain covering the top 15 feet of the opening; and

(iv) After removal from the EAFs, all molten slag shall be deposited into slag carrying pots and transported to the designated slag processing area.

(5) To comply with GHG BACT on the EAFs, the permittee shall meet the following design and operational requirements:

(i) Install and maintain seals and modern insulation media to minimize heat losses from EAF doors, roof, and any openings around the burners or other equipment traversing through the furnace shell;

(ii) Install, operate, and maintain oxyfuel burners in accordance with manufacturer's specifications to maximize heat transfer, reduce heat losses, and reduce electrode consumption resulting in high thermal efficiency and reduced electrical energy consumption;

(iii) Employ foamy slag practices to reduce radiation heat losses and increases the electric power efficiency of the EAFs;

(iv) Optimize process control operations to reduce electricity consumption through monitoring integration of real-time monitoring of process variables along with realtime control systems for carbon injection and lance oxygen practices; and

(v) Implement a preventative maintenance program that is consistent with the manufacturer's instructions for routine and long-term maintenance of equipment important to the operation, including EAF doors, burners, etc.

d. **Vacuum Tank Degassers Requirements**
The Vacuum Tank Degassers (VTGs), identified as VTD1 and VTD2, shall be operated according to the following requirements:

(1) Once the ladle is enclosed in the VTGs and a vacuum is drawn, all gas from the units shall be pulled through a particulate filter and combusted in the associated VTG Flare. The flare shall be designed and operated according to the requirements given under 4.1.10(e);

(2) The VTGs shall not be operated simultaneously;

(3) The emissions from each VTG, as controlled by the VTG Flare, shall not exceed the limits given in the following table (Emission Points VTGST-1 and VTGST-2):

Table 4.1.4(d)(3): VTG/Flaring Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	PPH Limit	Flaring	5.38	14.93
NO_x	PPH Limit	§60.18 Flare Design	0.84	3.69
$PM_{2.5}$/PM_{10} (1)	0.0083 gr/scf (pre flare)	Particulate Filter(2) §60.18 Flare Design	0.08	0.33
PM(3)	0.0083 gr/scf (pre flare)	Particulate Filter §60.18 Flare Design	0.08	0.33
SO_2 (4)	PPH Limit	§60.18 Flare Design	0.01	0.03
VOCs	PPH Limit	§60.18 Flare Design	1.73	7.60
Total HAPs	n/a	n/a	0.02	0.10
CO_2e	TPY Limit	§60.18 Flare Design	1,863	7,504

(1) Includes condensables.
(2) The Particulate Filter is located prior to the flare and captures emissions generated by the VTG. It does not control the trace amount of particulate matter generated by the flare's combustion exhaust.
(3) Filterable only.
(4) SO_2 emissions are based on the natural gas combustion emission factor as a conservative estimate of possible emissions from the flare, No substantive amount of sulfur compounds are expected in the waste gas.

(4) The particulate matter filter controlling the offgases from each VTG (prior to combustion in the flare) shall not exceed an exit loading rate of 0.0083 gr/dscf (defined as BACT).

e. **45CSR7**
The EAFs, LMFs, Casters, and VTGs shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

f. **45CSR10**
The Emission Points BHST-1 and BHST-2 are subject to the applicable limitations and standards under 45CSR10, including the requirements given below:

(1) No person shall cause, suffer, allow or permit the emission into the open air from any source operation an in-stack sulfur dioxide concentration exceeding 2,000 parts per million by volume from existing source operations, except as provided in subdivisions 4.1.a through 4.1.e.
[45CSR§10-4.1]

(2) Compliance with the allowable sulfur dioxide concentration limitations from manufacturing process source operation(s) set forth in this rule shall be based on a block three (3) hour averaging time.
[45CSR§10-4.2]

g. **40 CFR 60, Subpart AAa**
The EAFs shall comply with all applicable requirements of 40 CFR 60, Subpart AAa including, but not limited to, the following standards:

(1) **§ 60.272a Standard for particulate matter.**

(i) On and after the date of which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause

to be discharged into the atmosphere from an EAF or an AOD vessel any gases which:
[40 CFR§60.272a(a)]

(A) Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf);
[40 CFR§60.272a(a)(1)]

(B) Exit from a control device and exhibit 3 percent opacity or greater; and
[40 CFR§60.272a(a)(2)]

(C) Exit from a shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.
[40 CFR§60.272a(a)(3)]

(ii) On and after the date on which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from the dust-handling system any gases that exhibit 10 percent opacity or greater.
[40 CFR§60.272a(b)]

h. **40 CFR 63, Subpart YYYYY**
The EAFs shall comply with all applicable requirements of 40 CFR 63, Subpart YYYYY including, but not limited to, the following standards:

(1) **§63.10685 What are the requirements for the control of contaminants from scrap?**

(i) **Chlorinated plastics, lead, and free organic liquids.** For metallic scrap utilized in the EAF at your facility, you must comply with the requirements in either paragraph (a)(1) or (2) of this section. You may have certain scrap at your facility subject to paragraph (a)(1) of this section and other scrap subject to paragraph (a)(2) of this section provided the scrap remains segregated until charge make-up.
[40 CFR§63.10685(a)]

(A) **Pollution prevention plan**. For the production of steel other than leaded steel, you must prepare and implement a pollution prevention plan for metallic scrap selection and inspection to minimize the amount of chlorinated plastics, lead, and free organic liquids that is charged to the furnace. For the production of leaded steel, you must prepare and implement a pollution prevention plan for scrap selection and inspection to minimize the amount of chlorinated plastics and free organic liquids in the scrap that is charged to the furnace. You must submit the scrap pollution prevention plan to the permitting authority for approval. You must operate according to the plan as submitted during the review and approval process, operate according to the approved plan at all times after approval, and address any deficiency identified by the permitting authority within 60 days following disapproval of a plan. You may request approval to revise the plan and may operate according to the revised plan unless and until the revision is disapproved by the permitting authority. You must keep a copy of the plan onsite, and you must provide training on the plan's requirements to all plant personnel with materials acquisition or inspection duties. Each plan must include the information in paragraphs (a)(1)(i) through (iii) of this section:
[40 CFR§63.10685(a)(1)]

(1) Specifications that scrap materials must be depleted (to the extent practicable) of undrained used oil filters, chlorinated plastics, and free organic liquids at the time of charging to the furnace.
[40 CFR§63.10685(a)(1)(i)]

(2) A requirement in your scrap specifications for removal (to the extent practicable) of lead-containing components (such as batteries, battery cables, and wheel weights) from the scrap, except for scrap used to produce leaded steel.
[40 CFR§63.10685(a)(1)(ii)]

(3) Procedures for determining if the requirements and specifications in paragraph (a)(1) of this section are met (such as visual inspection or periodic audits of scrap providers) and procedures for taking corrective actions with vendors whose shipments are not within specifications.
[40 CFR§63.10685(a)(1)(iii)]

(4) The requirements of paragraph (a)(1) of this section do not apply to the routine recycling of baghouse bags or other internal process or maintenance materials in the furnace. These exempted materials must be identified in the pollution prevention plan.
[40 CFR§63.10685(a)(1)(iv)]

(B) **Restricted metallic scrap.** For the production of steel other than leaded steel, you must not charge to a furnace metallic scrap that contains scrap from motor vehicle bodies, engine blocks, oil filters, oily turnings, machine shop borings, transformers or capacitors containing polychlorinated biphenyls, lead-containing components, chlorinated plastics, or free organic liquids. For the production of leaded steel, you must not charge to the furnace metallic scrap that contains scrap from motor vehicle bodies, engine blocks, oil filters, oily turnings, machine shop borings, transformers or capacitors containing polychlorinated biphenyls, chlorinated plastics, or free organic liquids. This restriction does not apply to any post-consumer engine blocks, post-consumer oil filters, or oily turnings that are processed or cleaned to the extent practicable such that the materials do not include lead components, chlorinated plastics, or free organic liquids. This restriction does not apply to motor vehicle scrap that is charged to recover the chromium or nickel content if you meet the requirements in paragraph (b)(3) of this section.
[40 CFR§63.10685(a)(2)]

(ii) **Mercury requirements.** For scrap containing motor vehicle scrap, you must procure the scrap pursuant to one of the compliance options in paragraphs (b)(1), (2), or (3) of this section for each scrap provider, contract, or shipment. For scrap that does not contain motor vehicle scrap, you must procure the scrap pursuant to the requirements in paragraph (b)(4) of this section for each scrap provider, contract, or shipment. You may have one scrap provider, contract, or shipment subject to one compliance provision and others subject to another compliance provision.
[40 CFR§63.10685(b)]

(A) **Site-specific plan for mercury switches**. You must comply with the requirements in paragraphs (b)(1)(i) through (v) of this section.
[40 CFR§63.10685(b)(1)]

(1) You must include a requirement in your scrap specifications for removal of mercury switches from vehicle bodies used to make the scrap.
[40 CFR§63.10685(b)(1)(i)]

(2) You must prepare and operate according to a plan demonstrating how your facility will implement the scrap specification in paragraph (b)(1)(i) of this section for removal of mercury switches. You must submit the plan to the permitting authority for approval. You must operate according to this plan as submitted during the review and approval process, operate according to the approved plan at all times after approval, and address any deficiency identified by the permitting authority within 60 days following disapproval of a plan. You may request approval to revise the plan and may operate according to the revised plan unless and until the revision is disapproved by the permitting authority. The permitting authority may change the approval status of the plan upon 90-days written notice based upon the semiannual compliance report or other information. The plan must include:
[40 CFR§63.10685(b)(1)(ii)]

(A) A means of communicating to scrap purchasers and scrap providers the need to obtain or provide motor vehicle scrap from which mercury switches have been removed and the need to ensure the proper management of the mercury switches removed from that scrap as required under the rules implementing subtitle C of the Resource Conservation and Recovery Act (RCRA) (40 CFR parts 261 through 265 and 268). The plan must include documentation of direction to appropriate staff to communicate to suppliers throughout the scrap supply chain the need to promote the removal of mercury switches from end-of-life vehicles. Upon the request of the permitting authority, you must provide examples of materials that are used for outreach to suppliers, such as letters, contract language, policies for purchasing agents, and scrap inspection protocols;
[40 CFR§63.10685(b)(1)(ii)(A)]

(B) Provisions for obtaining assurance from scrap providers that motor vehicle scrap provided to the facility meet the scrap specification;
[40 CFR§63.10685(b)(1)(ii)(B)]

(C) Provisions for periodic inspections or other means of corroboration to ensure that scrap providers and dismantlers are implementing appropriate steps to minimize the presence of mercury switches in motor vehicle scrap and that the mercury switches removed are being properly managed, including the minimum frequency such means of corroboration will be implemented; and
[40 CFR§63.10685(b)(1)(ii)(C)]

(D) Provisions for taking corrective actions (i.e., actions resulting in scrap providers removing a higher percentage of mercury switches or other mercury-containing components) if needed, based on the results of procedures implemented in paragraph (b)(1)(ii)(C) of this section).
[40 CFR§63.10685(b)(1)(ii)(D)]

(3) You must require each motor vehicle scrap provider to provide an estimate of the number of mercury switches removed from motor vehicle scrap sent to your facility during the previous year and the basis for the estimate. The permitting authority may request documentation or additional information at any time. **[40 CFR§63.10685(a)(1)(iii)]**

(4) You must establish a goal for each scrap provider to remove at least 80 percent of the mercury switches. Although a site-specific plan approved under paragraph (b)(1) of this section may require only the removal of convenience light switch mechanisms, the permitting authority will credit all documented and verifiable mercury-containing components removed from motor vehicle scrap (such as sensors in anti-locking brake systems, security systems, active ride control, and other applications) when evaluating progress towards the 80 percent goal.
[40 CFR§63.10685(a)(1)(iv)]

(5) For each scrap provider, you must submit semiannual progress reports to the permitting authority that provide the number of mercury switches removed or the weight of mercury recovered from the switches, the estimated number of vehicles processed, an estimate of the percent of mercury switches removed, and certification that the removed mercury switches were recycled at RCRA-permitted facilities or otherwise properly managed pursuant to RCRA subtitle C regulations referenced in paragraph (b)(1)(ii)(A) of this section. This information can be submitted in aggregated form and does not have to be submitted for each scrap provider, contract, or shipment. The permitting authority may change the approval status of a site-specific plan following 90-days notice based on the progress reports or other information.
[40 CFR§63.10685(a)(1)(v)]

(B) **Option for approved mercury programs.** You must certify in your notification of compliance status that you participate in and purchase motor vehicle scrap only from scrap providers who participate in a program for removal of mercury switches that has been approved by the Administrator based on the criteria in paragraphs (b)(2)(i) through (iii) of this section. If you purchase motor vehicle scrap from a broker, you must certify that all scrap received from that broker was obtained from other scrap providers who participate in a program for the removal of mercury switches that has been approved by the Administrator based on the criteria in paragraphs (b)(2)(i) through (iii) of this section. The National Vehicle Mercury Switch Recovery Program and the Vehicle Switch Recovery Program mandated by Maine State law are EPA-approved programs under paragraph (b)(2) of this section unless and until the Administrator disapproves the program (in part or in whole) under paragraph (b)(2)(iii) of this section.
[40 CFR§63.10685(b)(2)]

(1) The program includes outreach that informs the dismantlers of the need for removal of mercury switches and provides training and guidance for removing mercury switches;
[40 CFR§63.10685(b)(2)(i)]

(2) The program has a goal to remove at least 80 percent of mercury switches from the motor vehicle scrap the scrap provider processes. Although a program approved under paragraph (b)(2) of this section may require only the removal

of convenience light switch mechanisms, the Administrator will credit all documented and verifiable mercury-containing components removed from motor vehicle scrap (such as sensors in anti-locking brake systems, security systems, active ride control, and other applications) when evaluating progress towards the 80 percent goal; and
[40 CFR§63.10685(b)(2)(ii)]

(3) The program sponsor agrees to submit progress reports to the Administrator no less frequently than once every year that provide the number of mercury switches removed or the weight of mercury recovered from the switches, the estimated number of vehicles processed, an estimate of the percent of mercury switches recovered, and certification that the recovered mercury switches were recycled at facilities with permits as required under the rules implementing subtitle C of RCRA (40 CFR parts 261 through 265 and 268). The progress reports must be based on a database that includes data for each program participant; however, data may be aggregated at the State level for progress reports that will be publicly available. The Administrator may change the approval status of a program or portion of a program (e.g., at the State level) following 90-days notice based on the progress reports or on other information.
[40 CFR§63.10685(b)(2)(iii)]

(4) You must develop and maintain onsite a plan demonstrating the manner through which your facility is participating in the EPA-approved program.
[40 CFR§63.10685(b)(1)(iv)]

(A) The plan must include facility-specific implementation elements, corporate-wide policies, and/or efforts coordinated by a trade association as appropriate for each facility.
[40 CFR§63.10685(b)(2)(iv)(A)]

(B) You must provide in the plan documentation of direction to appropriate staff to communicate to suppliers throughout the scrap supply chain the need to promote the removal of mercury switches from end-of-life vehicles. Upon the request of the permitting authority, you must provide examples of materials that are used for outreach to suppliers, such as letters, contract language, policies for purchasing agents, and scrap inspection protocols.
[40 CFR§63.10685(b)(2)(iv)(B)]

(C) You must conduct periodic inspections or provide other means of corroboration to ensure that scrap providers are aware of the need for and are implementing appropriate steps to minimize the presence of mercury in scrap from end-of-life vehicles.
[40 CFR§63.10685(b)(2)(iv)(C)]

(2) **§63.10686 What are the requirements for electric arc furnaces and argon-oxygen decarburization vessels?**

(i) You must install, operate, and maintain a capture system that collects the emissions from each EAF (including charging, melting, and tapping operations) and argon-oxygen decarburization (AOD) vessel and conveys the collected emissions to a control device for the removal of particulate matter (PM). **[40 CFR§63.10686(a)]**

(ii) Except as provided in paragraph (c) of this section, you must not discharge or cause the discharge into the atmosphere from an EAF or AOD vessel any gases which:
[40 CFR§63.10686(b)]

(A) Exit from a control device and contain in excess of 0.0052 grains of PM per dry standard cubic foot (gr/dscf); and
[40 CFR§63.10686(b)(1)]

(B) Exit from a melt shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.
[40 CFR§63.10686(b)(2)]

4.1.5. **Natural Gas Combustion Units**

The natural gas-fired units identified in Appendix A: Table A-3 shall operate according to the following requirements:

a. Each unit shall be fired by PNG, shall not exceed the MDHI as given under Table 1.0 of this permit, shall not exceed the maximum emission limits for the specified process heaters given under Appendix A: Table A-3, and shall comply with the BACT requirements given in the following table;

Table 4.1.5(a): Natural Gas Combustion BACT

Pollutant	Emission Units	BACT Limit	BACT Technology(1)
CO	All Units in Table A-3	0.082 lb/mmBtu	Good Combustion Practices
NO_x	LD, TD LPHTR1 - 7 TPHTR1 - 2 SENPHTR1 - 2 SLAG-CUT ASP	0.098 lb/mmBtu	LNB, Good Combustion Practices
	BOXANN1 - 22 GALVFN1/2	0.05 lb/mmBtu	
	TF1	0.07 lb/mmBtu	
$PM_{2.5}/PM_{10}$(2)	All Units in Table A-3	0.00745 lb/mmBtu	Use of PNG, Good Combustion Practices
PM(3)	All Units in Table A-3	0.00186 lb/mmBtu	
SO_2	All Units in Table A-3	0.00059 lb/mmBtu	Use of PNG
VOCs	All Units in Table A-3	0.0054 lb/mmBtu	Good Combustion Practices
CO_2e	All Units in Table A-3	TPY Limits in Table A-3	Use of PNG, Good Combustion Practices

(1) LNB = Low-NO_x Burning Technology. For the purposes of this permit, "Good Combustion Practices" are defined to include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control emissions through proper combustion tuning, temperature, and air/fuel

mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

(2) Includes Condensables.
(3) Filterable Only.

b. As the annual emission limits of all natural gas-fired combustion units listed under Table A-3 are based on operating at MDHI for 8,760 hours of operation, there are no annual limit on hours of operation or natural gas combusted on an annual basis for these units.

c. **45CSR2**
The Water Bath Vaporizer (ASP) is subject to the applicable limitations and standards under 45CSR2, including the requirements as given below under (1) through (3).

(1) The permittee shall not cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from the fuel burning units which is greater than ten (10) percent opacity based on a six minute block average.
[45CSR§2-3.1]

(2) The permittee shall not cause, suffer, allow or permit the discharge of particulate matter into the open air from the fuel burning units, measured in terms of pounds per hour in excess of the amount determined as follows:

(i) The product of 0.09 and the total design heat input for the fuel burning units in million British Thermal Units (B.T.U.'s) per hour, provided however that no more than twelve hundred (1200) pounds per hour of particulate matter shall be discharged into the open air.
[45CSR§2-4.1a]

(3) The visible emission standards set forth in section 3 of 45CSR2 shall apply at all times except in periods of start-ups, shutdowns and malfunctions. Where the Director believes that start-ups and shutdowns are excessive in duration and/or frequency, the Director may require an owner or operator to provide a written report demonstrating that such frequent start-ups and shutdowns are necessary. **[45CSR§2-9.1]**

d. **45CSR10**
The Water Bath Vaporizer (ASP) is subject to the applicable limitations and standards under 45CSR10, including the requirement as given below:

(1) The permittee shall not cause, suffer, allow or permit the discharge of sulfur dioxide into the open air from the fuel burning units measured in terms of pounds per hour, in excess of the product of 3.2 and the total design heat of the boilers in million BTU's per hour.
[45CSR§10-3.1]

(2) No person shall cause, suffer, allow or permit the combustion of any refinery process gas stream or any other process gas stream that contains hydrogen sulfide in a concentration greater than 50 grains per 100 cubic feet of gas except in the case of a person operating in compliance with an emission control and mitigation plan approved by the Director and U. S. EPA. In certain cases very small units may be considered exempt from this requirement if, in the opinion of the Director, compliance would be economically unreasonable and if the contribution of the unit to the surrounding air quality could be considered negligible.
[45CSR§10-5.1]

e. **40 CFR 60, Subpart Dc**
The Water Bath Vaporizer (ASP) is subject to the applicable record-keeping and reporting requirements given under 40 CFR §60.48c.

4.1.6. **Hot Mill and Cold Mill**
The Hot Mill and the Cold Mill shall operate according to the following requirements:

a. The permittee shall not exceed the maximum particulate matter emission limits for the Hot Mill and Cold Mill stack/vent emission points as given under Appendix A: Table A -4;

b. **Pickling and Galvanizing Line**
The Pickling Line (PKL-1) and Galvanizing Line shall be operated according to the following requirements:

(1) The pickling line tanks shall be covered and vented to the appropriate Pickling Line Scrubber (PKL1-SCR);

(2) The outlet concentration of HCl from the Pickling Line Scrubber Stack (PLST-1) shall not exceed a BACT concentration of 6 parts per million by volume (ppm_v);

(3) Mass emissions of HCL from Pickling Line 1 Scrubber Stack (PLST-1) shall not exceed 0.25 lbs/hr and 1.09 tons/yr (as based on a maximum flow rate of 7,185 dscfm);

(4) Spillage of acid, caustic, or other process materials shall be cleaned up as soon as practical and contained to minimize fugitive emissions;

(5) During non-operational periods, either a fume suppressant shall be used in the pickling bath, or the pickling bath shall be covered to reduce evaporative losses;

(6) Hydrogen gas cleaning shall be used to prepare the steel for galvanizing to prevent fumes from the zinc pot. The use of fluxing agents in the Galvanizing Line is not authorized; and

(7) **45CSR7 - Acid Mist Source**
The emissions of HCl from the Pickling Lines shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(i) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **45CSR7 - Particulate Matter Sources**
The Hot Mill and Cold Mill particulate matter sources, excluding those that meet the exemption requirements given under 45CSR§7-10.5 and those that particulate matter is generated solely from the combustion of natural gas, shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

4.1.7. **Storage Tanks**

Use of the fixed roof and open storage tanks shall be in accordance with the following:

a. Tank capacity shall be limited as specified under Table 1.0 of this permit;

b. The aggregate emissions of VOCs from all fixed roof storage tanks (T1 - T9, T24) shall not exceed a BACT Limit of 0.46 tons/year. The aggregate emissions of VOCs from all open Cold Degreaser Tanks (T25 - T29) shall not exceed a BACT Limit of 1.46 tons/year;

c. The aggregate emissions of HCl from all HCL Storage Tanks (T10 - T15) and the Spent Pickle Liquor Tanks (T16 - T23) shall not exceed a limit of 0.07 tons/year;

d. Material stored shall be as specified and the aggregate annual storage tank throughputs shall not exceed those given in the following table:

Table 4.1.7(d): Fixed Roof Storage Tanks Annual Throughput Limits

Tank ID	Material Stored	Gallons(1)
T1 - T6	Diesel	2,190,000
T7	Gasoline	120,000(2)
T8 -T9	Hydraulic Oil	730,000
T10 - T15	HCl	7,200,000
T16 - T23	Spent Pickle Liquor	7,200,000
T24	Used Oil	365,000

(1) This number represents the aggregate limit for all specified storage tanks.
(2) The permittee has chosen to comply with the 40 CFR 63, Subpart CCCCCC requirements for facilities with less than monthly throughput of less than 10,000 gallons of gasoline.

e. For all fixed roof storage tanks with the potential to emit VOCs (does not include T10 through T23 or T25 - T29), the permittee shall, for purposes **of** BACT, meet the following requirements:

(1) Utilize good operating practices in the operation of the storage tanks. Good operating practices shall mean maintaining and operating the storage tanks according to manufacturers recommendations and regularly inspecting the tanks for areas of disrepair or failure that would allow the escape of pollutant-containing vapors.

(2) Maintain a white or aluminum color on all storage tank surfaces that are exposed to the sun to mitigate heat absorption of the tanks; and

(3) Utilize submerged fill on all tanks.

f. Operation of the Cold Degreaser Tanks shall be in accordance with the following:

(1) The cover of each degreaser tank shall be closed if not handling parts in the cleaner;

(2) The operation of a cold cleaner using a solvent with a vapor pressure that exceeds one (1.0) mmHg (0.019 psi) measured at 20° C (68° F) is prohibited; and

(3) Work area fans shall be positioned so that air is not directed across the opening of the tanks so as to facilitate volatization.

g. **40 CFR 63, Subpart CCCCCC**
The "gasoline dispensing facility" located at facility, as defined under §63.11132, shall comply with all applicable requirements of 40 CFR 63, Subpart CCCCCC including, but not limited to, the following standards:

(1) **§ 63.11116 Requirements for facilities with monthly throughput of less than 10,000 gallons of gasoline.**

(i) You must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:
[40 CFR§63.11116(a)]

(A) Minimize gasoline spills;
[40 CFR§63.11116(a)(1)]

(B) Clean up spills as expeditiously as practicable;
[40 CFR§63.11116(a)(2)]

(C) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use;
[40 CFR§63.11116(a)(3)]

(D) Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.
[40 CFR§63.11116(a)(4)]

4.1.8. **Cooling Towers**
The Cooling Towers shall operate in accordance with the following requirements:

a. The Cooling Towers shall use the control device specified under Section 1.0 at all times in operation, shall not exceed the specified maximum design and operational limits, and shall not exceed the emission limits in the following table:

Table 4.1.8(a): Cooling Tower Specifications

ID No.	Max Design Capacity Water Circulation Pump (gal/min)	Total Dissolved Solids (ppm)	Mist Eliminator Max Drift Rate (%)(1)	$PM_{2.5}/PM_{10}/PM$	
				PPH	TPY
CT1	52,000	1,500	0.0005	0.20	0.86
CT2	5,900	1,500	0.0005	0.02	0.10
CT3	8,500	1,500	0.0005	0.03	0.14
CT4	22,750	1,500	0.0005	0.09	0.37
CT5	90,000	1,500	0.0005	0.34	1.48
CT6	8,000	1,500	0.0005	0.03	0.13
CT7	3,000	1,500	0.0005	0.01	0.05
CT8	14,000	1,500	0.0005	0.05	0.23

(1) As based on manufacturer or vendor guarantee or applicable product literature.

b. BACT for all Cooling Towers listed under Table 4.1.8(a) is the PPH limit as based on the use of a High Efficiency Drift Eliminator with a maximum drift rate of 0.0005%.

4.1.9. **Emergency Engines**

The Emergency Engines, identified as EMGEN1 through EMGEN6, shall meet the following requirements:

a. Each unit shall not exceed 2,000 horsepower, shall be fired only with PNG, and shall not operate in excess of 100 hours per year nor exceed one (1) hour in any 24-hour period during times not defined as emergencies. Only one (1) engine shall be operated at a time during times not defined as emergencies;

b. The maximum emissions from each Emergency Engine shall not exceed the limits given in the following table:

Table 4.1.9(b): Emergency Engine Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	2.0 g/hp-hr	Subpart JJJJ Certification Annual Hrs of Op(3) Limit	17.64	0.88
NO_x	4.0 g/hp-hr	Subpart JJJJ Certification Annual Hrs of Op(3) Limit	8.82	0.44
$PM_{2.5(1)}$	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
$PM_{10(1)}$	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
PM(2)	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
SO_2	PPH	Annual Hrs of Op(3) Limit	8.23e-03	4.12e-04

Pollutant	BACT Limit	BACT Technology	PPH	TPY
VOCs	1.0 g/hp-hr	Subpart JJJJ Certification, Annual Hrs of Op(3) Limit	4.41	0.22
CO_2e	TPY	Annual Hrs of Op(3) Limit	1,639	82

(1) Includes Condensables.
(2) Filterable Only.
(3) Non-emergency hours of operation.

c. **40 CFR 60, Subpart JJJJ**
Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE. For owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 100 HP (except gasoline and rich burn engines that use LPG) manufactured prior to January 1, 2011 that were certified to the certification emission standards in 40 CFR part 1048 applicable to engines that are not severe duty engines, if such stationary SI ICE was certified to a carbon monoxide (CO) standard above the standard in Table 1 to this subpart, then the owners and operators may meet the CO certification (not field testing) standard for which the engine was certified.
[40 CFR §60.4233(e)]

Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards					
			g/HP-hr			ppmvd at 15% O_2		
			NO_x	CO	VOC(d)	NO_x	CO	VOC(d)
Emergency	HP≥130	1/1/2009	2.0	4.0	1.0	160	540	86

(a) Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O_2.
(d) For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.
[40 CFR60, Subpart JJJJ, Table 1]

d. **40 CFR 63, Subpart ZZZZ**
An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.
[40 CFR §63.6590(c)]

(1) A new or reconstructed stationary RICE located at an area source;
[40 CFR §63.6590(c)(1)]

4.1.10. Control Devices

a. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in

this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11.]

b. **Fabric Filters/Bin Vents/Baghouses**
Use of Fabric Filters/Bin Vents/Baghouses shall be in accordance with the following requirements:

(1) The permittee shall continuously monitor the differential pressure drop of baghouses EAF1-BH, EAF2-BH, and RM-BH so as to ensure proper continuous operation of the baghouses according to the following requirements:

(i) The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The range of acceptable pressure drops shall be based on the range recommended by the baghouse manufacturer or as defined during the most recent stack test; and

(ii) The frequency of data recording shall be, at a minimum, once every 15 minutes.

(2) Baghouses EAF1-BH and EAF2-BH shall meet all applicable requirements given under 40 CFR 60, Subpart AAa; and

(3) The filter material of all Fabric Filters/Bin Vents/Baghouses shall be replaced on a schedule as determined by the manufacturer.

c. **Melt Shop Collection Systems**
All hooding, duct, and collection systems shall be effective in capturing emissions from the intended equipment and in preventing excess fugitive emissions from the building. The hooding and duct systems shall be maintained free of holes, cracks, and other conditions that would substantially reduce the collection efficiency of the emission capture system.

d. **Wet Scrubbers/Mist Eliminators**
Use of Wet Scrubbers/Mist Eliminators shall be in accordance with the following requirements:

(1) Each scrubber/mist eliminator shall be designed, operated, and maintained according to good engineering practices or manufacturing recommendations so as to achieve, at a minimum, compliance with the particulate matter emission limits given under Appendix A, Table A-4 and, for scrubber PKL-1, the HCl emission limits given under 4.1.6(b)(2) and (3);

(2) The permittee shall continuously monitor the differential pressure drop of scrubber TCM-ME so as to ensure proper continuous operation of the scrubber according to the following requirements:

(i) The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The range of acceptable pressure drops shall be based on the range recommended by the scrubber manufacturer or as defined during the most recent stack test; and

(ii) The frequency of data recording shall be, at a minimum, once every 15 minutes.

(3). The liquor flow rate to the scrubbers/mist eliminators shall be set at a rate as determined by manufacturer's recommendation or site-specific testing so as achieve compliance with the associated emission limit. Any media or entrapment lattice used in the mist elimination process shall be maintained/repaired/replaced according to manufacturer's recommendations.

e. **Flares**

The flares, identified as VTG-Flare 1 and VTG-Flare 2, shall operate according to the following requirements:

(1) Each flare have a MDHI that does not exceed 12.37 mmBtu/hr, shall be air-assisted, and shall be designed and operated according to the requirements specified in 40 CFR 60, Section §60.18;

(2) Each flare shall be designed, operated, and maintained according to good engineering practices or manufacturing recommendations so as to achieve, at a minimum, a carbon monoxide and hydrocarbon DRE of 98.0%;

(3) Each flare shall be operated with a flame present at all times the VTGs are in operation, as determined by the methods specified in 4.2.10(b);

(4) The permittee shall operate and maintain each flare according to the manufacturer's specifications for operating and maintenance requirements to maintain the minimum guaranteed control efficiency listed under 4.1.10(e)(2); and

(5) **45CSR6**

Each flare is subject to 45CSR6. The requirements of 45CSR6 include but are not limited to the following:

(i) The permittee shall not cause, suffer, allow or permit particulate matter to be discharged from the flares into the open air in excess of the quantity determined by use of the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

[45CSR§6-4.1]

(ii) No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is twenty (20%) percent opacity or greater.
[45CSR6 §4.3]

(iii) The provisions of subsection 4.3 shall not apply to smoke which is less than forty percent (40%) opacity, for a period or periods aggregating no more than eight (8) minutes per start-up, or six (6) minutes in any sixty (60)-minute period for stoking operations.
[45CSR6 §4.4]

(iv) No person shall cause or allow the emission of particles of unburned or partially burned refuse or ash from any incinerator which are large enough to be individually

distinguished in the open air.
[45CSR6 §4.5]

(v) Incinerators, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.
[45CSR6 §4.6]

(vi) Due to unavoidable malfunction of equipment, emissions exceeding those provided for in this rule may be permitted by the Director for periods not to exceed five (5) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.
[45CSR6 §8.2]

4.1.11 **Additional GHG BACT Requirements**
In addition to the GHG BACT requirements specified elsewhere in this permit, the permittee shall meet the following requirements:

a. Develop and implement training programs and good housekeeping programs help to decrease energy consumption throughout the plant;

b. Develop and implement energy monitoring and management systems help provide for optimal energy recovery and distribution between processes at the plant; and

c. Across all plant operations, utilize where possible energy efficient devices (e.g., motors, drives, pumps, fans, compressors, controls);

d. Unless approved by the Director to remove, modify, or replace a specific control strategy, the permittee shall implement the GHG Mitigation and Efficiency strategies listed under Table 4-66 of the permit application for the specifically listed emission units; and

e. The permittee shall, within 60 days of plant startup, submit to the Director a GHG BACT Implementation Plan that describes the method of implementation of the requirements given under (a) through (d) above. The plan will include specifics on actions taken to meet the requirements including training methods, use of specific energy efficient devices, O&M procedures, etc. This plan will thereafter be maintained on-site and updated as needed.

4.1.12. **Applicable Rules**
The permittee shall meet all applicable requirements, including those not specified above, as given under 45CSR2, 45CSR6, 45CSR7, 45CSR10, 40 CFR 60, Subparts Dc, AAa, and JJJJ, and 40 CFR 63, Subparts ZZZZ, YYYYY, and CCCCCC. Any final revisions made to the above rules will, where applicable, supercede those sections specifically cited in this permit.

4.1.13. **Stack Parameters**
The emission point stack parameters (Inner Diameter, Emission Point Elevation, and UTM Coordinates) shall be in accordance with the specifications as given on the Emission Points Data Sheet (Attachment J) in the most updated version of Permit Application R14-0039. If needed, and granted prior approval by the Director, the permittee may provide information to show that as-built variations in the stack parameters will not result in any substantive changes to the results of the air impacts analysis required under §45-14-9 and §45-14-10.

4.2. Monitoring, Compliance Demonstration, Recording and Reporting Requirements

4.2.1. **Maximum Design Capacity Compliance**
Compliance with the maximum design capacity limitations as given under Table 1.0 and Section 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) or processing line in question is limited by design to a throughput or production rate that does not exceed the specified value under Table 1.0 and Section 4.1.

4.2.2. **Maximum Design Heat Input Compliance**
Compliance with the various combustion unit MDHI limitations as given under Table 1.0 and Section 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) in question is limited by design to an MDHI that does not exceed the specified value under Table 1.0 and Section 4.1.

4.2.3. **Quantities Monitored/Recorded**
To determine continuous compliance with maximum production, throughputs, and other limits given in Section 4.1 of the permit, the permittee shall monitor and record the following:

Table 4.2.3: Facility Quantities Monitored/Recorded

Quantity Monitored/Recorded	Emission Unit(s)	Permit Citation	Units	Period
Steel Production	EAF/LMFs	4.1.2	Tons	Monthly, 12-Month Rolling Total
Scrap Steel DRI Carbon Alloys Lime Slag	Various	4.1.3(a)	Tons	Monthly, 12-Month Rolling Total
Storage Tank Throughputs				
Diesel	T1-T6	4.1.7(d)	Gallons	Monthly, 12-Month Rolling Total
Gasoline	T7			
Hydraulic Oil	T8-T9			
HCl	T10-T15			
Spent Pickle Liquor	T16-T23			
Used Oil	T24			
Fuel Usage(1)	ASP	4.2.5	mmscf	Monthly
Non-Emergency Hours of Operation	EMGEN1 - 6	4.1.9(a)	Hours	Monthly, 12-Month Rolling Total

(1) Pursuant to 45CSR§2A-7.1(a)(1).

4.2.4. **EAFs/LMFs CEMS (BHST-1, BHST-2)**
Within 60 days after achieving the maximum design steel production rate at which the facility will be operated, but not later than 180 days after initial startup, the permittee shall, to show continuous

compliance with the CO, NO_x, and SO_2 emission limits as given under Table 4.1.4(a), install and operate a Continuous Emissions Monitoring System (CEMS) for monitoring the emissions of CO, NO_x, and SO_2 from BHST-1 and BHST-2. The CEMS shall be installed, maintained and operated according to the manufacturers design, specifications, and recommendations, of which a protocol shall be developed by the permittee and approved by the Director prior to operation. The CEMS shall meet the applicable performance specifications required by 40 Part 60, Appendix B, the applicable quality assurance procedures required in 40 CFR Part 60, Appendix F, and the requirements of 40 CFR 60.13. In lieu of the requirements of 40 CFR Part 60, Appendix F, 5.1.1, 5.1.3, and 5.1.4, the permittee may conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) on the CEMS at least once every three (3) years. The permittee shall conduct Cylinder Gas Audits (CGA) each calendar quarter during which a RAA or a RATA is not performed. Data recorded by the CEMS shall be kept for a period not less than three (3) years and shall be made available to the Director or his/her representative upon request.

4.2.5. **45CSR2**
The Water Bath Vaporizer (ASP) is subject to the applicable record-keeping requirements under 45CSR2A, including the requirements as given below under (a).

a. The owner or operator of a fuel burning unit(s) shall maintain records of the operating schedule, and the quality and quantity of fuel burned in each fuel burning unit as specified in paragraphs 7.1.a.1 through 7.1.a.6, as applicable.
[45CSR§2A-7.1(a)]

(1) For fuel burning unit(s) which burn only pipeline quality natural gas, such records shall include, but not be limited to, the date and time of start-up and shutdown, and the quantity of fuel consumed on a monthly basis.
[45CSR§2A-7.1(a)(1)]

4.2.6. **40 CFR 60, Subpart AAa**
The EAFs shall comply with all applicable Monitoring, Compliance Demonstration, Recording and Reporting Requirements of 40 CFR 60, Subpart AAa including, but not limited to, the following requirements:

a. **§ 60.273a Emissions Monitoring.**

(1) Except as provided under paragraphs (b) and (c) of this section, a continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) shall be installed, calibrated, maintained, and operated by the owner or operator subject to the provisions of this subpart.
[40 CFR§60.273a(a)]

(2) No continuous monitoring system shall be required on any control device serving the dust-handling system.
[40 CFR§60.273a(b)]

(3) A continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) is not required on any modular, multi-stack, negative-pressure or positive-pressure fabric filter if observations of the opacity of the visible emissions from the control device are performed by a certified visible emission observer; or on any single-stack fabric filter if visible emissions from the control device are performed by a certified visible emission observer and the owner installs and continuously operates a bag leak detection system according to paragraph (e) of this section. Visible emission

observations shall be conducted at least once per day for at least three 6-minute periods when the furnace is operating in the melting and refining period. All visible emissions observations shall be conducted in accordance with Method 9. If visible emissions occur from more than one point, the opacity shall be recorded for any points where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of the visible emission, only one set of three 6-minute observations will be required. In that case, the Method 9 observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident. Records shall be maintained of any 6-minute average that is in excess of the emission limit specified in § 60.272a(a).
[40 CFR§60.273a(c)]

(4) A furnace static pressure monitoring device is not required on any EAF equipped with a DEC system if observations of shop opacity are performed by a certified visible emission observer as follows: Shop opacity observations shall be conducted at least once per day when the furnace is operating in the meltdown and refining period. Shop opacity shall be determined as the arithmetic average of 24 consecutive 15-second opacity observations of emissions from the shop taken in accordance with Method 9. Shop opacity shall be recorded for any point(s) where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of visible emissions, only one observation of shop opacity will be required. In this case, the shop opacity observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident.
[40 CFR§60.273a(d)]

(5) A bag leak detection system must be installed and continuously operated on all single-stack fabric filters if the owner or operator elects not to install and operate a continuous opacity monitoring system as provided for under paragraph (c) of this section. In addition, the owner or operator shall meet the visible emissions observation requirements in paragraph (c) of this section. The bag leak detection system must meet the specifications and requirements of [*40 CFR§60.273a(e)(1) through (8)*].
[40 CFR§60.273a(e)]

(6) For each bag leak detection system installed according to paragraph (e) of this section, the owner or operator shall initiate procedures to determine the cause of all alarms within 1 hour of an alarm. Except as provided for under paragraph (g) of this section, the cause of the alarm must be alleviated within 3 hours of the time the alarm occurred by taking whatever corrective action(s) are necessary. Corrective actions may include, but are not limited to [*the requirements given under 40 CFR§60.273a(f)(1) through (6)*].
[40 CFR§60.273a(f)]

(7) In approving the site-specific monitoring plan required in paragraph (e)(4) of this section, the Administrator or delegated authority may allow owners or operators more than 3 hours to alleviate specific conditions that cause an alarm if the owner or operator identifies the condition that could lead to an alarm in the monitoring plan, adequately explains why it is not feasible to alleviate the condition within 3 hours of the time the alarm occurred, and demonstrates that the requested additional time will ensure alleviation of the condition as expeditiously as practicable.
[40 CFR§60.273a(g)]

b. **§ 60.274a Monitoring of operations.**

(1) The owner or operator subject to the provisions of this subpart shall maintain records of the following information:
[40 CFR§60.274a(a)]

(A) All data obtained under paragraph (b) of this section; and
[40 CFR§60.274a(a)(1)]

(B) All monthly operational status inspections performed under paragraph © of this section.
[40 CFR§60.274a(a)(2)]

(2) Except as provided under paragraph (e) of this section, the owner or operator subject to the provisions of this subpart shall check and record on a once-per-shift basis the furnace static pressure (if DEC system is in use, and a furnace static pressure gauge is installed according to paragraph (f) of this section) and either: check and record the control system fan motor amperes and damper position on a once-per-shift basis; install, calibrate, and maintain a monitoring device that continuously records the volumetric fl ow rate through each separately ducted hood; or install, calibrate, and maintain a monitoring device that continuously records the volumetric fl ow rate at the control device inlet and check and record damper positions on a once-per-shift basis. The monitoring device(s) may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring device(s) shall have an accuracy of ±10 percent over its normal operating range and shall be calibrated according to the manufacturer's instructions. The Administrator may require the owner or operator to demonstrate the accuracy of the monitoring device(s)relative to Methods 1 and 2 of appendix A of this part.
[40 CFR§60.274a(b)]

(3) When the owner or operator of an affected facility is required to demonstrate compliance with the standards under §60.272a(a)(3) and at any other time that the Administrator may require (under section 114 of the CAA, as amended) either: the control system fan motor amperes and all damper positions, the volumetric flow rate through each separately ducted hood, or the volumetric flow rate at the control device inlet and all damper positions shall be determined during all periods in which a hood is operated for the purpose of capturing emissions from the affected facility subject to paragraph (b) of this section. The owner or operator may petition the Administrator for reestablishment of these parameters whenever the owner or operator can demonstrate to the Administrator's satisfaction that the affected facility operating conditions upon which the parameters were previously established are no longer applicable. The values of these parameters as determined during the most recent demonstration of compliance shall be maintained at the appropriate level for each applicable period. Operation at other than baseline values may be subject to the requirements of §60.276a(c).
[40 CFR§60.274a(c)]

4.2.7. **Cooling Tower**

For the purposes of demonstrating initial and continuing compliance with the operational limits set forth in Table 4.1.8(a), the permittee shall, for all cooling towers, within 180 days of startup, take an initial grab sample of the cooling tower circulating water and analyze such to determine the total solids content of the cooling tower circulating water. Thereafter, the permittee shall test for solids content on an annual basis (with no more than 14 months between tests).

4.2.8. **RICE Oxidation Catalysts**
If applicable, the permittee shall meet the following requirements for use of Oxidation Catalysts on the Emergency Engines:

a. The permittee shall regularly inspect, properly maintain and/or replace catalytic reduction devices to ensure functional and effective operation of each engine's physical and operational design. The permittee shall ensure proper operation, maintenance and performance of catalytic reduction devices by:

(1) Maintaining proper operation of the automatic air/fuel ratio controller or automatic feedback controller; and

(2) Following the catalyst manufacturer emissions related operating and maintenance recommendations, or develop, implement, or follow a site-specific maintenance plan.

b. To demonstrate compliance with section 4.2.8, the permittee shall maintain records of the maintenance performed on each RICE and/or generator and shall maintain a copy of the site specific maintenance plan or manufacturer maintenance plan.

4.2.9. **Baghouse/Fabric Filter Compliance Demonstrations**
Unless specifically requested by the Secretary under 4.3.1. or listed in Table 4.3.2., compliance with all baghouse and fabric filter mass emission limits that have BACT outlet grain loading limits shall be based on vendor information or vendor guarantees that show the maximum outlet grain loading emissions from the baghouse/fabric filter is in compliance with the specific limit.

4.2.10. **Flares**
The permittee shall meet the following Monitoring, Compliance Demonstration, Recording and Reporting Requirements for the VTG Flare 1 and VTG Flare 2:

a. To demonstrate compliance with 4.1.10(e)(2), the permittee shall maintain records of all substantive actions undertaken in compliance with the manufacturer's specifications for operation and maintenance to maintain the minimum control efficiency;

b. To demonstrate compliance with the pilot flame requirements of 4.1.10(e)(3), the presence of a pilot flame shall be continuously monitored using a thermocouple or any other equivalent device to detect the presence of a flame when emissions are vented to it. The pilot shall be equipped such that it sounds an alarm, or initiates notification via remote alarm to the control room, when the pilot light is out;

c. For any absence of pilot flame, or other indication of smoking or improper equipment operation, the permittee must ensure the equipment is returned to proper operation as soon as practicable after the event occurs. At a minimum, the permittee must: (1) Check the air vent for obstruction. If an obstruction is observed, you must clear the obstruction as soon as practicable. (2) Check for liquid reaching the flare;

d. The permittee shall maintain records of the times and duration of all periods when the pilot flame was not present and vapors were vented to the device. The permittee shall maintain records of any inspections made pursuant to 4.2.10; and

e. Any time the flare is not operating when emissions are vented to it, shall be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days of the discovery.

4.2.11. **Control Device Monitoring**
The permittee shall install, maintain, and operate instrumentation to continuously monitor and record the control device parameters as required under 4.1.10 of this permit including, at a minimum, the following:

Table 4.2.11: Control Device Parameters Monitored/Recorded(1)

Control Device Description	Control Device ID	Parameter(s)
EAF Baghouses	EAF1-BH EAF2-BH	Pressure Drop
Rolling Mill Baghouse	RM-BH	Pressure Drop
Pickling Line Scrubber	PKL1-SCR	Liquid Flow Rate
Tandem Cold Mill Mist Eliminator	TCM-ME	Pressure Drop

(1) Does not include any monitoring as required by 40 CFR 60, Subpart AAa or 40 CFR 63, Subpart YYYYY.

4.2.12. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

a. The opacity limitations and the associated compliance determinations are given in the following table for sources of particulate matter:

Table 4.2.12(a): Visible Emissions Compliance Demonstrations

Emission Point(s)	Opacity Limit (%)(1)	Rule Citation	Compliance Demonstration
Melt Shop			
BHST-1/2	3%	40 CFR§60.272a(a)(2)	Section 4.2.12(b)
MSFUG CASTFUG	6%	40 CFR§60.272a(a)(3) 40 CFR§63.10686(b)(2)	
EAFVF1/2	10%	40 CFR§60.272a(b)	
45CSR2 Applicable Emission Points			
ASP-1	10%	40CSR§2-3.1	Section 4.2.12(c)(2)(i)
Flares (45CSR6 Applicability)			
VTDST1/2	20%(2)	45CSR§6-4.3 and 4.4	Section 4.2.12(c)(2)(ii)
45CSR7 Applicable Emission Points (Non-Material Handling)			
RM-BH TCMST	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iii)

Emission Point(s)	Opacity Limit (%)(1)	Rule Citation	Compliance Demonstration
PLST-1 PKLSB STM-BH SPMST1/2 CGL1-ST1/2 CGL2-ST1/2 SLAG-CUT-BH	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
45CSR7 Applicable Emission Points (Material Handling Stack/Vent)			
LCB-ST DRI-DOCK-ST DRIVF1/2/3/4 DRIBF1/2/3/4 DRI-DB1-BH DRI-DB2-BH DRI-CONV-BH LIME-DUMP-ST CARBON-DUMP-ST ALLOY-HANDLE-ST	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
45CSR7 Applicable Emission Points (Material Handling Non-Stack/Vent)			
DRI-DOCK-FUG BULK-DRI-1/2 DRI-EMG-1/2 SCRAP-DOCK-FUG SCRAP-RAIL-FUG SCRAP-BULK1 - 39 SLGSKP1 -3 SCRPSKP1 -4 LIME-DUMP-FUG CARBON-DUMP-FUG ALLOY-HANDLE-FUG Haulroads	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
Cooling Towers			
CT1 - 8	20%(3)	45CSR§7-3.1 and 3.2	Not Required(4)
Other Natural Gas Combustion			
TFST-1/2 GALVFN1-ST GALVFN2-ST GALVFUG SLAG-CUT-NG EMGEN1 - 6	None(5)	n/a	n/a

(1) Where multiple opacity limits apply, the more restrictive is listed.
(2) Shall not apply to smoke which is less than forty (40%) percent opacity, for a period or periods aggregating no more than eight (8) minutes per start-up.
(3) Shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.

(4) Due to the nature of the particulate matter emissions from the Cooling Towers (entrained in droplets), a compliance demonstration for the Cooling Towers is not practical.
(5) Natural gas combustion does not meet the definition of a "source operation" pursuant to 45CSR§7-2.38.

b. **40 CFR 60, Subpart AAa/40 CFR 63, Subpart YYYYY**
For Emission Points BHST-1/2, MSFUG, and CASTFUG, the permittee shall show compliance with the opacity requirements of 40 CFR 60, Subpart AAa, §60.272a(a) and 40 CFR 63, Subpart YYYYY, §63.10686, pursuant to the applicable requirements of Subpart AAa and Subpart YYYYY, respectively. Compliance with the opacity requirements of Subpart AAa shall show compliance with the opacity requirements of 45CSR7;

c. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

(1) The visible emission check shall determine the presence or absence of visible emissions. The observations shall be conducted according to Section 11 of EPA Method 22. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 which may include online web-based training as supplied by a Method 9 training company; and

(2) Specific emission points shall meet the following visible emissions monitoring requirements:

(i) **45CSR2**
Upon request by the Secretary, compliance with the visible emission requirements of Sections 3.1 and 3.2 of 45CSR2 as applicable to Emission Point ASP-1 shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 or by using measurements from continuous opacity monitoring systems approved by the Secretary. The Secretary may require the installation, calibration, maintenance and operation of continuous opacity monitoring systems and may establish policies for the evaluation of continuous opacity monitoring results and the determination of compliance with the visible emission requirements of 3.1 of 45CSR2;

(ii) **45CSR6**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to Emission Points VTDST1/2 shall be in accordance with the following: Visible emission checks shall be conducted at least once every seven (7) calendar days and these checks shall be performed for a sufficient time interval, but no less than a 6-minute interval, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions. If one year of weekly Method 22 readings show that there are no visible emissions, then the frequency of observations can be reduced to quarterly. If, during quarterly checks, visible emissions are observed, then the frequency of observations shall be returned to weekly;

(iii) **45CSR7**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to Emission Points RM-BH and TCMST shall be in accordance with the

following: Visible emission checks shall be conducted at least once per seven (7) calendar days. These checks shall be performed for a sufficient time interval, but no less than three (3) 6-minute intervals, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions; and

(iv) **45CSR7**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to all other emission points, excluding those identified under 4.2.9(c)(2)(iii), subject to 45CSR7 as shown under Table 4.2.9 above shall be in accordance with the following: Visible emission checks shall be conducted at least quarterly. These checks shall be performed for a sufficient time interval, but no less than a 6-minute interval, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions.

(3) If visible emissions are present at a source(s), the permittee shall perform Method 9 readings to confirm that visible emissions are within the applicable limits of this permit. Said Method 9 readings shall be taken as soon as practicable, but within twenty-four (24) hours of the Method 22 emission check.

e. For the purpose of demonstrating compliance with the visible emissions and opacity requirements, the permittee shall maintain records of the visible emission opacity tests and checks. The permittee shall maintain records of all monitoring data required by 4.2.12 documenting the date and time of each visible emission check, the emission point or equipment/ source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6-10 mph NE wind) during the visual emission check(s). Should a visible emission observation be required to be performed per the requirements specified in Method 9, the data records of each observation shall be maintained per the requirements of Method 9. For an emission unit out of service during the evaluation, the record of observation may note "out of service" (O/S) or equivalent; and

f. Any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40 CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

4.2.13. **Emission Point Map**
The permittee shall prepare and maintain an emission point map of the facility. This map shall consist of a diagram of the location and identification of all emission points at the facility that vent to ambient air. A legend shall be prepared with the map that identifies the emission point type and source(s) contributing to that emission point. This map shall be prepared within 180 days of startup and thereafter be updated as necessary to reflect current facility operations. The map(s) shall be retained on-site and be made available to the Director or his/her duly authorized representative upon request.

4.2.14. **Vendor Guarantees**
The permittee shall, at the time of initial startup, maintain on-site and have readily available to be made available to the Director or his/her representative upon request, a copy of the all current vendor guarantees relevant to the air emissions associated with the facility. This includes information relating to the performance of both emission units and control devices.

4.3. Performance Testing Requirements

4.3.1. **General Performance Testing**
At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of this permit, the permittee shall conduct or have conducted test(s) to determine compliance with the emission limitations established in this permit and/or applicable regulations.

4.3.2. **Specific Emissions Point Performance Testing**
Within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit, the permittee shall conduct, or have conducted, in accordance with a protocol submitted pursuant to 3.3.1(c), performance tests on the emission units (as emitted from the listed emission points) to show compliance with the specified pollutants as given in the following table:

Table 4.3.2.: Performance Testing Requirements

<table>
<tr><th>Emission Unit(s)</th><th>Emission Point(s)</th><th>Pollutants</th><th>Limit(1)</th></tr>
<tr><td>EAF1/LMF1/CAST1</td><td>BHST-1(2)</td><td rowspan="2">All Pollutants under Table 4.1.4(a) with the exception of Total HAPs, and CO_2e.</td><td rowspan="2">PPH
gr/dcsf (PM)</td></tr>
<tr><td>EAF2/LMF2/CAST2</td><td>BHST-2(2)</td></tr>
<tr><td>TF1</td><td>TFST-1</td><td rowspan="3">CO and NO_x</td><td rowspan="3">PPH</td></tr>
<tr><td>GALVFN1
GALVFN2(3)</td><td>GALVFN1-ST
GALVFN2-ST</td></tr>
<tr><td>ASP</td><td>ASP-1</td></tr>
<tr><td>RM</td><td>RM-BH</td><td rowspan="2">$PM_{2.5}$, PM_{10}, PM(4)</td><td rowspan="2">PPH(4)
gr/dscf</td></tr>
<tr><td>SPM1
SPM2(3)</td><td>SPMST1
SPMST2</td></tr>
</table>

(1) Where applicable, test results will also be used to show compliance with lb/ton, lb/mmBtu, or other BACT performance limits.
(2) Initial and periodic performance testing on PM emitted from BHST-1 and BHST-2 shall be in accordance with the procedures outlined under §60.18 and §60.275a.
(3) Permittee may choose one of the identical listed units to test.
(4) Filterable Only.

4.3.3 With respect to the performance testing required above under Section 4.3.2, the permittee shall, after the initial performance test, periodically conduct additional performance testing on the specified sources according to the following schedule:

Table 4.3.3.: Performance Testing Schedule

Test	Test Results	Retesting Frequency
Initial Baseline	<50% of weight emission standard	Once/3 years
Initial Baseline	between 50% and 80 % of weight emission standard	Once/2 years
Initial Baseline	>80% of weight emission standard	Annual
Annual	after three successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Annual	after two successive tests indicate mass emission rates <80 % of weight emission standard	Once/2 years
Annual	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/2 years	After two successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Once/2 years	any tests indicates a mass emission rate <80 % of weight emission standard	Once/2 years
Once/2 years	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/3 years	any tests indicates a mass emission rate <50% of weight emission standard	Once/3 years
Once/3 years	any test indicates mass emission rates between 50% and 80 % of weight emission standard	Once/2 years
Once/3 years	any test indicates a mass emission rate >80% of weight emission standard	Annual

4.3.4. Performance testing for pollutants monitored by CEMS (CO, NO_x, and SO_2, as emitted from the Emission Point BHST-1 and BHST-2) are not subject to the performance testing schedule given under Table 4.3.3 and any performance testing shall, unless at such other reasonable time(s) as the Secretary may designate, be conducted on a schedule consistent with the required RATA testing.

4.3.5. The permittee shall use the test methods specified in Table 4.3.5. unless granted approval in writing by the Director to use an alternative test method in a protocol submitted pursuant to 3.3.1(c).

Table 4.3.5: Performance Test Methods

Pollutant	Test Method[(1)]
CO	Method 10
NO_x	Method 7E
$PM_{2.5}$ (filterable only)	Method 201A
PM_{10}/PM (filterable only)	Method 5
$PM_{2.5}$/PM_{10} (condensable)	Method 202
SO_2	Method 6C

Pollutant	Test Method(1)
VOCs	Method 18/25A
Lead	Method 12
HCl	Method 26A
Fluoride	Method 13

(1) All test methods refer to those given under 40 CFR 60, Appendix A

4.3.6. **40 CFR 60, Subpart AAa**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 60, Subpart AAa, Section §60.275a.

4.3.7. **40 CFR 63, Subpart YYYYY**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 63, Subpart YYYYY, Section §63.10686(d).

4.3.8. **40 CFR 60, Subpart JJJJ**
The permittee shall meet all applicable Performance Testing requirements for the emergency engines as given under 40 CFR 60, Subpart JJJJ, Section §60.4244.

4.4. Recordkeeping Requirements

4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit and time of sampling or measurements;

b. The date(s) analyses were performed;

c. The company or entity that performed the analyses;

d. The analytical techniques or methods used;

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

4.5. Additional Reporting Requirements

4.5.1. The permittee shall submit the following information to the DAQ according to the specified schedules:

a. The permittee shall submit reports of all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports; and

b. The permittee shall submit to the Director on or before March 15, a certification of compliance with all requirements of this permit for the previous calendar year ending on December 31. If, during the previous annual period, the permittee had been out of compliance with any part of this permit, it shall be noted along with the following information: 1) the source/equipment/process

that was non-compliant and the specific requirement of this permit that was not met, 2) the date the permitted discovered that the source/ equipment/process was out of compliance, 3) the date the Director was notified, 4) the corrective measures to get the source/equipment/process back into compliance, and 5) the date the source began to operate in compliance. The submission of any non-compliance report shall give no enforcement action immunity to episodes of non-compliance contained therein.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached ____, representing the period beginning ______________________________ and ending ______________________________, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] ____ ____________________________
(please use blue ink) Responsible Official or Authorized Representative Date

Name and Title ____ _______________________________
(please print or type) Name Title

Telephone No. __________________________________ Fax No. ____________________________________

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[1] This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The 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 a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

   (I) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

   (ii) the delegation of authority to such representative is approved in advance by the Director;

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of USEPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.

Appendix A: Table A-1

Nucor Steel West Virginia LLC: WV Steel Plant

R14-0039: 053-00085

Table A-1 : Material Handling Stack/Vent Emission Limits

Emission Point ID	Description	Flow Rate(1)	Filter Outlet (gr/dscf)(2)		Hourly Emissions (lb/hr)(3)		Annual Emissions (ton/yr)	
		dscf/min	$PM_{2.5}$	PM/PM_{10}	$PM_{2.5}$	PM/PM_{10}	$PM_{2.5}$	PM/PM_{10}
LCB-ST	Lime, Carbon, and Briquetter Silos	38,000	0.0050	0.0050	1.63	1.63	7.13	7.13
DRI-DOCK-ST	DRI Unloading Dock (two units)	4,000	0.0005	0.0010	0.017	0.034	0.074	0.150
DRIVF1	DRI Storage Silo 1 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV1	DRI Storage Silo 1 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRIVF2	DRI Storage Silo 2 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV2	DRI Storage Silo 2 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRIVF3	DRI Storage Silo 3 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV3	DRI Storage Silo 3 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRIVF4	DRI Storage Silo 4 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV4	DRI Storage Silo 4 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRI-DB1-BH	DRI Day Bin #1	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRI-DB2-BH	DRI Day Bin #2	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRI-CONV-BH	DRI Transfer Conveyors	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
SLAG-CUT-BH	Slag Cutting	100,000	0.0010	0.0010	0.857	0.857	3.754	3.754
EAFVF1	EAF Baghouse 1 Dust Silo	1,000	0.0100	0.0100	0.086	0.086	0.375	0.375
EAFVF2	EAF Baghouse 2 Dust Silo	1,000	0.0100	0.0100	0.086	0.086	0.375	0.375
LIME-DUMP-ST	Lime Dump Station	2,000	0.0050	0.0050	0.086	0.086	0.375	0.375
CARBON-DUMP-ST	Carbon Dump Station	2,000	0.0050	0.0050	0.086	0.086	0.375	0.375
ALLOY-HANDLE-ST	Alloy Handling System	3,800	0.0050	0.0050	0.163	0.163	0.713	0.713

(1) Air flow rates represent the modeled mechanical flow rate through the listed particulate matter control device during steady-state operation.

(2) gr/dscf = grains/dry standard cubic feet. For these emission points, baghouse/fabric filter is the BACT technology and the outlet loading is $PM_{2.5}/PM_{10}$/PM(filterable) BACT limit for the specified emission points.

(3) Hourly emission limits are based on a 24-hour average.

Appendix A: Table A-2
Nucor Steel West Virginia LLC: WV Steel Plant
R14-0039: 053-00085

Table A-2 : Material Handling Non-Stack/Vent Emission Limits

Emission Point ID	Description	Material	Control Technology(1)(2)(3)	Hourly Emissions (lb/hr)(3)			Annual Emissions (ton/yr)		
				$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
DRI-DOCK-FUG	DRI Unloading Dock - Fugitives	DRI	Good Housekeeping Practices Enclosure	1.40E-02	9.26E-02	1.96E-01	7.82E-03	5.16E-02	1.09E-01
BULK-DRI-1	DRI Silo #1 Loadout	DRI	Good Housekeeping Practices Enclosure	1.79E-03	1.18E-02	2.49E-02	7.82E-03	5.16E-02	1.09E-01
BULK-DRI-2	DRI Silo #2 Loadout	DRI	Good Housekeeping Practices Enclosure	1.79E-03	1.18E-02	2.49E-02	7.82E-03	5.16E-02	1.09E-01
DRI-EMG-1	DRI Conveyor #1 Emergency Chute	DRI	Good Housekeeping Practices	1.40E-02	9.26E-02	1.96E-01	2.80E-05	1.85E-04	3.92E-04
DRI-EMG-2	DRI Silos Emergency Chute	DRI	Good Housekeeping Practices	8.98E-02	5.93E-01	1.25E+00	8.08E-04	5.33E-03	1.13E-02
LIME-DUMP-FUG	Lime Dump Station Fugitives	Lime		0.003	0.017	0.050	0.012	0.076	0.219
CARBON-DUMP-FUG	Carbon Dump Station Fugitives	Carbon	Good Housekeeping Practices Enclosure	0.001	0.009	0.025	0.006	0.038	0.109
ALLOY-HANDLE-FUG	Alloy Handling System Fugitives	Alloy		0.007	0.044	0.125	0.010	0.067	0.194
SCRAP-DOCK-FUG	Barge Scrap Unloading	Scrap	Good Housekeeping Practices	0.026	0.090	0.180	0.031	0.108	0.217
SCRAP-RAIL-FUG	Rail Scrap Unloading	Scrap	Good Housekeeping Practices	0.009	0.030	0.060	0.004	0.014	0.029
SCRAP-BULK34	Barge Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.039	0.259	0.548	0.047	0.312	0.659
SCRAP-BULK35	Barge Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.018	0.119	0.251	0.047	0.312	0.659
SCRAP-BULK36	Rail Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.008	0.052	0.110	0.006	0.042	0.088
SCRAP-BULK37	Rail Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.018	0.119	0.251	0.006	0.042	0.088
SCRAP-BULK38	Truck Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.013	0.086	0.183	0.009	0.062	0.132
SCRAP-BULK39	Truck Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.018	0.119	0.251	0.009	0.062	0.132
SCRAP-BULK40	Scrap Charging	Scrap	Good Housekeeping Practices	0.014	0.095	0.201	0.063	0.416	0.879
SCRAP-BULK1	Dig Slag Inside Pot Barn	Slag		0.029	0.078	0.160	0.053	0.141	0.289
SCRAP-BULK2	Loader Transport & Dump Slag Into Trench	Slag		0.029	0.078	0.160	0.053	0.141	0.289
SCRAP-BULK3	Loader Transport & Dump Slag Into F1 Feed Hopper/Grizzly	Slag		0.012	0.031	0.064	0.021	0.056	0.116
SCRAP-BULK4	TP: F1 Feed Hopper/Grizzly to P1 Oversize Pile	Slag		0.026	0.026	0.075	0.047	0.047	0.135
SCRAP-BULK5	TP: F1 Feed Hopper/Grizzly to C7 Crusher Conveyer	Slag		0.001	0.001	0.001	0.001	0.001	0.003
SCRAP-BULK6	TP: F1 Feed Hopper/Grizzly to C1A Main Conveyer	Slag		0.008	0.008	0.022	0.014	0.014	0.040
SCRAP-BULK7	TP: C7 to CR1 Crusher	Slag	Good Housekeeping Practices	0.002	0.002	0.006	0.004	0.004	0.011
SCRAP-BULK8	TP: CR1 Crusher to C8 Conveyer	Slag		0.012	0.012	0.026	0.021	0.021	0.047
SCRAP-BULK9	TP: CR1 Crusher to P2 Off-spec Storage	Slag	Enclosure	0.010	0.010	0.022	0.018	0.018	0.040
SCRAP-BULK10	TP: C8 Conveyer to C9 Conveyer	Slag		0.000	0.000	0.000	0.000	0.000	0.001
SCRAP-BULK11	TP: C9 Conveyer to C1A Conveyer	Slag	Wet Suppression	0.001	0.001	0.002	0.002	0.002	0.004
SCRAP-BULK12	TP: C1A Conveyer to B1 Surge Bin	Slag		0.001	0.001	0.002	0.002	0.002	0.004
SCRAP-BULK13	TP: B1 Surge Bin to C1 Conveyer	Slag		0.003	0.003	0.008	0.006	0.006	0.015
SCRAP-BULK14	TP: C1 Conveyor through M1 Mag Splitter to S1 Slag Screen	Slag		0.003	0.003	0.008	0.006	0.006	0.015
SCRAP-BULK15	TP: C1 Conveyor through M1 Mag Splitter to S2 Scrap Screen	Slag		0.003	0.003	0.008	0.005	0.005	0.015
SCRAP-BULK16	TP: S2 Scrap Screen to C6 Conveyor	Slag		0.0017	0.0017	0.0050	0.0031	0.0031	0.0090
SCRAP-BULK17	TP: S2 Scrap Screen to P3 Off-spec Storage	Slag		0.0015	0.0015	0.0043	0.0027	0.0027	0.0077
SCRAP-BULK18	TP: C6 Conveyor to P4 Off-spec Storage	Slag		0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
SCRAP-BULK19	TP: S1 Slag Screen to C2 Conveyer	Slag		0.0015	0.0015	0.0043	0.0027	0.0027	0.0077
SCRAP-BULK20	TP: C2 Conveyer to C5 Conveyer	Slag		0.0012	0.0012	0.0032	0.0021	0.0021	0.0058
SCRAP-BULK21	TP: C5 Conveyer to SLGSKP1	Slag		0.0012	0.0012	0.0032	0.0021	0.0021	0.0058

Table A-2 : Material Handling Non-Stack/Vent Emission Limits (Continued)

Emission Point ID	Description	Material	Control Technology	Hourly Emissions (lb/hr)[3]			Annual Emissions (ton/yr)		
				$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
SCRAP-BULK22	TP: S1 Slag Screen to C4 Conveyer	Slag	Good Housekeeping Practices Enclosure Wet Suppression	0.0192	0.0192	0.0553	0.0346	0.0346	0.0995
SCRAP-BULK23	TP: C4 Conveyer to SLGSKP3	Slag		0.0009	0.0009	0.0024	0.0016	0.0016	0.0044
SCRAP-BULK24	TP: S1 Slag Screen to C3 Conveyer	Slag		0.0144	0.0144	0.0414	0.0260	0.0260	0.0746
SCRAP-BULK25	TP: C3 Conveyer to SLGSKP2	Slag		0.0006	0.0006	0.0016	0.0011	0.0011	0.0029
SCRAP-BULK26	TP: S1 Slag Screen to SLGSKP4	Slag		0.0096	0.0096	0.0276	0.0173	0.0173	0.0497
SCRAP-BULK27	Loader transports & loads products into trucks to product stockpiles	Slag		0.0011	0.0028	0.0058	0.0019	0.0051	0.0104
SCRAP-BULK28	Truck Dumps Products into Product Stockpiles	Slag		0.0117	0.0314	0.0642	0.0210	0.0564	0.1155
SCRAP-BULK29	Loader Into trucks, Oversize to Drop Ball Crusher	Slag		0.0117	0.0314	0.0642	0.0210	0.0564	0.1155
SCRAP-BULK30	Truck Dumps Oversize into Drop Ball Area	Slag		0.0002	0.0006	0.0013	0.0004	0.0011	0.0023
SCRAP-BULK31	Truck Transports Ladle Lip/Meltshop Cleanup Materials & Dumps at Drop Ball Site	Slag		0.0008	0.0020	0.0042	0.0014	0.0037	0.0075
SCRAP-BULK32	Truck Transports & Dumps Tundish at Lancing Station	Slag		0.0004	0.0011	0.0022	0.0007	0.0020	0.0040
SCRAP-BULK33	Ball Drop Crusher	Slag		0.0012	0.0012	0.0028	0.0022	0.0022	0.0050
SLGSKP1	Slag Stockpile 1	Slag	Water Sprays/Wet Suppression	0.01	0.06	0.12	0.04	0.26	0.54
SLGSKP2	Slag Stockpile 2	Slag		0.01	0.06	0.12	0.04	0.26	0.54
SLGSKP3	Slag Stockpile 3	Slag		0.01	0.06	0.12	0.04	0.26	0.54
SLGSKP4	Slag Stockpile 4	Slag		0.01	0.06	0.12	0.04	0.26	0.54
SCRPSKP1	Scrap Metal Stockpile 1	Scrap		0.02	0.15	0.31	0.10	0.64	1.36
SCRPSKP2	Scrap Metal Stockpile 2	Scrap		0.02	0.15	0.31	0.10	0.64	1.36
SCRPSKP3	Scrap Metal Stockpile 3	Scrap		0.02	0.15	0.31	0.10	0.64	1.36

(1) For the purposes of this permit, "Good Housekeeping Practices" are defined as maintaining all enclosures free of holes and cleaning spilled particulate matter from exposed areas where fugitive entrainment may easily occur.

(2) For the purposes of this permit, "Wet Supression" is defined as maintaining the misoture content of the material at a level that mitigates fugitive entrainment of particulate matter from the surface of the material.

(3) The enclsoures shall be as described in the Bulk Materials Transfer/Process Inputs and Assumptions Table in the permit application.

(4) Hourly emission limits are based on a 24-hour average and are the BACT limits for the listed emission sources.

Table A-3: Natural Gas Combustion Emission Limits

Emission Point ID	Emission Unit ID	Description	MDHI	CO		NO_x		$PM_{2.5}/PM_{10}$ (1)		PM (2)		SO_2		VOCs		CO_2e		Total HAPs	
			mmBtu/hr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
MSFUG	LD	Ladle Dryer	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR1	Horizontal Ladle Preheater 1	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR2	Horizontal Ladle Preheater 2	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR3	Horizontal Ladle Preheater 3	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR4	Horizontal Ladle Preheater 4	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR5	Horizontal Ladle Preheater 5	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR6	Vertical Ladle Preheater 6	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR7	Vertical Ladle Preheater 7	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	TD	Tundish Dryer 1	6.00	0.49	2.16	0.59	2.58	0.04	0.20	0.011	0.049	0.004	0.015	0.03	0.14	703	3,077	0.011	0.048
MSFUG	TPHTR1	Tundish Preheater 1	9.00	0.74	3.25	0.88	3.86	0.07	0.29	0.017	0.073	0.005	0.023	0.05	0.21	1,054	4,616	0.017	0.073
MSFUG	TPHTR2	Tundish Preheater 2	9.00	0.74	3.25	0.88	3.86	0.07	0.29	0.017	0.073	0.005	0.023	0.05	0.21	1,054	4,616	0.017	0.073
MSFUG	SENPHTR1	Subentry Nozzle (SEN) Preheater 1	1.00	0.08	0.36	0.10	0.43	0.007	0.033	0.002	0.008	0.001	0.003	0.01	0.02	117	513	0.002	0.008
MSFUG	SENPHTR2	Subentry Nozzle (SEN) Preheater 2	1.00	0.08	0.36	0.10	0.43	0.007	0.033	0.002	0.008	0.001	0.003	0.01	0.02	117	513	0.002	0.008
GALVFN1-ST	GALVFN1	Galvanizing Furnace #1	64.00	5.27	23.09	3.20	14.02	0.48	2.09	0.119	0.522	0.038	0.165	0.35	1.51	7,494	32,825	0.118	0.517
GALVFN2-ST	GALVFN2	Galvanizing Furnace #2	64.00	5.27	23.09	3.20	14.02	0.48	2.09	0.119	0.522	0.038	0.165	0.35	1.51	7,494	32,825	0.118	0.517
GALVFUG	BOXANN1	Box Annealing Furnace #1	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN2	Box Annealing Furnace #2	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN3	Box Annealing Furnace #3	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN4	Box Annealing Furnace #4	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN5	Box Annealing Furnace #5	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN6	Box Annealing Furnace #6	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN7	Box Annealing Furnace #7	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN8	Box Annealing Furnace #8	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN9	Box Annealing Furnace #9	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN10	Box Annealing Furnace #10	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN11	Box Annealing Furnace #11	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN12	Box Annealing Furnace #12	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN13	Box Annealing Furnace #13	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN14	Box Annealing Furnace #14	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN15	Box Annealing Furnace #15	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN16	Box Annealing Furnace #16	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN17	Box Annealing Furnace #17	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN18	Box Annealing Furnace #18	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN19	Box Annealing Furnace #19	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN20	Box Annealing Furnace #20	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN21	Box Annealing Furnace #21	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN22	Box Annealing Furnace #22	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
TFST-1	TF1	Hot Mill Tunnel Furnace 1	150.00	12.35	54.11	10.50	45.99	1.12	4.90	0.279	1.224	0.088	0.386	0.81	3.54	17,565	76,933	0.277	1.212
SLAG-CUT-NG	SLAG-CUT	Slag Cutting	2.40	0.20	0.87	0.24	1.03	0.02	0.08	0.004	0.020	0.001	0.006	0.01	0.06	281	1,231	0.004	0.019
ASP-1	ASP	Water Bath Vaporizer	11.00	0.91	3.97	1.08	4.72	0.08	0.36	0.020	0.090	0.006	0.028	0.06	0.26	1,288	5,642	0.020	0.089

(1) Inlcudes Condensables
(2) Filterable Only.

Appendix A: Table A-4

Nucor Steel West Virginia LLC: WV Steel Plant

R14-0039: 053-00085

Table A-1 : Hot Mill and Cold Mill Stack/Vent Emission Limits

Emission Point ID	Description	Control Device	Flow Rate[(1)]	Filter/Scrubber Outlet (gr/dscf)[(2)]			Hourly Emissions (lb/hr)[(3)]			Annual Emissions (ton/yr)		
			dscf/min	$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
RM-BH	Rolling Mill	Baghouse	117,716	0.0100	0.0100	0.0050	5.04	10.09	10.09	22.10	44.19	44.19
PLST-1	Pickling Line 1	Scrubber	7,185	0.0100	0.0100	0.0100	0.62	0.62	0.62	2.70	2.70	2.70
PKLSB	Pickle Line Scale Breaker	Baghouse	52,972	0.0030	0.0030	0.0030	1.36	1.36	1.36	5.97	5.97	5.97
TCMST	Tandem Cold Mill	Mist Eliminator	202,162	0.0066	0.0066	0.0100	11.44	11.44	17.33	50.09	50.09	75.90
STM-BH	Standalone Temper Mill	Mist Eliminator	45,000	0.0013	0.0024	0.0025	0.50	0.93	0.96	2.20	4.05	4.22
SPMST1	Skin Pass Mill #1	Baghouse	24,587	0.0050	0.0100	0.0100	1.05	2.11	2.11	4.62	9.23	9.23
SPMST2	Skin Pass Mill #2	Baghouse	24,587	0.0050	0.0100	0.0100	1.05	2.11	2.11	4.62	9.23	9.23
CGL1-ST1	CGL1 - Cleaning Section	Scrubber	6,123	0.0030	0.0030	0.0030	0.16	0.16	0.16	0.69	0.69	0.69
CGL1-ST2	CGL1 - Passivation Section	Scrubber	9,350	0.0030	0.0030	0.0030	0.24	0.24	0.24	1.05	1.05	1.05
CGL2-ST1	CGL2 - Cleaning Section	Scrubber	6,123	0.0030	0.0030	0.0030	0.16	0.16	0.16	0.69	0.69	0.69
CGL2-ST2	CGL2 - Passivation Section	Scrubber	9,350	0.0030	0.0030	0.0030	0.24	0.24	0.24	1.05	1.05	1.05

(1) Air flow rates represent the modeled mechanical flow rate through the listed particulate matter control device during steady-state operation.

(2) gr/dscf = grains/dry standard cubic feet. For these emission points, the listed control device is the BACT technology and the outlet loading is PM2.5/PM10/PM(filterable) BACT limit for the specified emission points.

(3) Hourly emission limits are based on a 24-hour average.

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone 304/926-0475

Harold D. Ward, Cabinet Secretary
dep.wv.gov

Pursuant to §45-14-17.2, the Division of Air Quality presents the

PRELIMINARY DETERMINATION/FACT SHEET

for the

CONSTRUCTION

of

Nucor Steel West Virginia LLC
West Virginia Steel Mill

proposed to be located near

Apple Grove, Mason County, WV.

Permit Number: R14-0039
Facility Identification Number: 053-00085

Date: March 29, 2022

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BACKGROUND INFORMATION

Application No.:	R14-0039
Plant ID No.:	053-00085
Applicant:	Nucor Steel West Virginia LLC
Facility Name:	West Virginia Steel Mill
Location:	Near Apple Grove, Mason County
SIC/NAICS Code:	3312/331110
Application Type:	Major Source Construction
Received Date:	January 21, 2022
Engineer Assigned:	Joseph R. Kessler, PE
Fee Amount:	$14,500
Date Received:	January 24, 2022
Complete Date:	March 23, 2022
Due Date:	September 19, 2022
Applicant Ad Dates:	January 27, 2022
Newspaper:	*Point Pleasant Register*
UTM's:	Easting: 398.20 km • Northing: 4,278.87 km • Zone: 17
Latitude/Longitude:	38.65536/-82.16853
Description:	Construction of a 3,000,000 tons per year sheet steel mill.

On January 21, 2022, Nucor Steel West Virginia LLC (Nucor), a subsidiary of Nucor Corporation, submitted a permit application to construct a new sheet steel mill near Apple Grove, Mason County, WV. The proposed facility is, pursuant to 45CSR14, Section 2.43, defined as a "major stationary source" and is, therefore, required to undergo Prevention of Significant Deterioration (PSD) review according to the requirements of 45CSR14. Based on DAQ procedure, the permit application will also be concurrently reviewed under the WV minor source program administered under 45CSR13.

The following document will outline the DAQ's preliminary determination that the construction of Nucor's West Virginia Steel Mill will meet the emission limitations and conditions set forth in the DRAFT permit and will comply with all currently applicable state and federal air quality rules and standards.

PUBLIC REVIEW PROCEDURES

The public review procedures for a new major construction application dual-reviewed under 45CSR13 and 45CSR14 require action items at the time of application submission and at the time a preliminary determination/draft permit is prepared by the DAQ. The following details compliance with the applicable rules and accepted procedures for public notification with respect to Permit Application R14-0039.

Actions Taken at Application Submission

Pursuant to §45-13-8.3 and §45-14-17.1, Nucor placed a Class I legal advertisement in the following newspaper on the specified date notifying the public of the submission of a permit application:

- *Point Pleasant Register* (January 27, 2022).

The DAQ sent a notice of the application submission and a link to the electronic version of the permit application to the following parties:

- The U.S. Environmental Protection Agency (USEPA) Region 3 [§45-14-13.1] - (January 24, 2022);

- The National Park Service [§45-14-13.2] - (January 24, 2022); and

- The US Forest Service [§45-14-13.2] - (January 24, 2022).

The permit application was also made available for review on DAQ's website and on DAQ's publically available database (AX).

Actions Taken at Completion of Preliminary Determination

Pursuant to §45-13-8.4 and §45-14-17.4, upon completion (and approval) of the preliminary determination and draft permit, a Class 1 legal advertisement will be placed in the following newspaper stating the DAQ's preliminary determination regarding R14-0039:

- *Point Pleasant Register*.

Pursuant to §45-13-8.7 and §45-14-13.3, a copy of the preliminary determination, draft permit, and public notice shall be forwarded to USEPA Region 3, the National Park Service (NPS) and the US Forest Service (USFS). A copy of the application, complete file, preliminary determination and draft permit will be available on DAQ's website and on DAQ's publically available database (if unable to review online, the documents will also, by request to the DAQ, be made available at one location in the region in which the source is proposed to be located or be provided within a reasonable time-frame). Additionally, pursuant to §45-14-17.5, a copy of the public notice will be sent to the County Clerk of Mason County, WV, and the Ohio Environmental Protection Agency (OHEPA). All other requests for information by interested parties for documents related to Permit Application R14-0039 shall be provided upon request.

Actions Taken at Completion of Final Determination

Pursuant to §45-14-17.7, and 17.8, upon reaching a final determination concerning R14-0039, the DAQ shall prepare a "Final Determination" document and make such determination available for review on the DAQ's website and on DAQ's publically available database (and available to any party upon request).

DESCRIPTION OF PROPOSED FACILITY

Facility Overview

Nucor has submitted a permit application for the new construction of a sheet steel mill to be located near Apple Grove, Mason County, WV. The proposed facility will have the capacity to produce up to 3,000,000 tons of steel per year and the production process can be broken down into the following six (6) major components: Material Handling, Melt Shop, Hot Mill, Cold Mill, Slag Processing, and Auxiliary Processes/Equipment.

The basic steel producing process involves the melting of scrap steel (with other raw materials) in two (2) Electric Arc Furnaces (EAFs). The molten steel is then further refined in several additional processes prior to being sent to the casting area where the molten steel is formed into a continuous ribbon of steel and sent to the Hot Mill for sizing. In the Hot Mill, the ribbon of steel is cut and rolled (while heated) to achieve the desired size and thickness per customer specifications. As required, product refining can continue in the Cold Mill, where the cooled steel can be further sized, cleaned, annealed, and galvanized to meet additional customer specifications. Material handling and slag processing are needed at the facility to unload, store, and process feedstock materials and slag, respectively. Auxiliary operations and equipment include the use of storage tanks, cooling towers, an air separation unit, and emergency engines. The proposed steel mill will have a facility-wide potential-to-emit (PTE) as given in the following table:

Table 1: Facility-Wide Annual PTE

Pollutant	PTE (TPY)
CO	3,262.61
NO_x	701.59
$PM_{2.5(1)}$	570.10
$PM_{10(1)}$	617.54
$PM^{(2)}$	395.74
$PM^{(3)}$	690.89
SO_2	361.48
VOCs	178.36
Total HAPs	7.48
CO_{2e}	673,848

(1) Including condensables.
(2) Filterable Only.
(3) Total Particulate Matter including filterable and condensables.

Process Description

The following is a summary of a detailed process description given from Section 2.1 through Section 2.3 (pp 12 - 19) of the permit application.

Raw Material Storage and Handling

The proposed facility will use various feedstocks in the steel making process: scrap steel, direct reduced iron (DRI), carbons, alloys, and lime. The purpose of each is give in the following:

- Scrap Steel is the primary iron feedstock used in the steel making process and can include sheet metal, rectangular scrap bundles, shredded scrap, plate scrap, structural scrap, pig iron, and miscellaneous scrap metal. It is melted in the EAFs and combined with certain purifying and strengthening additives as noted to produce the molten steel that is finally shaped into sheet steel.

- DRI is a secondary source of iron used in the steel making process and its purpose is to augment the scrap steel with residual-free iron to produce advanced grades of steel and control the alloy chemistry (Fines Content - 3%, Moisture Content - 0.30%).

- The carbons (coal, petroleum coke, powdered graphite, etc.) are materials added to the melting process as a fluxing agent to remove impurities from the steel through the formation of slag (Fines Content - 100%, Moisture Content - 0.20%).

- Alloys (manganese, nickel, chromium, molybdenum, vanadium, silicon, and boron, etc.) are added to improve specific properties such as strength, wear, and corrosion resistance and are used to vary the chemical composition of the steel to specific customer specifications (Fines Content - 100%, Moisture Content - 2.20%).

- Lime is added to the melting process as a fluxing agent to remove impurities from the steel through the formation of slag (Fines Content - 100%, Moisture Content - 0.20%).

The above materials will be brought to the facility via truck, railcar, and barge (see Table 2 below) and, depending on the material, will be stored in open stockpiles or in silos. Scrap steel will be direct loaded onto three (3) open storage piles (SCRPSKP1 through 3) each with a maximum area of 81,809 ft^2. Fugitive emissions from the open piles will be controlled by wetting the piles as necessary.

Each of the other material unloading processes have three (3) sources of potential emissions: (1) fugitive emissions from the dumping of the material into a hopper/bin, controlled emission points from (2) air evacuated from the enclosed conveying system, and from the (3) bin vents displaced air to exit the associated storage silos.

The DRI will be unloaded from barges via a clamshell crane located on the dock and transferred to a receiving hopper. The hopper will be equipped with side ventilation to capture particulate matter emissions and controlled by a dust collector (DRI-DOCK-BH). From the bottom of the hopper, the DRI will be conveyed to storage silos (DRI1 through 4). The conveying system will be enclosed and evacuated to a baghouse that controls the conveyers for each silo (DRI1-BH through DRI4-BH). Each silo will additionally have a bin vent (DRI1-BV through DRI4-BV) to capture particulate matter in air displaced from the silo while filling.

Lime, carbon, and alloy feedstocks are delivered by truck and unloaded through dump bins directly into fully enclosed conveyer systems and stored in storage silos (collectively given the Emission Unit ID of "LCB"). The conveying system for each material will be enclosed and emissions evacuated to an individual baghouse (LIME-BH, CARBON-BH, and ALLOY-BH). All the bin vents for the LCB silos are collectively exhausted to a single baghouse (LCB-BH).

Table 2: Feedstock Unloading & Storage

Material	Transport Method	Unloading Method	Unloading Emission Unit IDs	Annual Throuhphut (TPY)	Storage Method
Scrap Steel	Barge	Clamshell/Magnetic Crane	SCRAP-DOCK	1,443,750	Open Storage Piles
	Rail	Magnetic Crane	SCRAP-RAIL	192,500	
	Trucks	Direct Dump	SCRAP-BULK38	288,750	
DRI[(1)]	Barge	Clamshell Crane ➜ Hopper ➜ Conveyer	DRI-DOCK	557,500	Silos
Carbon	Truck	Truck Dump ➜ Enclosed Conveyer or Direct Pneumatic Transfer	CARBON-DUMP	35,000	Silos
Alloys	Truck	Truck Dump ➜ Enclosed Conveyer	ALLOY-HANDLE	62,000	Silos
Lime	Truck	Truck Dump ➜ Enclosed Conveyer or Direct Pneumatic Transfer	LIME-DUMP	70,000	Silos

(1) DRI may include the following scrap substitutes: pig iron and hot briquetted Iron (HBI).

From the open storage piles, scrap steel will be dropped onto conveyers (SCRAP-BULK35, 37, and 39) and transported to the (enclosed) Melt Shop where it is transferred into charge buckets for delivery into the EAFs (SCRAP-BULK40). Overhead cranes then will maneuver the charge bucket into position over the EAF. Once in position, the charge bucket bottom opens, allowing scrap to fill the EAF.

DRI will be conveyed from the bottom of the storage silos to two (2) DRI Day Bins (DRI-DB1 and 2) located near the Melt Shop. From DRI Day Bins, the DRI will be transferred to the Melt Shop via conveyors where it will be added to the EAF charge through the roof of the EAF. The DRI conveying system (DRI-CONV) will be an enclosed system and controlled with a baghouse (DRI-CONV-BH), with the bins under a nitrogen purge "blanket" to minimize oxidation and to maintain the material's quality before charging. Air displaced from the day bins will be captured by each bin's baghouse (DRI-DB1-BH and DRI-DB2-BH). The DRI handling system will also include emergency bypass chutes located on DRI storage silos (DRI-EMG-1) and at the end of DRI conveyors (DRI-EMG-2). The emergency bypass chutes will be used to remove DRI from the system that cannot be fed to the furnaces (e.g., if the material is too wet) or if there is an emergency with the nitrogen purging system. Normal operation of the DRI Handling System will be shutdown if the emergency bypass chutes are needed to be used.

Carbons, lime, and Alloys are transported from their respective silos and into the Ladle Metallurgy Furnaces (LMF) and (Vacuum Degassers as well for the Alloys) as needed using an enclosed conveying system.

Melt Shop

The primary material processing (the melting of scrap steel and DRI) occurs in the Melt Shop. The Melt Shop contains two (2) 342,000 lbs/hr (171 TPH) Single Shell 123 mW DC Electric Arc Furnaces (EAF-1 and EAF-2) that will be charged with scrap steel and DRI (or with other scrap substitutes as may be needed) to each produce up to a maximum of 1,500,000 tons/year of steel. Electric arc steelmaking uses high-current electric arcs to melt steel scrap and DRI and convert it into liquid steel of a specified chemical composition and temperature (as opposed to using coke-fired blast furnaces).

During a cold startup, the steel will be preheated in each EAF through the use of a 22.18 mmBtu/hr natural gas-fired oxyfuel burner. In the oxyfuel burners, a pure or enriched oxygen stream is used instead of air for combustion. These burners result in more efficient combustion and lower emissions of NO_x. Once preheated, the furnace electrodes will be lowered into the charged material. Electrical power will be provided to induce arcing that will increase the temperature of the scrap to beyond the steel melting point of approximately 3,000 degrees Fahrenheit (°F). The oxyfuel burners will continue to operate after the electrodes are lowered to promote the post combustion of gases in the furnace vapor space and to introduce oxygen into the furnace for use in exothermic reactions within the molten steel.

EAF emissions are generated during charging, melting, and tapping. Pursuant to requirements in 40 CFR Subpart AAa, Nucor has proposed the use of a direct-shell evacuation control system (DEC system) for control of particulate matter emissions from the EAFs/LMFs. A DEC system is one that maintains a negative pressure within the EAF above the slag or metal and ducts emissions to the control device - in this case an pulse jet fabric filter baghouse for each EAF/LMF stack (EAF-1-BH and EAF-2-BH). The DEC is designed to achieve a minimum capture efficiency of 95% of all potential particulate matter emissions when the furnace roof is closed. During EAF charging (estimated to be a maximum of 4% of the time), when the furnace roof is open, particulate matter emissions are controlled by a canopy hood over the EAFs that is designed to capture a minimum of 95% potential particulate matter emitted by the units (and the LMFs and casting units as well). The canopy hood also evacuates the captured particulate matter to the EAF baghouses. Emissions that are not captured by the DEC system or the canopy hood are potentially released as fugitives from the Melt Shop building openings. The enclosed Melt Shop building, when openings are properly mitigated, is able to capture another 90% of the potential fugitive emissions. These emissions are considered to fall out inside the building.

When the steel melting in the EAF is complete, the contents of the furnace will be poured (tapped) into a refractory-lined chamber (ladle) which will transport the molten steel to the ladle metallurgy furnaces (LMF1 and LMF2) for further refining. After most tappings, a heel of molten steel is left in the furnace in order to assist in the melting of the subsequent scrap steel charges and to prevent damage to the furnace from thermal and mechanical shock during the next charge. The molten heel is, however, periodically also tapped out of the furnace so that the refractory lining can be inspected and repaired if needed. After this occurs, a cold startup is required.

As stated, the ladles of molten steel are transferred from the EAFs to the LMFs for final steel refining. During transportation, the ladle uses a 15.00 mmBtu/hr natural gas-fired Ladle Dryer (LD) and seven (7) 15.00 mmBtu/hr natural gas-fired Horizontal or Vertical Ladle Preheaters (LPHTR1 through 7). Each LMF will consist of a combined furnace and stirring station. The introduction of additional materials, such as carbons, metal alloys, or lime, will occur in the LMFs in order to produce steel to meet specific customer requirements.

EAF dust collected in the Melt Shop baghouses will be pneumatically transferred to two (2) storage silos (EAFVF1 and 2), each of which will be equipped with a fabric filter bin vent (EAFVF1-BV and EAFVF2-BV). The dust will be loaded into trucks or railcars beneath the silo to be transported to off-site disposal or reclamation facilities.

A portion of the steel will be further refined in the Vacuum Tank Degassing Operations (VTD) to reduce/eliminate dissolved gases (especially hydrogen, nitrogen, and carbon). Chosen ladles are placed directly into the VTD for processing. During the degassing process, material additions are made for deoxidation and alloying. These materials will be supplied to the VTGs by the Alloy Handling System. Once the ladle is enclosed in the VTD, mechanical pumps will be used to draw a vacuum on the ladle. The gas from the VTD is captured and first directed through a particulate filter to protect the mechanical pumps from particulate matter. The degassing process primarily generates CO emissions due to the release of carbon from the steel and partial oxidation to CO. A12.37 mmBtu/hr Flare (Vacuum Tank Degasser Flares 1 and 2) is used to control the excess CO emissions, but will also provide control for any VOC emissions generated in the VTG process. The Flare will have a minimum destruction and removal efficiency (DRE) of 98% for CO.

Once the molten steel achieves the desired properties in the LMF and/or VTD, the ladle will be removed and transported by overhead crane to a continuous casting machine. In the caster, steel will flow via a bottom slide gate from the ladle into another refractory-lined chamber (tundish). From the tundish, the molten steel will flow through a specially designed tundish nozzle into a thin slab caster. A 6.00 mmBtu/hr natural gas-fired Tundish Dryer (TD) and two (2) 9.00 mmBtu/hr Tundish Preheaters (TPHTR1/2) are used in the process. As the steel travels through the Caster, it will be cooled with process water and formed into a continuous ribbon of steel.

The natural gas combustion emissions from the Ladle Preheaters and the Tundish Dryer and Preheaters all vent inside the Melt Shop building and are conservatively assumed to be emitted from openings in the Melt Shop building.

<u>Hot Mill</u>

As noted, the purpose of the Hot Mill is to take the steel coming from the Casters in the Melt Shop and size it for further processing in the Cold Mill. Therefore, after initial cooling, the ribbon of steel from the Casters is sheared to length to form individual slabs and sent to the 150 mmBtu/hr natural gas-fired Tunnel Furnace (TF1). In the Tunnel Furnace, the slabs are heated to achieve a consistent temperature prior to feeding to the 171 tons/hour Hot Rolling Mill (RM). In the Hot Rolling Mill, each slab thickness is reduced using great pressure to meet customer thickness specifications. Particulate matter emissions from the Hot Rolling Mill are controlled by a baghouse (RM-BH). The rolled steel is then cooled and coiled for further processing.

Cold Mill

The Cold Mill will receive steel coils from the Hot Mill and, as necessary, they will be sent first to the 342 tons/hour Scale Breaker (PKLSB), where a tension leveler type scale breaker will apply pressure to the steel slabs, elongating the slab to correct surface defects and breaking the iron oxide layer on the slab surface in order to prepare the slab for pickling. Particulate matter emissions generated from the scale breaking of the steel are controlled by a baghouse (PKLSB-BH).

After receiving steel from the Scale Breaker or directly from the Hot Mill, coils are chemically cleaned on the continuous pickling line using hydrochloric acid (HCl). The Pickling Line (PKL-1) cleans steel for shipment or further processing by removing scale and other deposits from the steel surface which may develop during the manufacturing process. Steel Coils received from the Melt Shop or the Scale Breaker will first be uncoiled and sent through a series of HCl baths that remove the oxides. The steel sheet is then rinsed and dried. A wet scrubber (PKL1-SCR) is used on the pickling line to control any potential HCl and particulate matter emissions generated from the process.

Pickled coils can be shipped to customers as finished product, or further processed in the 342 tons/hour Tandem Cold Mill (TCM) to further reduce the thickness of the coil. The Tandem Cold Mill uses an oiler that applies surface oiling electrostatically to both sides of the strips simultaneously to facilitate processing in the mill. This oiler can apply multiple grades of rolling oil with minimum transition times between oil types. Particulate matter emissions generated in the Tandem Cold Mill are controlled by a mist eliminator (TCM-ME).

Steel coils can also, per customer specifications, be sent to the galvanized lines for treatment. Galvanizing is the process of applying a protective coating to steel or iron. The coating is usually made from zinc and is used to halt the formation of rust. First, the steel will be uncoiled and go through a cleaning section (CGL1 and CGL2) that removes rolling oils and metal fines from the surface of the steel. Particulate matter emissions from the Galvanizing Cleaning Section are controlled by scrubbers (CGL-SCR1 - 4). The steel is then dipped into a molten zinc bath, resulting in the formation of zinc-iron alloy layers that combat corrosion. The final product is galvanized or "galvannealed" cold rolled steel intended for automotive applications. Two (2) 64.00 mmBtu/hr natural gas-fired Galvanizing Furnaces (GALVFN1 and GALVFN2) are used to provide heat to the galvanizing section.

The Cold Mill will also include an annealing section. Annealing is a heat treatment process which alters the micro-structure of the steel to reduce hardness, increase ductility, and help eliminate internal stresses. The heat for the process is supplied by twenty-two (22) 5.00 mmBtu/hr natural gas-fired Box Annealing Furnaces (BOXANN1 through BOXANN22).

Finally, the Cold Mill includes a 342 tons/hour Standalone Temper Mill (STM) and two (2) 114 tons/hour Skin Pass Mills (SPM1/2). These mills are cold-rolling mills which improve the surface finish on steel products. A variety of surface finishes are used to impart the desired finish to the product. Skin pass mills improve the final strip quality, including strip surface defects and roughness formed on the processing line. The Standalone Temper Mill utilizes a mist eliminator (STM-ME) and the Skin Pass Mills each utilize a dedicated baghouse (SPM1-BH and SPM2-BH) to control particulate matter emissions.

Slag Processing

As mentioned in the Melt Shop process discussion, a material called slag (a hard, stony material) is formed as lime and carbon is added to the molten steel bath to remove phosphorous and sulfur. This slag formation will occur in both the EAFs and in the LMFs when additional impurities are removed from the molten steel. The slag formed in the EAF falls to the bottom of the furnace and will be periodically emptied into slag pots beneath the furnace. After the slag pot is filled, it is taken to the slag dump station where it will be quenched using process water. After quenching, the slag is taken to the slag processing area.

The slag formed in the LMF will be emptied from the ladle after the LMF refining operation is complete and then will also be transported to the slag processing area after quenching. Slag processing equipment will be required to load, convey, crush, and screen the slag prior to use either on site as a road grading material or removal from the site as a saleable material. This area will include potential particulate matter emissions from truck dumps, conveyer transfer points, slag crushing, and slag screening (SCRAP-BULK1 through SCRAP-BULK33) operations. After sizing, the processed slag will be stored in four (4) open storage piles (SLGSKP1/4) each with a maximum area of 32,541 ft^2. Particulate matter emissions from the slag processing area will be mitigated primarily by using water sprays to keep the material wet enough to minimize emissions.

Natural Gas Combustion Units

The proposed facility includes various natural gas-fired combustion units providing direct process heat and indirect heat in many areas of the plant. As noted, some of the units emit directly inside the Melt Shop where the emissions then both get pulled into the canopy hood and emitted from the EAF Baghouses and are also emitted from the Melt Shop building openings (thus classified as fugitive emissions and identified as MSFUG). The following table identifies all the proposed natural gas combustion devices (with the exception of the oxyfuel burners within the EAFs and the Emergency Engines):

Table 3: Natural Gas Combustion Devices

Emission Unit ID(s)	Emission Point ID(s)	Number of Units	Unit Description	MDHI[1] (mmBtu/hr)
LD	MSFUG[2]	1	Ladle Dryer	15.00
LPHTR1-5	MSFUG[2]	5	Horizontal Ladle Preheaters	15.00
LPHTR6-7	MSFUG[2]	2	Vertical Ladle Preheaters	15.00
TD	MSFUG[2]	1	Tundish Dryer	6.00
TPHTR1-2	MSFUG[2]	2	Tundish Preheaters	9.00
SENPHTR1-2	MSFUG[2]	2	Tundish Preheaters	1.00
GALVFN1-2	GALVFN(1-2)-ST	2	Galvanizing Furnaces	64.00
GALFUG	BOXANN1-22	22	Box Annealing Furnaces	5.00
TF1	TFST-1	1	Hot Mill Tunnel Furnaces	150.00

Emission Unit ID(s)	Emission Point ID(s)	Number of Units	Unit Description	MDHI(1) (mmBtu/hr)
SLAG-CUT	SLAG-CUT-NG	1	Slag Cutting Torch	2.40
ASP	ASP-1	1	Water Bath Vaporizer	11.00

(1) Individual unit MDHI. Aggregate MDHI of all units = 547.40 mmBtu/hr.
(2) Direct process heat: exhaust vents inside the Melt Shop.

Auxiliary Processes/Equipment

Air Separation Unit

The proposed facility will include an air separation plant to supply process gases, such as nitrogen and oxygen, to various facility operations. The air separation plant will include a 11.00 mmBtu/hr natural gas-fired Water Bath Vaporizer (ASP), an emergency generator, and a cooling tower (CT8). The Water Bath Vaporizer is a backup unit employed when the air separation plant is down, or the nitrogen or oxygen demand is more than the air separation plant is generating. During these events, liquefied gas maintained in storage tanks is passed through the Water Bath Vaporizer to vaporize the liquefied gas prior to distributing the gas to the process operations.

Storage Tanks

Nucor has proposed the use of twenty-four (24) fixed roof storage tanks 1,000 gallons or larger and five (5) open degreasing tanks as shown in the following table:

Table 4: Storage Tanks Information(1)

Tank ID(s)	Material Stored	Tank Size (gallons)	Throughput (gallons/yr)	Pollutant	BACT	Subpart Kb?(2)
T1	Diesel	5,000	365,000	VOCs	Submerged Fill White Shell(3)	N
T2 - T4	Diesel	1,000	365,000	VOCs		N
T5 - T6	Diesel	2,000	365,000	VOCs		N
T7	Gasoline	1,000	365,000	VOCs		N
T8 - T9	Hydraulic Oil	5,000	365,000	VOCs		N
T10 - T15	HCl	26,400	1,200,000	HCl	n/a	N
T16 - T23	Spent Pickle Liquid	26,400	900,000	HCl	n/a	N
T24	Used Oil	5,000	365,000	VOCs	Submerged Fill White Shell(3)	N
T25 - T29(4)	Cold Degreaser	80	n/a	VOCs	Work Practice Standards	N

(1) The Tank Size and throughput are given on a per-tank basis where multiple tanks are grouped together.
(2) Shows if the requirements of 40 CFR 60, Subpart Kb are applicable to the storage tank.
(3) A white shell improves the heat radiation off the tanks from the sun thereby keeping the tanks cooler, lessening the volatilization of the stored material.
(4) These tanks are inside and open. Work Practice standards are given under 4.1.7(f) of the draft permit.

Emergency Engines

Nucor has proposed the use of six (6) 2,000 horsepower (hp) natural gas-fired Emergency Engines (EMGEN1 through EMGEN6) to generate backup power at the facility in the event of a power disruption. The specific make and model of these engines has not yet been determined, but will not exceed 2,000 hp and will be fired by pipeline-quality natural gas (PNG).

Cooling Towers

Nucor has proposed the use of eight (8) Cooling Towers (CT1 though CT8) that will provide contact and non-contact cooling water to various processes throughout the mill. A cooling tower extracts waste heat into the atmosphere through the evaporative cooling of a water stream to a lower temperature. A direct contact (or open-circuit) cooling tower (DCW) operates by having the cooling water come into direct contact with the material being cooled. A non-contact (or closed-circuit) cooling tower (ICW) operates without the cooling water coming into direct contact with the material being cooled. Emissions are possible with cooling towers as particulate matter may become entrained with the water droplets of the vapor cloud as it released into the ambient air. Each of the Cooling Towers will be constructed with a high efficiency drift eliminator (rated to limit the vapor escape of only 0.0005% of the total water vapor) to mitigate the drift of the entrained droplets (BACT control technology). The Cooling Towers proposed for the facility are shown in the following table:

Table 5: Cooling Tower Information

Emission ID No.	Description	Max Design Capacity Water Circulation Pump (gal/min)
CT1	Melt Shop ICW Cooling Tower	52,000
CT2	Melt Shop DCW Cooling Tower	5,900
CT3	Rolling Mill ICW Cooling Tower	8,500
CT4	Rolling Mill DCW Cooling Tower	22,750
CT5	Rolling Mill/Quench/ACC Cooling Tower	90,000
CT6	Light Plate DCW Cooling Tower	8,000
CT7	Heavy Plate DCW Cooling Tower	3,000
CT8	Air Separation Plant Cooling Tower	14,000

Haulroads

The proposed facility will include paved and unpaved haulroads and mobile work areas. The paved roads are calculated to be an aggregate of 3.21 miles as broken up into ten (10) sections. The unpaved roads are calculated to be an aggregate of 1.24 miles as broken up into nine (9) sections. The roads will be vacuum swept (paved) and watered (paved and unpaved) as needed to mitigate the emissions of road dust from their use.

SITE INSPECTION

On February 10, 2022, the writer conducted an inspection of the proposed location of Nucor's West Virginia Steel Mill. The proposed site is located along the Kanawha River near the unincorporated community of Apple Grove, Mason County, WV approximately 13.5 miles south of Point Pleasant, Mason County, WV. The writer was accompanied on the inspection by Mr. Jon McClung and Rex Compston of the WVDAQ. Observations from the inspection include:

- The proposed location of the facility is just south of APG Polytech, LLC's Apple Grove Plant between the Ohio River to the west and WV State Route (SR) 2 to the east. South of the proposed location the Ohio River and SR 2 come close together to pinch off the site. At this point there is located the small unincorporated community of Ashton, WV;

- The Apple Grove location is a well-known 1,370 acre site owned by America Electric Power (AEP) long promoted for proposed development. More information concerning the site can be found on the Mason County Economic Development Authority website:

  http://properties.masoncounty.org/site.php?site_id=2;

- As noted, the small communities of Apple Grove (25502), Mercer's Bottom (25502), and Ashton (25503) are the three (3) nearest residential areas to the proposed location with Apple Grove generally east, Mercer's Bottom southeast, and Ashton generally south-southeast of the location. The Ashton Elementary School is located approximately 1.5 miles south-southeast of the southern end of the proposed location;

- The topography of the proposed location is typical of Ohio River bottomland (with an approximate elevation of about 570 feet above sea-level) with the river to the west flowing from the north-northwest to south-southeast. The proposed location is generally flat between the river to the west and SR 2 to the east. Beyond SR 2, low hills begin rising to the east (the elevation of these hills generally don't exceed 850 feet above sea level within several miles of the location). Due to the river's gentle turn to the south east at this point, there is very little bottomland across the river in Ohio with low hills rising almost immediately (the elevation of these hills generally don't exceed 900 feet above sea level within several miles of the location);

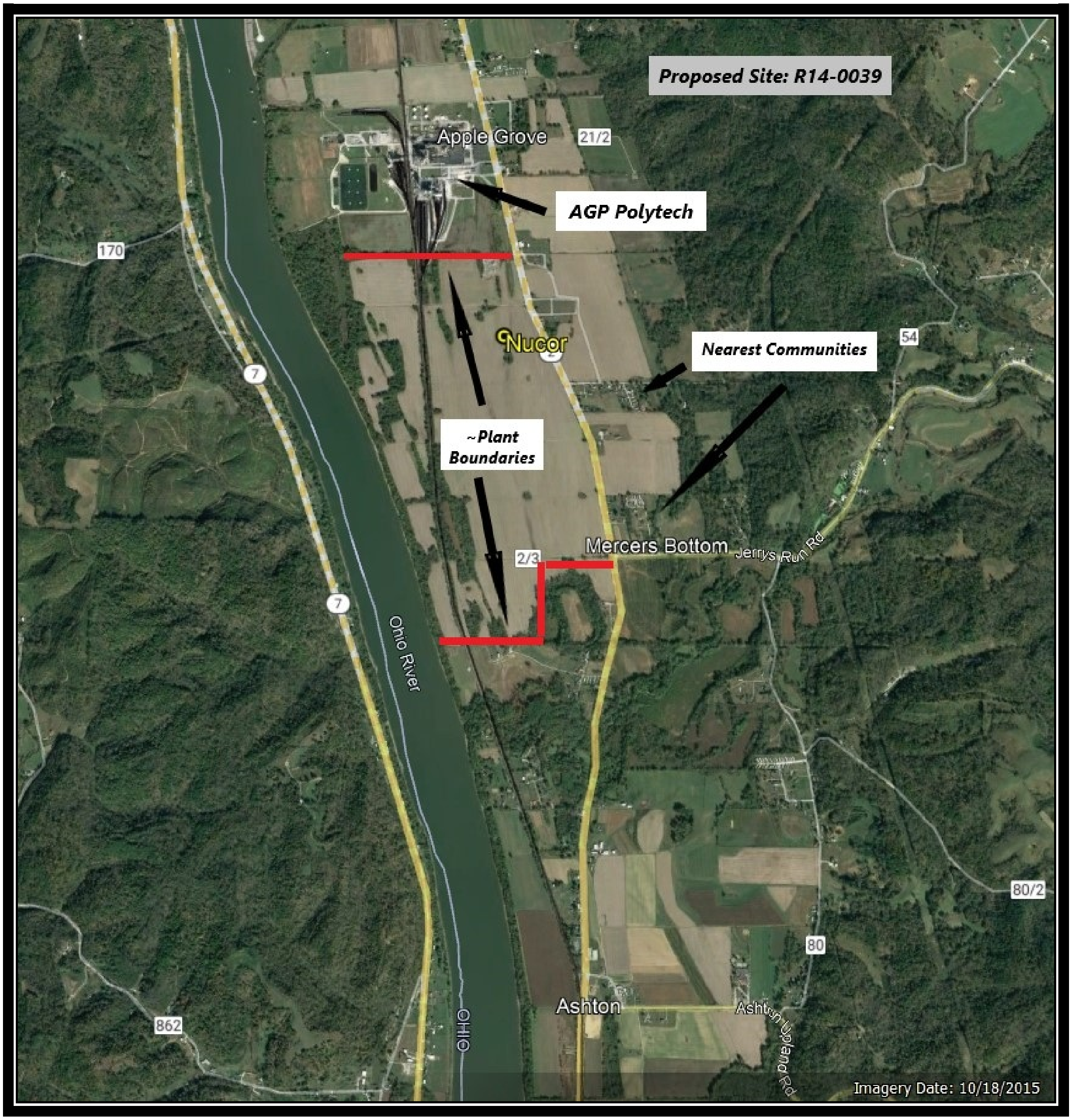
- As noted, immediately north of the proposed site is APG Polytech, LLC's Apple Grove Plant (053-00054). This facility manufactures polyester resin and, according to the most recent Title V permit application, has a PTE of all pollutants of less than 100 TPY;

- The area around the proposed site is generally rural in nature with an industrial presence as noted just north of the proposed site and another industrial facility - ICL-IP America Inc's Gallopolis Ferry Facility - located approximately 8.21 miles north of the site;

- At the time of the inspection, a small drilling rig was on site presumably extracting samples for subsurface investigations. No construction of any permanent foundation work or similar activity was seen; and

- The nearest occupied residences will be directly east of the proposed facility across SR 2 along Hereford Lane (County Route 24).

The following is labeled satellite imagery of the proposed site of the West Virginia Steel Mill:



Directions: [Latitude/Longitude: 38.65536/-82.16853] From the junction of WV SR 35 and SR 2 just south of Point Pleasant, travel approximately 14.2 miles south on SR 2 and the proposed location will be on the right.

AIR EMISSIONS AND CALCULATION METHODOLOGIES

Nucor included as Attachment N in the permit application (pp 171-237) detailed air emissions calculations for the proposed West Virginia Steel Mill. The following will summarize the calculation methodologies used by Nucor to calculate the PTE of the proposed facility. See Attachment N in the permit application for the complete and detailed PTE calculations.

Material Handling

Emissions of particulate matter may occur from the unloading, transporting, conveying, screening, crushing, and storing of raw materials, collected baghouse material, and slag from the steel manufacturing process. Where emission sources (silos, enclosed conveyer transfer points, crushing, etc.) are controlled by fabric filters/baghouses/bin vents, the filterable particulate matter emission estimate for the controlled source was based on the maximum outlet concentration of the filter. For uncontrolled emission sources, or where controlled through the use of enclosures or wet suppression, emissions were calculated using the appropriate section of AP-42 (AP-42 is a database of emission factors maintained by USEPA) or from other acceptable guidance. Controlled emissions were then calculated using a reasonable control efficiency based on the type of enclosure or other mitigating factor. See the following table for the source of various material handling emission factors used by Nucor:

Table 6: Material Handling PM Emission Factor Sources

Emission Source	Material	Emission Factors Source	Notes
Truck Dumps Conveyer Transfer Points & Other Drops Not Evacuated to a Filter	Various	AP-42, Section 13.2.4 (11/06)	Emission factor calculation includes material moisture content and average wind speed.(1)
Slag Loader/Truck Drops	Slag	AP-42, Table 12.5-4 (10/86)	Low-Silt Slag (1)
Slag Conveyer Drops	Slag	AP-42, Table 11.19.2-2 (8/04)	Uncontrolled Conveyer Transfer Point(2)
Slag Crushing	Slag	AP-42, Table 11.19.2-2 (8/04)	Tertiary Factor + Drop(2)
Slag Screening			Uncontrolled Factor + Drop(2)
Open Storage	Scrap Slag	TCEQ Draft RG 058 Rock Crushing Plants, Section 5.	Considered Active Piles 365 days/yr (1)
Paved Haulroads & Mobile Work Areas	n/a	AP-42 Section 13.2.1 (1/11)	Based on average truck weights, surface material silt content, and number of precipitation days. A control percentage of 90% was used for sweeping/watering.
Unpaved Haulroads & Mobile Work Areas	n/a	AP-42 Section 13.2.2 (11/06)	Based on average truck weights, surface material silt content, and number of precipitation days. A control percentage of 90% was used for watering.
Sources Controlled by Baghouses/Fabric Filters	All	Maximum Outlet Loading Concentration(1)	Calculated with maximum outward airflow.

(1) Uses control percentages from TCEQ Draft RG 058 Rock Crushing Plants, Table 7.
(2) Uses uncontrolled emission factors and applies control percentage for wetted material as provided for in AP-42, Section 11.19.2.
(3) As based on vendor information or vendor guarantees.

For sources not controlled by a fabric filter/baghouse/bin vent, maximum hourly emissions were based on the worst-case hourly throughput (either as limited by the bottlenecked process or by the capacity of the unit) and, unless otherwise noted, annual emissions were based on a reasonable worst-case estimate of annual throughput. Maximum hourly emissions from the fabric filters/baghouses were based on the maximum expected airflow through the units (in dcfm) and annual emissions were based on 8,760 hours a year of operation. Where appropriate, Nucor adjusted the emission rates of PM_{10} and $PM_{2.5}$ as based on appropriate particle size distribution.

EAFs/LMFs/Casters

Particulate Matter Emissions

As noted above, EAFs/LMFs particulate matter emissions are generated during charging, melting, and tapping processes. Pursuant to requirements in 40 CFR Subpart AAa, Nucor has proposed the use of a direct-shell evacuation control system (DEC system) for control of particulate matter emissions from the EAFs/LMFs. A DEC system is one that maintains a negative pressure within the EAF/LMF above the slag or molten metal and ducts emissions to the control device - in this case an pulse jet fabric filter baghouse for each EAF/LMF combo stack (EAF-1-BH and EAF-2-BH). The DEC is designed to achieve a minimum capture efficiency of 95% of all potential particulate matter emissions when the furnace roof is closed.

The Melt Shop also includes a negative pressure canopy hood inside the Melt Shop that is located over the EAFs/LMFs to capture any particulate matter that is not captured by the DEC. The canopy hood is designed to capture a minimum of 95% of the potential particulate matter emitted by the units and not captured by the DEC or during times of charging when the furnace roof is open (estimated to be a maximum of 4% of the time). The canopy hood also evacuates the captured particulate matter to the EAF baghouses.

Particulate matter that is not captured by the DEC system or the canopy hood is potentially released as fugitives from the Melt Shop building openings. The enclosed Melt Shop building, when openings are properly mitigated, is able to capture another 90% of the potential fugitive emissions. These emissions are considered to fall out inside the building. Therefore, of the total uncontrolled particulate matter emissions generated in the EAFs/LMS, 0.025% is calculated to be emitted as fugitive emissions from the Melt Shop building openings when the furnace roof is closed and 0.50% when during furnace charging.

The Casters also generate potential emissions inside the Melt Shop but are not connected to the DEC. However, the Casters do benefit from the 95% collection efficiency of the canopy hood and the 90% collection efficiency of the Melt Shop building enclosure. Therefore, of the total uncontrolled particulate matter emissions generated in the Casters, 0.50% is calculated to be emitted as fugitive emissions from the Melt Shop building openings.

Based on the configuration of the Melt Shop as described above, there are three emission points: EAF Baghouses (BHST-1/2) and the Melt Shop building openings (various points). The particulate matter emissions from the EAF Baghouses are based on the outlet grain loading of the control devices (PM - 0.0018 gr/dscf, $PM_{2.5}/PM_{10}$ - 0.0052 gr/dscf). These limits are based on vendor guarantees in turn based on the emission limits given in 40 CFR 60, Subpart AAa and 40 CFR 63, Subpart YYYYY. Maximum hourly emissions from these emission points are then based on the volumetric flow rates being pulled through each of the baghouses when the EAFs are being operated at the normal maximum production rate of 171 tons-steel/hr. The annual emissions from these emission points are then conservatively based on the operation of the EAFs at that volumetric flow rate for 8,760 hours/yr.

The amount of fugitive emissions from the Melt Shop building openings are based on the total uncontrolled particulate matter generated in the EAFs/LMFs (MSFUG) and Casters (CASTFUG) with the control percentages applied as described above. The uncontrolled particulate matter emission factors (PM - 11.3 lbs/ton-steel, $PM_{2.5}/PM_{10}$ - 6.55 lbs/ton-steel) for the EAFs/LMFs are based on the Energy and Environmental Profile of the U.S. Iron and Steel Industry, U.S. Department of Energy (Aug. 2000), Table 5-3, for EAFs/LMFs (melting, refining, charging, tapping, and slagging alloy steel). The uncontrolled particulate matter emission factors for the Casters (PM - 0.12 lbs/ton-steel, $PM_{2.5}/PM_{10}$ - 0.12 lbs/ton-steel) are based on AP-42, Section 12.5.1 (04/2009) - "Steel Minimills," Table 12.5.1-2, for uncontrolled ladle heating and transfer and continuous casting.

Both the maximum hourly MSFUG and CASTFUG emissions are calculated based on a maximum processing rate of 342 tons-steel/hour and the maximum annual emissions are based on a maximum processing rate of 3,000,000 tons-steel/year.

Metals and Fluoride

The emissions of Lead (Pb) and Fluoride (F) from the EAFs/LMFs Baghouses are based on emission factors (0.00045 lb-Pb/ton-steel and 0.00350 lb-F/ton-steel, respectively) that are in turn based on the BACT determination for these pollutants. The emissions of other potential metal pollutants: Arsenic (Ar), Beryllium (Be), Cadmium (Cd), Chromium (Cr), Mercury (Hg), Manganese (Mn), and Nickel (N), are based on emission factors taken from AP-42, Section 12.5.1 (04/2009) - "Steel Minimills"- Table 12.5.1-9. The maximum hourly emissions of Metals and Fluoride from the individual EAFs Baghouses are calculated based on a maximum production rate of 171 tons-steel/hour and the maximum annual emissions are based on a maximum production rate of 1,500,000 tons-steel/year. The fugitive emissions of Metals and Fluoride are conservatively based on a 5% escape of these pollutants with no credit taken for additional control from the canopy hood and the building enclosure.

Non-Particulate Pollutants (not GHGs)

Like the particulate matter emissions, the emissions of non-particulate pollutants (CO, NO_x, SO_2, VOCs, and GHGs) from the EAFs/LMFs (the Casters do not have any non-particulate matter emissions) are emitted from three (3) sources: both EAF Baghouses (BHST-1/2) and the Melt Shop building openings (various points). Different than the particulate matter emissions, however, the non-particulate pollutants do not benefit from any control efficiency based on capture and ducting to the baghouse. The uncontrolled emission factors for each of the listed pollutants, except for

GHGs, are based on the selected aggregate (EAF and LMF) BACT emission rates (CO - 2.02 lb-CO/ton-steel, NO_x - 0.35 lb-NO_x/ton-steel, SO_2 - 0.24 lb-SO_2/ton-steel, VOCs 0.098 lb-VOC/ton-steel) for each pollutant. A capture efficiency of 95% was used to calculate the amount of the emissions that were directed by the DEC to the Baghouse stacks. The remaining 5% were assumed to escape from the DEC and conservatively not captured by the canopy hood and released from the building openings as fugitive emissions (MSFUG).

The maximum hourly emissions from each Baghouse stack was based on a steel production rate of 171 tons-steel/hr in each EAF and the maximum annual emissions were based on an annual production rate in each EAF of 1,500,000 tons-steel/year.

<u>GHGs</u>

Greenhouse gases (GHGs) is collectively the air pollutant defined in 40 CFR 86, Section §86.1818-12(a)(1) as the aggregate group of six greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6). GHGs are quantified by determining the CO_2 equivalent emissions (CO_2e) and are computed by multiplying the mass amount of emissions for each of the six greenhouse gases by the gas's associated global warming potential published at Table A-1 of 40 CFR 98, Subpart A - "Global Warming Potentials."

The emissions of GHGs from the EAFs/LMFs, as calculated using CO_2e, is based on two sources of emissions in the EAFs: (1) natural gas-combustion in the EAF's 22.00 mmBtu/hr oxyfuel burners and (2) carbon atoms that are released from various materials present in the furnace during melting operations that are subsequently oxidized and emitted as CO_2.

Emission factors (CO_2 - 116.98 lb/mmBtu, CH_4 - 0.0022 lb/mmBtu, N_2O - 0.00022 lb/mmBtu) for the combustion of natural gas in the oxyfuel burners are taken from Tables C-1 ("Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel") and C-2 ("Default CH_4 and N_2O Emission Factors for Various Types of Fuel") of 40 CFR Part 98 - "Mandatory Greenhouse Gas Reporting." The maximum hourly emissions from the oxyfuel burners were based on the MDHI of the units and the maximum annual emissions were based conservatively on the units operating 8,760 hours/year. As with the other non-particulate pollutants, a capture efficiency of 95% was used to calculate the amount of the CO_2e emissions that were directed by the DEC to the Baghouse stacks. The remaining 5% were assumed to escape from the DEC and conservatively not captured by the canopy hood and released from the building openings as fugitive emissions (MSFUG).

Oxidized carbon emissions (CO_2) from the various materials present in the EAFs/LMFs during melting operations are based on the weight fraction of carbon in each of the materials (DRI, Scrap, Fluxing Agents, the electrodes, carbon agents, the molten steel itself, slag, and residue material) used and maximum hourly and annual throughput of the materials. The maximum hourly emissions are then based on all of the carbon oxidizing to CO_2. As with the GHGs produced from natural gas combustion in the oxyfuel burners, a capture efficiency of 95% was used to calculate the amount of the CO_2e emissions that were directed by the DEC to the Baghouse stacks. The remaining 5% were assumed to escape from the DEC and conservatively not captured by the canopy hood and released from the building openings as fugitive emissions (MSFUG).

Finally, the CO_2e emissions from the EAF Baghouse stacks (BHST-1/2) and as emitted from the Melt Shop building openings (MSFUG) were a combination of the emissions from the two sources: the oxyfuel burners and the carbon released and oxidized from the charged materials.

Vacuum Tank Degassers

As discussed above, a portion of the steel will be further refined in the VTD operations to reduce/eliminate dissolved gases (especially hydrogen, nitrogen, and carbon). The offgases from each VTD is captured and first directed through a particulate matter filter (with a maximum outlet grain loading of 0.0083 gr/dscf) to protect the mechanical pumps from particulate matter prior to combustion in a 12.37 mmBtu/hr flare. The flare is used primarily to control CO, as the degassing process primarily generates CO emissions due to the release of carbon from the steel and partial oxidation to CO. Each flare will have a minimum DRE of 98% for CO. Additional NO_x and GHG emissions are generated from the products of combustion from each flare's combustion of the offgases and the use of natural gas in the flare's burners. Trace amounts of SO_2 and VOCs also may be emitted from the use of natural gas in the flare's burners. Emission factors for these pollutants are based on AP-42, Section 13.5 - "Industrial Flares," Table 13.5-1 (NO_x - 0.068 lb/mmBtu, VOCs - 0.14 lb/mmBtu), AP-42 Section 1.4. - "Natural Gas Combustion," Table 1.4-2 (SO_2 - 0.6 lb/mmscf), and and 40 CFR Part 98 - "Mandatory Greenhouse Gas Reporting," Tables C-1 and C-2 (CO_2 - 116.98 lb/mmBtu, CH_4 - 0.0022 lb/mmBtu, N_2O - 0.00022 lb/mmBtu).

Natural Gas Combustion Exhaust Emissions

The proposed facility contains various natural gas-fired combustion devices (not including the Emergency Engines that will be discussed below) that provide direct and indirect process heat to the facility. With the exception of the NO_x emissions from the Box Annealing Furnaces, Galvanizing Furnaces, and the Hot Mill Tunnel Furnace, the emission factors for all units were based on the emission factors provided for natural gas combustion as given in AP-42 Section 1.4. - "Natural Gas Combustion," Tables 1.4-1/2 (CO - 84 lbs/mmscf, NO_x - 100 lbs/mmscf, $PM_{2.5}/PM_{10}$ (including condensables)- 7.6 lbs/mmscf, PM (filterable only)- 1.9 lbs/mmscf, SO_2 - 0.6 lb/mmscf, VOCs - 5.5 lb/mmscf, HAPs - various by speciated HAP), and 40 CFR Part 98 - "Mandatory Greenhouse Gas Reporting," Tables C-1 and C-2 (CO_2 - 116.98 lb/mmBtu, CH_4 - 0.0022 lb/mmBtu, N_2O - 0.00022 lb/mmBtu).

The AP-42 Section 1.4. emission factors were converted to lb/mmBtu using a natural gas heat content of 1,020 Btu/scf. A NO_x emission factor of 0.05 lb/mmBtu was used for the Box Annealing Furnaces and Galvanizing Furnaces and 0.07 lb/mmBtu was used for the Hot Mill Tunnel Furnace. These emission factors were based on the BACT emission limit for the units. Maximum hourly emissions for all units were based on the MDHI of the units and annual emissions were based on operation of 8,760 hours per year. All units utilize Low-NO_x Burner technology to limit NO_x emissions.

As noted, some of the units (see Table 3) emit directly inside the Melt Shop and are emitted from the Melt Shop building openings (identified as MSFUG) and are therefore classified as fugitive emissions. To be conservative, all combust exhaust emissions from units that emit directly inside the Melt Shop are considered to be emitted as fugitive emissions from the Melt Shop openings.

Hot and Cold Milling

Particulate matter emissions generated from the Rolling Mill (RM-BH), Tandem Cold Mill (TCMST), Standalone Temper Mill (STMST), and Skin Pass Mills (SPMST1/2) are captured by the associated baghouse or mist eliminator/scrubber prior to release. No other pollutants are emitted from these units. The controlled emissions from each unit were based on the BACT determinations for each unit set at the appropriate outlet grain loading rate. The outlet grain loading rates for each control device can be seen in Table A-4 of Appendix A attached to the draft permit. Maximum hourly emissions from these emission points are then based on the volumetric flow rates being pulled through each of the control devices when the associated mills are being operated at the maximum production rates. The annual emissions from these emission points are then conservatively based on the operation at that volumetric flow rate for 8,760 hours/yr.

Cleaning, Pickling and Galvanizing

Particulate matter emissions generated from the Pickling Line (PLST-1), Pickling Line Scale Breaker (PKLSB), the Cleaning Sections (CGL(1/2)-ST1), and the Passivation Sections (CGL(1/2)-ST2) are all captured by the associated baghouse or scrubber prior to release. The controlled emissions from each unit were based on the BACT determinations for each unit set at the appropriate outlet grain loading rate. The outlet grain loading rates for each control device can be seen in Table A-4 of Appendix A attached to the draft permit. Maximum hourly emissions from these emission points are then based on the volumetric flow rates being pulled through each of the control devices when the associated lines are being operated at the maximum production rates. The annual emissions from these emission points are then conservatively based on the operation at that volumetric flow rate for 8,760 hours/yr.

The emissions of HCl from the Pickling Line (PLST-1), as controlled and emitted after the Pickling Line Scrubber (PKL1-SCR), were based on a vendor guaranteed HCl outlet concentration in the scrubber that would not exceed 6 ppm_v. The maximum hourly HCl emission rate was again based on the volumetric flow rate being pulled through the Pickling Line Scrubber while being operated at the maximum production rate. The annual emissions from this emission point was then conservatively based on that volumetric flow rate for 8,760 hours/yr.

Slag Cutting

Larger pieces of slag may need to be cut prior to processing. This is done with the use of a 2.4 mmBtu/hr natural gas-fired slag torch (SLAG-CUT-NG). The combustion exhaust emissions generated by this torch are calculated using the methodology as described under Natural Gas Combustion Exhaust Emissions above. Particulate matter emissions generated from the Slag Cutting (SLAG-CUT-BH) are captured by a baghouse prior to release. The controlled emissions from Slag Cutting was based on an outlet grain loading limit of 0.001 gr/dscfm (all emissions considered $PM_{2.5}$ or less). This limit was based on the BACT determination and will be guaranteed by the vendor. Maximum hourly emissions from the Slag Cutting was then based on the volumetric flow rate being pulled through each the baghouse while cutting is being performed. The annual emissions from this emission point was then very conservatively based on operation at that volumetric flow rate for 8,760 hours/yr.

Storage Tanks

Nucor provided an estimate of the emissions of VOCs (Tanks T1-T9 and Tanks T24-T29) or HCl (Tanks T10 - T23) produced from each storage tank proposed for the facility. The emissions for all fixed roof tanks, excluding the open topped indoor Cold Degreaser tanks (T25-T29), were calculated using the methodology and equations for fixed roof tanks taken from AP-42, Section 7.1 - "Organic Liquid Storage Tanks." The total "routine" emissions from each fixed roof storage tank are the combination of the calculated "standing loss" and "working loss." The standing loss refers to the loss of vapors as a result of tank vapor space breathing (resulting from temperature and pressure differences) that occurs continuously when the tank is storing liquid. The working loss refers to the loss of vapors as a result of tank filling or emptying operations. Standing losses are independent of storage tank throughput while working losses are dependent on throughput. The equations use many variables based on the size and construction of the tank, the vapor pressure of the material that is stored, the throughput of that material (see Table 4), and the temperature data at the site of the tank.

The emissions of VOCs from the open topped Cold Degreaser tanks (T25-T29) are based on the equations from taken from the EPA document "Methods for Estimating Air Emissions from Chemical Manufacturing Facilities," Volume II, Chapter 16, Section 3.7.1 - "Evaporation from an Open Top Vessel or a Spill." The equations use the area of open material storage (in this case 3.14 ft^2 for each tank), the vapor pressure of the material being stored (0.019 lb/in^2), and temperature data to determine the evaporation rate of the liquid being stored. The maximum evaporation rate is used to calculate the maximum hourly emission rate of each tank and the annual emissions are based on each tank emitting at this rate for 8,760 hours/year.

Cooling Towers

Nucor has proposed the use of eight (8) Cooling Towers (CT1 though CT8) that will provide contact and non-contact cooling water to various processes throughout the mill. Emissions are possible with cooling towers as particulate matter may become entrained within the water droplets of the vapor cloud as it released into the ambient air. Nucor calculated the potential emissions from the cooling towers based on the expected worst-case total dissolved solids (TDS - 1,500 ppm_w) in the cooling water, the maximum flow rate of water used in the cooling towers (varies by cooling tower, see Table 5), and the estimated maximum drift rate (0.0005% based on the use of the high-efficiency drift eliminators as BACT) of the plume. Annual emissions from the cooling towers are based on operations of 8,760 hours per year.

Emergency Engines

Potential emissions from the proposed six (6) 2,000 horsepower (hp) natural gas-fired Emergency Engines (EMGEN1 through EMGEN6) were based on the applicable limits as given under 40 CFR 60, Subpart JJJJ (CO - 2.0 g/hp-hr, NO_x - 4.0 g/hp-hr, and VOCs - 1.0 g/hp-hr), worst-case emission factors obtained from AP-42, Section 3.2 - "Natural Gas-fired Reciprocating Engines", Tables 3.2-1/2 (SO_2 - 0.000588 lb/mmBtu, $PM_{2.5}$/PM_{10}/PM - 0.0483 lb/mmBtu, speciated HAPs - varies by HAP), and 40 CFR Part 98 - "Mandatory Greenhouse Gas Reporting," Tables C-1 and C-2 (CO_2 - 116.98 lb/mmBtu, CH_4 - 0.0022 lb/mmBtu, N_2O - 0.00022 lb/mmBtu).

The maximum hourly emissions were based on the rated horsepower of the engines and the MDHI of the engines (14.00 mmBtu/hr as based on a brake-specific fuel consumption of 7,000 Btu/hp-hr). Annual emissions were based on 100 hours per year of non-emergency operation.

Emissions Summary

Based on the above estimation methodology as submitted in Appendix A of the permit application, the facility-wide PTE of the proposed West Virginia Steel Mill is given below in Table 7. A more detailed facility-wide PTE is given in Attachment N of the permit application (p 180).

Table 7: West Virginia Steel Mill Annual PTE

Sources	PTE (ton/year)									
	CO	NO_x	$PM_{2.5}$(1)	PM_{10}(1)	PM(2)	PM(3)	SO_2	VOC	HAPs(4)	GHGs
Material Handling(5)	0.00	0.00	16.34	30.59	74.98	74.98	0.00	0.00	0.000	0
Melt Shop	3,030.00	525.00	435.92	435.92	157.16	438.90	360.00	147.00	1.600	377,594
PNG Combustion	193.48	161.84	17.51	17.51	4.38	17.51	1.38	12.67	3.410	275,114
Hot & Cold Mill	29.87	7.38	96.42	129.61	155.58	155.58	0.06	15.19	1.290	15,007
Cooling Towers	0.00	0.00	3.36	3.36	3.36	3.36	0.00	0.00	0.000	0
Emergency Engines	5.29	2.65	0.20	0.23	0.20	0.20	0.003	1.32	0.340	492
Storage Tanks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92	0.120	0
Other	3.97	4.72	0.36	0.36	0.09	0.36	0.06	0.26	0.090	5,642
Total(5)	***3,262.61***	***701.59***	***570.11***	***617.58***	***395.75***	***690.89***	***361.50***	***178.36***	***6.850***	***673,849***

(1) Includes condensables where applicable.
(2) Filterable only.
(3) Includes filterable and condensable.
(4) As the PTE of all individual HAPs are less than 10 TPY (the highest individual HAP emission rate is 4.43 TPY for n-Hexane) and the PTE of total HAPs is less than 25 TPY, the proposed WV Steel Mill is defined as a minor (area) source of HAPs for purposes of 45CSR30, 40 CFR 61, and 40 CFR 63.
(5) Includes particulate emissions from the Slag Cutting operations.
(6) Some small difference in total emissions may occur in comparison with those in the permit application due to rounding.

REGULATORY APPLICABILITY

The proposed West Virginia Steel Mill is subject to substantive requirements in the following state and federal air quality rules and regulations:

Table 8: Applicable State and Federal Air Quality Rules

State Air Quality Rules	
Emissions Standards	
45CSR2	To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers
45CSR6	To Prevent and Control Particulate Air Pollution from Combustion of Refuse
45CSR7	To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations
45CSR10	To Prevent and Control Air Pollution from the Emission of Sulfur Oxides
Permitting Programs and Administrative Rules	
45CSR13	Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation
45CSR14	Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration
45CSR30	Requirements for Operating Permits
Federal Air Quality Rules	
New Source Performance Standards (NSPS) - 40 CFR 60	
Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
Subpart AAa	Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983
Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
Maximum Achievable Control Technology (MACT) - 40 CFR 63	
Subpart ZZZZ	National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
Subpart YYYYY	National Emission Standards for Hazardous Air Pollutants for Area Sources: Ferroalloys Production Facilities
Subpart CCCCCC	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities

Each applicable rule (and any rule with questionable non-applicability) and Nucor's proposed compliance therewith will be summarized below. Nucor submitted a detailed regulatory applicability discussion as Section 3.0 in the permit application (p 20).

WV State Air Quality Rules

45CSR2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

45CSR2 "*establishes emission limitations for smoke and particulate matter which are discharged from fuel burning units*." A fuel burning unit is defined under 45CSR2 as any "*furnace, boiler apparatus, device, mechanism, stack or structure used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer.*" Additionally, the definition of "indirect heat exchanger" specifically excludes process heaters, which are defined as "*a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst.*" Based on these definitions, 45CSR2 will apply only to the 11 mmBtu/hr Water Bath Vaporizer (ASP). The other combustion units at the proposed facility do not use indirect heat transfer and are, therefore, not defined as fuel burning units under 45CSR2.

45CSR2 Opacity Standard - Section 3.1

Pursuant to 45CSR2, Section 3.1, the Water Bath Vaporizer are subject to an opacity limit of 10%. Proper maintenance and operation of the units (and the use of natural gas as fuel) should keep the opacity of the units well below 10% during normal operations.

45CSR2 Weight Emission Standard - Section 4.1(b)

The facility-wide allowable particulate matter emission rate for the applicable fuel burning unit noted above, identified as a Type "b" fuel burning unit, per 45CSR2, Section 4.1(b), is the product of 0.09 and the total design heat input of the applicable unit in million Btu per hour.

The maximum aggregate design heat input (short-term) of the applicable unit will be 11.00 mmBtu/Hr. Using the above equation, the 45CSR2 particulate matter emission limit will be 0.99 lb/hr. This limit represents filterable particulate matter only and does not include condensable particulate matter. The exemption of condensable particulate matter is located within the 45CSR2 Appendix - which establishes compliance test procedures - by not requiring measurement of the condensable particulate matter. The maximum potential hourly particulate matter emissions during normal operations from the unit (*including* condensables) is estimated to be 0.08 lb/hr. This conservative emission rate is 8.08% of the 45CSR2 limit.

45CSR2 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8

Section 8 of 45CSR2 requires testing for initial compliance with the limits under Section 3 and 4, monitoring for continued compliance, and record-keeping of that compliance. The TMR&R requirements are clarified under 45CSR2A and discussed below.

45CSR2A Applicability - Section 3

Pursuant to 45CSR2, Section 3.1(b), the owner or operator of a "*fuel burning unit(s) which combusts only natural gas shall be exempt from sections 5 and 6.*" Therefore, there are no substantive performance testing or monitoring requirements under 45CSR2 for the proposed Water Bath Vaporizer.

45CSR2A Record-keeping and Reporting Requirements - Section 7

Section 7 sets out the record-keeping requirements that Nucor will have to meet under 45CSR2A for the Water Bath Vaporizer. For units that combust only natural gas, the record-keeping requirements (45CSR§2A-7.1(a)(1)) are limited to the date and time of start-up and shutdown, and the quantity of fuel consumed on a monthly basis.

45CSR6: To Prevent and Control Particulate Air Pollution from Combustion of Refuse

Nucor has proposed the use of a flare (Vacuum Tank Degasser Flares 1 and 2) for control of vapors pulled from each VTG during degassing operations. These flares each meet the definition of an "incinerator" under 45CSR6 and are, therefore, subject to the requirements therein. The substantive requirements applicable to the flare are discussed below.

45CSR6 Emission Standards for Incinerators - Section 4.1

Pursuant to §45-6-4.1, PM emissions from incinerators are limited to a value determined by the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

Nucor has stated that the maximum capacity of each flare is 397 lbs/hour (0.20 tons/hour). Using this value in the above equation produces a PM emission limit of 1.08 lbs/hour. Nucor has estimated that a maximum of 0.08 lbs/hour of particulate matter emissions will be emitted from each flare. This is easily in compliance with the 45CSR6 limit.

45CSR6 Opacity Limits for - Section 4.3, 4.4

Pursuant to §45-6-4.3, and subject to the exemptions under 4.4, the flares each will have a 20% limit on opacity during operation. Proper design and operation of the flares (in compliance with §60.18) should prevent any substantive opacity from the units.

45CSR7: To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations

45CSR7 has requirements to prevent and control particulate matter air pollution from manufacturing processes and associated operations. Pursuant to §45-7-2.20, a "manufacturing process" means "*any action, operation or treatment, embracing chemical, industrial or manufacturing efforts . . . that may emit smoke, particulate matter or gaseous matter.*" 45CSR7 has three substantive requirements potentially applicable to the particulate matter-emitting operations at the West Virginia Steel Mill. These are the opacity requirements under Section 3, the mass emission standards under Section 4, and the fugitive emission standards under Section 5. Each of these sections will be discussed below.

45CSR7 Opacity Standards - Section 3

§45-7-3.1 sets an opacity limit of 20% on all "process source operations." Pursuant to §45-6-2.38, a "source operation" means the "*last operation in a manufacturing process preceding the emission of air contaminants [in] which [the] operation results in the separation of air contaminants from the process materials or in the conversion of the process materials into air contaminants and is not an air pollution abatement operation.*" This language would define all particulate matter emitting sources (excluding natural gas combustion exhaust sources) as "source operations" under 45CSR7 and, therefore, these sources would be subject to the opacity limit (after any applicable control device). Based on the Nucor's proposed use of BACT-level particulate matter controls (such as baghouses, fabric filters, enclosures, water sprays, etc.), these measures shall, when maintained and operated correctly, allow the particulate matter emitting sources to operate in compliance with the 20% opacity limit.

45CSR7 Weight Emission Standards - Section 4

§45-7-4.1 requires that each manufacturing process source operation or duplicate source operation meet a maximum allowable "stack" particulate matter limit based on the weight of material processed through the source operation. As the limit is defined as a "stack" limit (under Table 45-7A), the only applicable emission units (defined as a type 'a' sources) are those that can be defined as non-fugitive in nature. Pursuant to §45-7-4.1, any manufacturing process that has "*a potential to emit less than one (1) pound per hour of particulate matter and an aggregate of less than one thousand (1000) pounds per year for all such sources of particulate matter located at the stationary source*" is exempt from Section 4.1.

For the purposes of Section 4.1, a source of particulate matter emissions that are solely the result of the combustion of natural gas is not considered a "source operation" as defined under §45-7-2.38. This is based on the definition that states a source operation is one that "*result in the separation of air contaminants from the process materials or in the conversion of the process materials into air contaminants.*" Natural gas when solely a fuel does not meet the reasonable definition of a process material. Additionally, the particulate matter limits given under 45CSR7 only address filterable particulate matter, which are only above 25% of total natural gas particulate matter emissions. This determination excludes all natural gas combustion (only) sources from 45CSR7 applicability. See the following table for the 45CSR7 compliance demonstration.

Table 9: 45CSR7 Section 4.1 Compliance[1]

Source Operation(s)	EP ID	Source Type	Aggregate PWR (lb/hr)	Table 45-7A Limit (lb/hr)	PTE (lb/hr)	Control Device
EAF/LMFs/Casters	BHST-1	B	684,000	34.78[2]	17.03	BH
EAF/LMFs/Casters	BHST-2	B		34.78[2]	17.03	BH
Rolling Machine	RM-BH	B	342,000	42.52	10.09	BH
VTG-1	VTGST1	B	684,000	34.78[2]	0.08	Filter
VTG-2	VTGST2	B		34.78[2]	0.08	Filter
Pickling Line 1	PLST-1	B	684,000	69.57	0.62	SCR
Skin Pass Mill 1	SPMST1	B	684,000	23.19[2]	2.11	BH
Skin Pass Mill 2	SPMST2	B		23.19[2]	2.11	BH
Pickle Line Scale Breaker	PKLSB	B	684,000	69.57	1.36	BH
Tandem Cold Mill	TCMST	B	684,000	69.57	17.33	BH
Standalone Temper Mill	STM-BH	B	684,000	69.57	0.96	BH
CGL1 - Cleaning Station	CGL1-ST1	B	684,000	34.78[2]	0.16	BH
CGL2 - Cleaning Station	CGL2-ST1	B		34.78[2]	0.16	BH
CGL1 - Passivation Station	CGL1-ST2	B	684,000	34.78[2]	0.24	BH
CGL2 - Passivation Station	CGL2-ST2	B		34.78[2]	0.24	BH
Slag Cutting	SLAG-CUT-BH	A	342,000	34.26	0.86	BH
All DRI Handling	Various	A	127,283	34.09	1.81	Various
Scrap Handling	Various	A	439,498	44.58	2.03	Various
Slag Processing	Various	A	716	0.86	0.86	Various
EAF Baghouse Dust Silo 1	EAFVF1	A	3,372	1.85[2]	0.09	Filter
EAF Baghouse Dust Silo 2	EAFVF1	A		1.85[2]	0.09	Filter
Lime/Carbon/Alloy Handling	Various	A	7,991	7.99	1.96	BHs
Cooling Towers	Various	A	1,501,200	50.00	0.77	DEs

(1) To be conservative, this analysis was done using "duplicate sources" under 45CSR7 and aggregating other sources. Nucor provided a 45CSR7 analysis using only individual sources, and there is a strong case to be made that duplicate source limits don't apply. But as all the sources have more stringent BACT limits below even the more conservative methodology, it is a moot point.

(2) These sources, for a conservative compliance demonstration, are considered "duplicate sources" as defined in 45CSR7. As such, the PWR of all duplicate sources are aggregated and the resulting limit is distributed to each emission point relative to each source's contribution to the total PWR.

(3) For simplicity, and to be extremely conservative, all identified sources (including some fugitive sources that otherwise would not be subject to Section 4.1) are included in this demonstration and only the lowest PWR of any source is used to determine the emission limit. This method is very conservative as 45CSR7 allows the use of the PWR on an emissions-unit basis to calculate the particulate matter limit for that specific emissions unit. As most processes are serial in nature, the aggregate limit (or a value near to it) would apply in most cases on an individual emission-unit basis and not on the aggregate emissions of a group of emission units. Therefore, using the smallest line PWR to determine an aggregate emission limit is considered a reasonable (and very conservative) methodology to determine §45-7-4.1 compliance with a large number of particulate matter sources.

As shown in Table 9, due to the large process weight-rates used in the production of steel and the BACT-level particulate matter controls on particulate matter-emitting units, most of the Table 45-7A limits will be easily met (even using the more conservative compliance demonstration methodology outline in the table).

§45-7-4.2 requires that mineral acids (including HCl) shall not be released from a manufacturing process source operation or duplicate source operation in excess of the quantity given in Table 45-7B. The Pickling Line has the potential to emit HCl from the controlling scrubber. The applicable limit under Table 45-7B for HCl is 210 mg/m^3. The maximum concentration of HCl in the scrubber exhaust was determined to be 6 ppm_v and the aggregate mass emission rate of HCl was 0.25 lbs/hr for the Pickling Line. Using the emission rate and the flow rate (7,185 dscfm), the calculated exhaust concentration is 9.29 mg/m^3. The proposed emission rate is in compliance with the Table 45-7B limits.

45CSR7 Fugitive Emissions - Section 5

Pursuant to §45-7-5.1 and 5.2, each manufacturing process or storage structure generating fugitive particulate matter must include a system to minimize the emissions of fugitive particulate matter. The use of various BACT-level controls (where reasonable) on material transfer points, the use of a vacuum sweeping and watering on the haulroads, and the wetting and management of on-storage pile activity is considered a reasonable system of minimizing the emissions of fugitive particulate matter at the proposed facility.

45CSR7 Reporting and Testing - Section 8

Pursuant to §45-7-8.1, performance testing is only required per the Director's request. The required initial and continuing performance testing required for the proposed facility is given under Section 4.3 of the draft permit. Some 45CSR7 sources are included in the required testing.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

The purpose of 45CSR10 is to "*prevent and control air pollution from the emission of sulfur oxides.*" 45CSR10 has requirements limiting SO_2 emissions from "fuel burning units," limiting in-stack SO_2 concentrations of "manufacturing process source operations," and limiting H_2S concentrations in "process gas" streams that are combusted. Each substantive 45CSR10 requirement is discussed below.

45CSR10 Fuel Burning Units - Section 3

As noted under the discussion of 45CSR2 applicability, based on the same definitions therein, the proposed 11 mmBtu/hr Water Bath Vaporizer (ASP) is defined as a "fuel burning unit" and is subject to 45CSR10 under Section 3.

The allowable SO_2 emissions from the applicable fuel burning unit noted above, identified as a Type "b" fuel burning unit in a Priority III Region (which includes Mason County), per 45CSR10, Section 3.3(f), is the product of 3.2 and the total design heat input of all applicable units in million Btus per hour. The maximum aggregate design heat input (short-term) of the Water Bath Vaporizer will be 11.00 mmBtu/hr. Using the above equation results in a SO_2 limit of 35.20 pounds per hour. As the Water Bath Vaporizer is fueled by natural gas, the PTE of this fuel burning unit will be far below this limit at 0.03 lbs-SO_2/hr. This emission rate represents only a trace of the 45CSR10 limit.

45CSR10 Manufacturing Process Source Operations - Section 4.1

Section 4.1 of Rule 10 requires that no in-stack SO_2 concentration exceed 2,000 parts per million by volume (ppm_v) from any manufacturing process source operation except as provided in subdivisions 4.1(a) through 4.1(e). The only emission points with substantive in-stack SO_2 emissions are the EAF Baghouse stacks (BHST-1 and BHST-2). All other emission points with stack SO_2 emissions are on sources where the SO_2 is entirely the product of natural gas combustion. Due to the low sulfur content of pipeline-quality natural gas (PNG), SO_2 emissions from natural gas combustion sources are minimal. All natural gas combustion sources with the exception of the Hot Mill Tunnel Furnaces have SO_2 emissions less than the exemption threshold of 500 lbs/year pursuant to 45CSR§10-4.1(e). However, natural gas combustion exhaust is not considered a "source operation" under 45CSR10 as natural gas is not considered by itself as a "process material." Compliance with the limit for each of the identical EAF Baghouse stacks is given in the following table:

Table 10: 45CSR10, Section 4.1 Compliance Calculation (BHST-1/2)

Data Point	Value
Stack Emission Limit (lbs/hour)	40.36
Exit Gas Volumetric Flow (ACFM)	1,454,016
Exit Gas Temperature (°F)	225
Calculated Concentration (ppmv)	3.62
45CSR§10-4.1(e) Limit (ppmv)	2,000
% of Limit	0.18%

45CSR10 Combustion of Refinery Gas Streams - Section 5

Section 5.1 of Rule 10 prohibits the combustion of any "refinery process gas stream" that contains H_2S in excess of 50 grains for every 100 cubic feet of gas consumed. The offgases pulled from the Vacuum Tank Degasssers could be considered a "refinery process gas stream" under 45CSR10 and are combusted in the VTG Flares. However, based on information from Nucor, these offgases are not expected to contain any detectable amount of H_2S or any other sulfur compounds.

45CSR10 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8

Section 8 of Rule 10 requires performance testing for initial compliance with the limits therein, monitoring for continued compliance, and record-keeping of that compliance. The TMR&R requirements are clarified under 45CSR10A and discussed below.

45CSR10A Applicability - Section 3

Pursuant to §45-10A-3.1(b), for fuel burning units that combust "*natural gas, wood or distillate oil, alone or in combination,*" the units are not subject to the TMR&R Requirements under 45CSR10A. All the applicable fuel burning units under 45CSR10 combust natural gas and are, therefore, exempt from the TMR&R Requirements.

45CSR10A (Manufacturing Process Sources) - Sections 5.2 & 6.2

Pursuant to §45-10A-5.2(a), Nucor shall "*shall conduct or have conducted, compliance tests to determine the compliance of each manufacturing process source with the emission standards set forth in section 4 of 45CSR10.*" The SO_2 performance test required under 4.3.2 of the draft permit will satisfy this requirement.

Pursuant to §45-10A-6.2(a), Nucor shall "*submit, to the Secretary for approval, a monitoring plan for each manufacturing process source(s) that describes the method the owner or operator will use to monitor compliance with the applicable emission standard set forth in section 4 of 45CSR10.*" Nucor has proposed the use of SO_2 CEMS for the applicable BHST-1/2 emission points. Pursuant to §45-10A-6.2(a), use of CEMS shall "*be deemed to satisfy all of the requirements of an approved monitoring plan.*"

45CSR10A (Combustion Sources) - Sections 5.3, 6.3, & 7.1(b)

As stated, as the offgases pulled from VTGs are not expected to contain any detectable levels of H_2S, these sections do not apply.

45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation

The proposed construction of the West Virginia Steel Mill has the potential to emit a regulated pollutant in excess of six (6) lbs/hour and ten (10) TPY (see Attachment N of the permit application) and, therefore, pursuant to §45-13-2.24, the proposed facility is defined as a "stationary source" under 45CSR13. Pursuant to §45-13-5.1, "[n]o person shall cause, suffer, allow or permit the construction . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct." Therefore, Nucor is required to obtain a permit under 45CSR13 for the construction and operation of the proposed facility. It is noted that the proposed facility is also defined as a "major stationary source" under 45CSR14. Consistent with DAQ Policy, permitting actions reviewed under 45CR14 are concurrently reviewed under 45CSR13 and, where there is a additional or overlapping requirements, the DAQ will generally apply the stricter requirement.

As required under §45-13-8.3 ("Notice Level A"), Nucor placed a Class I legal advertisement in a "newspaper of *general circulation* in the area where the source is . . . located." The legal ad ran on January 27, 2022 in the *Point Pleasant Register*. Verification that the legal ad ran was provided on February 15, 2022.

45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration

45CSR14 sets the requirements for the new construction of a "major stationary source" (as defined under §45-14-2.43) of air pollution, on a pollutant-by-pollutant basis, in areas that are in attainment with the National Ambient Air Quality Standards (NAAQS). A proposed facility is defined as a "major stationary source" if, pursuant to §45-14-2.43,

(1) The source is listed as one of the source categories under §45-14-2.43(a) and has a PTE of any regulated pollutant in excess of 100 TPY (including fugitive emissions); or

(2) The source is not a source listed under §45-14-2.43(a) and has a PTE of any regulated pollutant in excess of 250 TPY (not including fugitive emissions).

Additionally, if a proposed source is determined to be a major stationary source under either (1) or (2) above for any single pollutant (with the exception of GHGs), pursuant to §45-14-8.2, Best Available Control Technology (BACT) applies to any additional pollutant proposed to be emitted in "significant" (as defined under §45-14-2.74) amounts. Further, as a result of the Supreme Court's decision in *Utility Air Regulatory Group v. Environmental Protection Agency*, GHGs may not trigger PSD alone, but are subject to PSD review if the emissions of CO_2e exceed a significance threshold of 75,000 TPY *and* if another pollutant triggers PSD review under (1) or (2) above (§45-14-2.80(d)).

The proposed West Virginia Steel Mill will be constructed in Mason County, WV, which is classified as in attainment with all NAAQS. As the proposed facility is listed as one of the source categories under §45-14-2.43(a) - "Iron and Steel Mill Plants" - the proposed facility is defined as a major stationary source based on the following pollutants exceeding a PTE of 100 TPY: Carbon Monoxide (CO), Oxides of Nitrogen (NO_x), Particulate Matter (PM_{10}, $PM_{2.5}$, and filterable particulate matter), Sulfur Dioxide (SO_2), and Volatile Organic Compounds (VOCs).

PSD review is additionally required for the pollutants of Greenhouse Gases (GHGs), Lead (Pb), and Fluorides (F) based on the individual significance thresholds for those pollutants (see Table 11 below). The substantive requirements of a PSD review includes a BACT analysis, an air dispersion modeling analysis (for applicable pollutants), a review of potential impacts on Federal Class 1 areas, and an additional impacts analysis. Each of these will be discussed in detail under the section PSD REVIEW REQUIREMENTS below.

Table 11: Pollutants Subject to PSD

Pollutant	Potential-To-Emit (TPY)	Significance Level (TPY)	PSD (Y/N)
CO	3,413	100	Y
NO_x	850	40	Y
$PM_{2.5}$	700	10	Y
PM_{10}	731	15	Y
Filterable PM	489	25	Y
SO_2	362	40	Y
VOCs	728	40	Y
GHGs (CO_2e)	859,430	75,000	Y
Lead	0.68	0.6	Y
Sulfuric Acid Mist	0.00	7	N
Flourides	5.25	3	Y
Vinyl Chroloride	0.00	1	N
Total Reduced Sulfur	0.00	10	N
Reduced Sulfur Compounds	0.00	10	N

45CSR30: Requirements for Operating Permits

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The proposed West Virginia Steel Mill will meet the definition of a "major source under §112 of the Clean Air Act" as outlined under §45-30-2.26 and clarified (fugitive policy) under 45CSR30b. The proposed facility-wide PTE (see Table 7) of a regulated pollutant exceeds100 TPY and, therefore, the source is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

Federal Air Quality Rules

40 CFR 60, Subpart Db: Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units - (Non-Applicable)

40 CFR 60, Subpart Db is the federal NSPS for industrial/commercial/institutional "steam generating units" (1) for which construction, modification, or reconstruction is commenced after June 19, 1984, (2) that have an MDHI greater than 100 mmBtu/hr, and (3) meet the definition of a "steam generating unit." Subpart Db contains within it emission standards, compliance methods,

monitoring requirements, and reporting and record-keeping procedures for affected facilities applicable to the rule. Subpart Db defines a "steam generating unit" as "*a device that combusts any fuel or byproduct/waste and produces steam or heats water or heats any heat transfer medium*." The definition also states that "*[t]his term does not include process heaters as they are defined in this subpart.*"

As noted under the 45CSR2 Regulatory Applicability discussion, only the 11 mmBtu/hr Water Bath Vaporizer (ASP) uses a heat transfer medium that would meet the definition of a "steam generating unit." However, the MDHI of this unit is below the applicability threshold for Subpart Db. The other combustion unit at the proposed facility that does have an MDHI above the applicability threshold (TF1) does not use a heat transfer medium and is, therefore, not defined as a "steam generating unit" under Subpart Db.

40 CFR 60, Subpart Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

40 CFR 60, Subpart Dc is the federal NSPS for small industrial/commercial/institutional "steam generating units" for which (1) construction, modification, or reconstruction is commenced after June 19, 1984, (2) that have a MDHI between 10 and 100 mmBtu/hr, and (3) meet the definition of a "steam generating unit." Subpart Dc contains within it emission standards, compliance methods, monitoring requirements, and reporting and record-keeping procedures for affected facilities applicable to the rule. Pursuant to §60.41(c), "steam generating unit" under Subpart Dc means "*a device that combusts any fuel and produces steam or heats water or heats any heat transfer medium. . . This term does not include process heaters as defined in this subpart.*" As noted under the 45CSR2 Regulatory Applicability discussion, only the 11 mmBtu/hr Water Bath Vaporizer (ASP) uses a heat transfer medium that would meet the definition of a "steam generating unit." Based on the MDHI of this unit, it is defined as an affected facility under Subpart Dc and is subject to the applicable requirements therein. The other combustion units at the proposed facility that have an MDHI that would potential subject the units to Subpart Dc do not use a heat transfer medium and are, therefore, not defined as a "steam generating unit" under Subpart Dc.

Subpart Dc does not, however, have any emission standards for units that combust only natural gas. Therefore, the proposed Water Bath Vaporizer is only subject to the nominal record-keeping and reporting requirements given under §60.48c.

40 CFR 60, Subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 - (Non-Applicable)

40 CFR 60, Subpart Kb is the federal NSPS for storage tanks containing Volatile Organic Liquids (VOLs) which construction commenced after July 23, 1984. The Subpart applies to storage vessels used to store volatile organic liquids with a capacity greater than or equal to 75 m^3 (19,813 gallons). However, storage tanks with a capacity greater than or equal to 151 m^3 (39,890 gallons) storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure less than 15.0 kPa are exempt from Subpart Kb.

The only storage tanks proposed by Nucor that are in excess of 19,813 gallons (see Table 4), identified as Storage Tanks T10 - T15 (HCl) and T16 - T23 (Spent Pickle Liquid), will not store a material that is defined as a VOL under Subpart Kb. Therefore, Subpart Kb will not apply to any tanks at the proposed steel mill.

40 CFR 60, Subpart AAa: Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983

40 CFR 60, Subpart AAa is the federal NSPS for steel plants that produce carbon, alloy, or specialty steels: electric arc furnaces, argon-oxygen de-carburization vessels, and dust-handling systems that commences construction, modification, or reconstruction after August 17, 1983. Nucor's proposed EAFs (EAF-1 and EAF-2) and associated dust-handling systems are defined as an "electric arc furnace" and therefore subject to the applicable provisions of Subpart AAa.

The substantive emission standards for EAFs are given under §60.272a and state that Nucor must not discharge or cause the discharge into the atmosphere from an EAF any gases which:

- Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf);
- Exit from a control device and exhibit 3 percent opacity or greater;
- Exit from a shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater; and
- Dust-handling systems prohibited from discharging any gases that exhibit 10 percent opacity or greater.

Nucor has proposed the use of a direct-shell evacuation control system (DEC system) for control of particulate matter emissions from the EAFs/LMFs combination stacks (EAF-1-BH and EAF-2-BH). A DEC system is one that maintains a negative pressure within the EAF above the slag or metal and ducts emissions to the control device - in this case an pulse jet fabric filter baghouse - for each EAF/LMF combo stack.

Nucor has proposed a combined (EAF/LMF) BACT emission rate for each unit as emitted from the associated controlling baghouse of the NSPS standard - 0.0052 gr/dscf. Initial compliance with this standard shall be based on the performance testing requirements given under §60.8. (and thereafter based on the periodic performance testing schedule given under 4.3.3 of the draft permit). Compliance with the opacity standard on the EAF/LMF combo stack may be achieved through the use of a continuous opacity monitoring system (COMS) or by performing daily Method 9 visible emissions testing pursuant to §60.273a(c) and installation and operation of a bag leak detection system pursuant to §60.273a(e) and (f). Nucor is proposing to meet this requirement by performing the Method 9 testing and is not proposing to install a COMS. As Nucor has proposed the use of a DEC, compliance with the opacity standard on the Melt Shop openings may be achieved through the use of a furnace static pressure monitoring device or by performing daily Method 9 visible emissions testing pursuant to §60.273a(d). Nucor will choose one of these compliance methods at a later date. Additional operational monitoring is required under §60.274a.

40 CFR 60 Subpart JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

40 CFR 60, Subpart JJJJ is the federal NSPS applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE). Nucor's proposed six (6) 2,000 horsepower (hp) natural gas-fired Emergency Engines (EMGEN1 through EMGEN6) are each defined under 40 CFR 60, Subpart JJJJ as a stationary spark-ignition internal combustion engines (SI ICE) and are, pursuant to §60.4230(a)(4)(i), subject to the applicable provisions of the rule.

Pursuant to §60.4233(e): "*Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE.*" Therefore, as a new engine that is greater than 100 hp, each proposed engine must comply with the emission standards under Table 1 for "Emergency ≥130 hp manufactured after July 1, 2009:" NO_x - 2.0 g/HP-hr, CO - 4.0 g/HP-hr, and VOC - 1.0 g/HP-hr. The emission standards and the proposed compliance therewith of the engines are given in the following table:

Table 12: Subpart JJJJ Compliance

Pollutant	Standard (g/HP-hr)	Uncontrolled Emissions (g/hp-hr)(1)	Control Percentage(1)	Controlled Emissions (g/hp-hr)(1)	JJJJ Compliant?
NO_x	2.0	--	--	2.00	Yes
CO	4.0	--	--	4.00	Yes
VOC	1.0	--	--	1.00	Yes

(1) Make and model of the engines are TBD as of this writing. BACT was determined to be the Subpart JJJJ emission limits for applicable pollutants.

Compliance with the requirements above may be determined by either purchasing an engine certified to meet the above standards and demonstrating continuous compliance according to the procedures of §60.4243(a) or purchasing a non-certified engine and demonstrating compliance according to the requirements specified in §60.4244, as applicable, and according to paragraphs §60.4243(b)(2)(i) and (ii).

40 CFR 63, Subpart CCC: National Emission Standards for Hazardous Air Pollutants for Steel Pickling--HCl Process Facilities and Hydrochloric Acid Regeneration Plants - (Non-Applicable)

40 CFR 63, Subpart CCC is a federal MACT rule that includes requirements for new steel pickling facilities located at major sources of HAPs. As shown in Table 7, the proposed WV Steel Mill is not defined as a major source of HAPs and, therefore, Subpart CCC does not apply.

40 CFR 63, Subpart ZZZZ: National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

40 CFR 63, Subpart ZZZZ is a federal MACT that establishes national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. As the West Virginia Steel Mill is defined as an area source of HAPs (see Table 7), the facility is subject to applicable requirements of Subpart ZZZZ. Pursuant to §63.6590(c):

> An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

§63.6590(c)(1) specifies that "[a] *new or reconstructed stationary RICE located at an area source*" is defined as a RICE that shows compliance with the requirements of Subpart ZZZZ by "*meeting the requirements of . . . 40 CFR part 60 subpart JJJJ, for spark ignition engines.*" Pursuant to §63.6590(a)(2)(iii), a "[a] *stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.*" The (6) 2,000 hp natural gas-fired Emergency Engines (EMGEN1 through EMGEN6) proposed for the West Virginia Steel Mill will each be defined as a new stationary RICE and, therefore, will show compliance with Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart JJJJ. Compliance with Subpart JJJJ is discussed above.

40 CFR 63, Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants for Hazardous Air Pollutants Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters - (Non-Applicable)

40 CFR 63, Subpart DDDDD is a federal MACT rule that establishes national emission limitations and work practice standards for HAPs emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAPs. As shown in Table 7, the proposed West Virginia Steel Mill is not defined as a major source of HAPs and, therefore, Subpart DDDDD does not apply.

40 CFR 63, Subpart YYYYY: National Emission Standards for Hazardous Air Pollutants for Area Sources: Electric Arc Furnace Steelmaking Facilities

40 CFR 63, Subpart YYYYY is a federal MACT rule that applies to Electric Arc Furnace Steelmaking Facilities that are area sources of HAPs. Pursuant to §63.10692, an "Electric Arc Furnace Steelmaking Facilities" is defined as "*a steel plant that produces carbon, alloy, or specialty steels using an EAF. This definition excludes EAF steelmaking facilities at steel foundries and EAF facilities used to produce nonferrous metals.*" The EAFs proposed at the West Virginia Steel Mill meet this definition, and as shown in Table 7, the proposed facility is defined as an area source of HAPs. Therefore, Subpart YYYYY applies to the EAFs.

The applicable requirements of Subpart YYYYY are targeted at (1) the management of the scrap that is charged into the EAF, and (2) the emissions standards of the EAF stacks. The requirements relating to the management of scrap are given under §63.10685 and require both a pollution prevention plan to minimize the amount of chlorinated plastics, lead, and free organic liquids that is charged to the furnace and a program to ensure that mercury switches are removed from any motor vehicle scrap charged into the EAFs.

The EAF emission standards are given under §63.10686(b) for EAFs that have a production capacity of greater than 150,000 tons/year (each Nucor EAF has a production capacity of 1,5000,000 tons/year) and state that Nucor must not discharge or cause the discharge into the atmosphere from an EAF any gases which:

- Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf); and

- Exit from a shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater;

Compliance with the pollution prevention plan and the mercury switch removal program is determined by the requirements of Subpart YYYYY. With respect to the emission standards, they are equivalent to those given under 40 CFR 60, Subpart AAa. The compliance demonstrations are also equivalent - see the discussion under Subpart AAa.

40 CFR 63, Subpart ZZZZZ: National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources - (Non-Applicable)

40 CFR 63, Subpart DDDDD is a federal MACT rule that establishes requirements for iron and steel foundries that are area sources of HAPs. Pursuant to §63.10906, an "Iron and Steel Foundry" is defined as "*a facility or portion of a facility that melts scrap, ingot, and/or other forms of iron and/or steel and pours the resulting molten metal into molds to produce final or near final shape products for introduction into commerce. Research and development facilities, operations that only produce non-commercial castings, and operations associated with nonferrous metal production are not included in this definition.*" The proposed West Virginia Steel Mill will not have the capability to pour molten steel directly into molds to produce final or near final shape products. Therefore, Subpart ZZZZZ will not apply.

40 CFR 63, Subpart CCCCCC: National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities

40 CFR 63, Subpart CCCCCC is a federal MACT rule that establishes national emission limitations and management practices for HAPs emitted from the loading of gasoline storage tanks at gasoline dispensing facilities (GDF). GDF's are defined under §63.11132 as "*any stationary facility which dispenses gasoline into the fuel tank of a motor vehicle, motor vehicle engine, nonroad vehicle, or nonroad engine, including a nonroad vehicle or nonroad engine used solely for competition. These facilities include, but are not limited to, facilities that dispense gasoline into on- and off-road, street, or highway motor vehicles, lawn equipment, boats, test engines, landscaping equipment, generators, pumps, and other gasoline-fueled engines and equipment.*" Nucor has

proposed the use of a 1,000 gallon gasoline storage tank (T7) for storing gasoline to dispense to gasoline-fueled non-road engines and equipment. This storage tank and the associated dispensing operation is defined as a GDF under Subpart CCCCCC.

Nucor has proposed a maximum monthly GDF throughput of gasoline less than 10,000 gallons and, therefore, pursuant to §63.11111(b), Nucor must comply with the requirements given under §63.11116, which include the following:

- You must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following: (1) Minimize gasoline spills; (2) Clean up spills as expeditiously as practicable; (3) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use; and (4) Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.

40 CFR 63 Subpart JJJJJJ: National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources - (Not Applicable)

40 CFR 63, Subpart JJJJJJ is a federal MACT rule that establishes national emission limitations and work practice standards for HAPs emitted from industrial, commercial, and institutional boilers located at area sources of HAPs. The proposed West Virginia Steel Mill meets the definition of an area source of HAPs (see Table 7).

Pursuant to §63.11237, the definition of "boiler" covered under Subpart JJJJJJ is limited to "an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam or hot water." This definition would only include the 11 mmBtu/hr Water Bath Vaporizer (ASP). However, pursuant to §63.11195(e), as this unit is exclusively "gas-fired," it is exempt from Subpart JJJJJJ.

PSD REVIEW REQUIREMENTS

In 1977, Congress passed the Clean Air Act Amendments (CAAA), which included the Prevention of Significant Deterioration (PSD) program. This program was designed to allow industrial development in areas that were in attainment with the NAAQS without resulting in a non-attainment designation for the area. The program, as implied in the name, permits the deterioration of the ambient air in an area (usually a county) as long as it is within defined limits (defined as "increments"). The program, however, does not allow for a significant (as defined by the rule) deterioration of the ambient air. The program prevents significant deterioration by allowing concentration levels to increase in an area within defined limits - called pollutant increments - as long as the pollutants never increase enough to exceed the NAAQS. Projected concentration levels are calculated using complex computer simulations that use meteorological data to predict impacts from the source's potential emission rates (see below). The concentration levels are then, in turn, compared to the NAAQS and pollutant increments to verify that the ambient air around the source does not significantly deteriorate (violate the increments) or violate the NAAQS. The PSD program also requires application of best available control technology (BACT) to new or modified sources, protection of Class 1 areas, and analysis of impacts on soils, vegetation, and visibility.

WV implements the PSD program as a SIP-approved state through 45CSR14. As a SIP-approved state, WV is the sole issuing authority for PSD permits. EPA has reviewed WV Legislative Rule 45CSR14 and concluded that it incorporates all the necessary requirements to successfully meet the goals of the PSD program as discussed above. EPA retains, however, an oversight role in WV's administration of the PSD program.

As stated above under the 45CSR14 Regulatory Applicability Section, the proposed West Virginia Steel Mill is defined as construction of a "major stationary source" under 45CSR14 and PSD review is required for the pollutants of CO, NO_x, $PM_{2.5}$, PM_{10}, PM (filterable), SO_2, VOCs, Lead, Fluorides, and GHGs. The substantive requirements of a PSD review include a BACT analysis, an air dispersion modeling analysis, and an additional impacts analysis - each of which will be discussed below.

BACT Analysis - 45CSR14 Section 8.2

Pursuant to 45CSR14, Section 8.2, Nucor is required to apply BACT to each reasonable emission source that emits a PSD pollutant (CO, NO_x, $PM_{2.5}$, PM_{10}, PM (filterable), SO_2, VOCs, Lead, Fluoride, and GHGs) with a PTE in excess of the amount that is defined as "significant" for that pollutant. BACT is defined under §45-14-2.12 as:

> ". . .an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the Secretary, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any federally enforceable emissions limitations or emissions limitations enforceable by the Secretary. If the Secretary determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment work practice, operational standard or combination thereof may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation and shall provide for compliance by means which achieve equivalent results."

Pursuant to USEPA and DAQ policy, the permit applicant determines an appropriate BACT emission limit by using a "top-down" analysis. The key steps in performing a "top-down" BACT analysis are the following: (1) Identification of all applicable control technologies; (2) Elimination of technically infeasible options; (3) Ranking remaining control technologies by control effectiveness; (4) Evaluation of most effective controls and documentation of results; and (5) the selection of BACT. Also included in the BACT selection process is, where appropriate, the review of BACT determinations at similar facilities using the RACT/BACT/LAER Clearinghouse (RBLC). The RBLC is a database of RACT, BACT, and LAER determinations maintained by EPA and periodically updated by the individual permitting authorities (it is important to note, however, that the RBLC is not exhaustive as not all determinations are uploaded to the database).

Nucor included a BACT analysis in their permit application under Section 4 generally using the top-down approach as described above. For a detailed review of Nucor's BACT, see Section 4 (p 30) of Permit Application R14-0039. The BACT determination is summarized below.

Nucor's BACT Submission

Nucor included in the permit application a BACT Analysis reasonably performed in accordance with 45CSR14 and relevant guidance. For each pollutant, Nucor generally performed, for each source or logical grouping of sources, a top-down analysis for the emissions unit(s). Where applicable, Nucor included an economic analysis and data from the RBLC to support the final selection of BACT.

This section will summarize key points of the Nucor BACT determination (for the detailed and complete BACT Analysis, see the permit application) and the following table lists Nucor's BACT selections (technology selection only, for tables/requirements containing BACT emission limits, see applicable permit section as cited in the below table).

Table 13: Nucor BACT Summary Table

Emission Unit ID	Pollutant	BACT Technology	Draft Permit Citation
Raw Material Handling and Storage EAF Baghouse Dust Handling Slag Processing			
SLGSK1-3 SCRPSK1-4	$PM_{2.5}$, PM_{10}, PM (filterable)	Wet Suppression, Good Housekeeping Practices	Appendix A, Table A-1, A-2
LIME-DUMP CARBON-DUMP ALLOY-HANDLE LCB EAFVF1/2	$PM_{2.5}$, PM_{10}, PM (filterable)	Enclosures (Dump Station) Enclosed Conveyers (w/ Baghouses) Storage Silo Fabric Filters Good Housekeeping Practices	
DRI-DOCK DRI1-4 DRI-DB1/2 BULK-DRI DRI-CONV	$PM_{2.5}$, PM_{10}, PM (filterable)	Enclosures (Dump Station) Storage Silo/Day Bin Fabric Filters Enclosed Conveyers (w/ Baghouses) Good Housekeeping Practices	
SCRAP-RAIL SCRAP-DOCK SCRAP-BULK34-40	$PM_{2.5}$, PM_{10}, PM (filterable)	Good Housekeeping Practices	
SCRAP-BULK1-33	$PM_{2.5}$, PM_{10}, PM (filterable)	Wet Suppression, Good Housekeeping Practices	
FUGD-UNPAVED-11U - 19U FUGD-PAVED-01P - 10P	$PM_{2.5}$, PM_{10}, PM (filterable)	Vacuum Truck (Paved) Wet Suppression	4.1.3(g)

Melt Shop			
EAF1/2 LMF1/2 (MSFUG)	CO	Good Combustion Practices	Table 4.1.4(a) Table 4.1.4(b) 4.14(e)(5)
	NO_x	LNBs, Oxy-Fuel Burners, Good Combustion Practices	
	$PM_{2.5}$, PM_{10}, (filterable) PM	DEC/Canopy Hood/Baghouse Fugitive Mitigation	
	SO_2	Scrap Management Plan	
	VOCs	Good Combustion Practices	
	Lead	DEC/Canopy Hood/Baghouse Fugitive Mitigation	
	Fluoride	DEC/Canopy Hood/Baghouse	
	GHGs	Efficiency Requirements	
CAST1/2	$PM_{2.5}$, PM_{10}, (filterable) PM	Canopy Hood/Baghouse/ Fugitive Mitigation	Table 4.1.4(b)
VTG1/2	CO	Flare	Table 4.1.4(d)(3)
	$PM_{2.5}$, PM_{10}, (filterable) PM	Particulate Matter Filter	
Natural Gas Combustion			
LD LPHTR1-7 TD TPHTR1/2 SENPHTR1/2 GALVFN1/2 BOXANN1-22 TF1 SLAG-CUT ASP	CO	Good Combustion Practices	Table 4.1.5(a)
	NO_x	LNB	
	$PM_{2.5}$, PM_{10}, (filterable) PM	Use of Natural Gas, Good Combustion Practices	
	SO_2	Use of Natural Gas	
	VOCs	Good Combustion Practices	
	GHGs	Use of Natural Gas, Good Combustion Practices	
Hot & Cold Mills			
RM PKL-1 PKLSB TCM STM SPM1/2 CGL1/2	$PM_{2.5}$, PM_{10}, (filterable) PM	Baghouses Scrubbers/Mist Eliminators	Appendix A, Table A-4
Storage Tanks			
T1 - T9	VOCs	White/Aluminum Shell Good Operating Practices	4.1.7(e)
T25 - T29	VOCs	Good Operating Practices	4.1.7(f)

Cooling Towers			
CT1 - CT8	$PM_{2.5}$, PM_{10}, (filterable) PM	Drift Eliminators	4.1.8(b)
Emergency Engines			
EMGEN1 - 6	CO	Subpart JJJJ Certification Annual Hrs of Op[1] Limit	Table 4.1.9(b)
	NO_x	Subpart JJJJ Certification Annual Hrs of Op[1] Limit	
	$PM_{2.5}$, PM_{10}, (filterable) PM	Use of Natural Gas Annual Hrs of Op[1] Limit	
	SO_2	Use of Natural Gas Annual Hrs of Op[1] Limit	
	VOCs	Annual Hrs of Op[3] Limit	
	GHGs	Use of Natural Gas Good Combustion Practices	

(1) Limited to 100 hours a year of non-emergency operation.

Material Handling Operations

Nucor will utilize a variety of materials in the steel making process and has proposed suite of BACT control technologies/mitigation strategies for the different material handling operations. Where feasible, for most of the DRI, lime, carbon, and alloy handling operations, Nucor has proposed the use of enclosed conveying systems that exhaust to baghouses/fabric filters/bin vents to control particulate matter emissions from these sources. For the slag and steel scrap material handling operations (including open storage piles), for which the particulate matter emissions are fugitive in nature (and, therefore, the reasonable use of full enclosures and baghouses is not appropriate), Nucor has proposed the use of various enclosures and wet suppression as the BACT mitigation strategies. These control technologies/mitigation strategies are consistent with similar units in the RBLC database. BACT emission rates for the control devices are set at the outlet grain loading rates for the baghouses/fabric filters/bin vents and at the lb/hr emission rates for the fugitive sources.

Melt Shop Sources: EAF/LMFs and Casting Operations

The BACT determination on the EAFs/LMFs was based for all pollutants (with the exception of GHGs) on the most efficient control technology/strategy that was not considered technically infeasible for use on the specific source in question.

BACT for the EAFs/LMFs was driven primarily by two characteristics of the emission source: the potential for high particulate matter emissions and the need to account for the variability of the scrap source in the production of VOCs and SO_2 emissions. The control of particulate matter and the BACT technology is driven by the NSPS-defined use of the DEC (and canopy hood) to achieve a very high control of the emissions generated during electrode use in the EAFs. The use of the DEC and associated baghouses preclude the use of bolt-on NO_x and CO control technology such as catalytic reduction and oxidation as the temperature profiles of these technologies do not align with the baghouse systems. There were no examples of these technologies being used on EAFs in the RBLC. The exclusion of these technologies was therefore appropriate.

VOCs and SO_2 emissions from the EAFs/LMFs are related to the characteristics of the scrap. For this reason, BACT is defined as the use of a the "Scrap Management Plan" as required under 40 CFR 63, Subpart YYYYY and the use of commercially available low residue, pre-processed, and inspected scrap. The BACT emission rates were chosen so as to allow for this site-specific scrap variability while mitigating the emissions of VOCs and SO_2. The use of the Scrap Management Plan is consistently present on the RBLC entries, and it is important to note that Nucor has proposed the use of an SO_2 CEMS that will allow for real-time monitoring of the SO_2 emissions from the EAFs/LMFs.

In addition, Nucor has noted, in response to a comment provided by the NPS concerning the consideration of lime injection in the EAF baghouses, that the proposed WV Steel Mill will be a producer of lower sulfur steel that utilizes correspondingly lower sulfur feedstocks. These feedstocks result in lower SO_2 exhaust concentrations that are below the levels generally controlled by flue gas desulfurization systems such as lime injection. Nucor also has proposed the use of lime injection in the melting process to remove sulfur in the form of the slag. While the NPS was able to provide an example from the RBLC of use of a lime-injection baghouse (Gerdau Macsteel MI-0438), it was used on a producer of higher-sulfur steel. Nucor also notes that the BACT emission limit chosen for the Gerdau Macsteel EAF/LMFs (0.35 lb-SO_2/ton-steel) was higher than that of Nucor's proposed EAF/LMFs (0.24 lb-SO_2/ton-steel). For these reasons, the DAQ agrees that lime injection in the baghouse is appropriately removed from consideration as BACT for Nucor's proposed low-sulfur steel production process.

As stated, the particulate matter BACT is driven by use of the DEC (and canopy hood) that evacuates to a baghouse to achieve a very high control of the emissions generated during electrode use in the EAFs. This is consistent with most of the other similar facilities listed in the RBLC.

Non-Fugitive Particulate Matter Sources

Generally, Nucor chose the most effective control option for the many non-fugitive particulate matter sources - baghouses, fabric filters, and silo bin vents. These sources primarily include the particulate matter generated during steel slab milling, surface cleansing operations, and the non-fugitive material handling operations. Baghouses work by pulling process exhaust gas through a tightly woven or felted fabric arranged in sheets, cartridges, or bags that collects particulate matter via sieving and other mechanisms. The dust cake that accumulates on the filters increases collection efficiency. Various cleaning techniques include pulse-jet, reverse-air, and shaker technologies. Collected dust then falls into a collection area and is periodically removed for disposal. Baghouses are capable of capturing up to 99.9%+ of uncontrolled emissions and are relatively easy to install and maintain operational at these high levels.

Also chosen for sources with certain exhaust characteristics (such as the Cold Mill Pickling Line that also has HCl emissions and the steel cleaning sections) was the use of mist eliminators and wet scrubbers. Wet scrubbers work when a scrubbing liquid is introduced into the process gas stream that captures and collects entrained particles. In the case of a venturi scrubber, the turbulent airflow atomizes the scrubbing liquid to increase droplet-particle interaction. The droplets containing particles are typically separated from the exhaust gas in a downstream cyclonic separator and/or mist eliminator. These particulate matter control devices are also capable of capturing up to 99.9%+ of uncontrolled emissions and are also relatively easy to install and maintain operation at this high levels.

Nucor provided information that showed the use of these control devices are strongly supported where data is available on the RBLC and that the chosen emission rates are at or exceed those chosen as BACT at most other similar facilities.

Natural Gas Combustion Sources

The most significant result of the BACT Analysis for the natural gas combustion sources (not including the RICE) was the determination that use of combustion exhaust technologies for control of NO_x (SCR, SNCR) and CO (oxidation catalysts) was either not technically feasible or was economically prohibitive. The elimination of these technologies were primarily based on the exhaust characteristics of the sources in question - either outside the temperature profile or used directly for heat and not captured and vented through a stack. Where these stack characteristics were not determinative, Nucor provided an economic analysis that showed the use of these technologies were cost prohibitive. For this reason, Nucor proposed the use of LNBs for the natural gas combustion devices as the NO_x BACT. This was consistent with the similar units in the RBLC database.

Again consistent with other units in the RBLC and conventional for natural gas combustion units of the size and characteristic of those proposed for the West Virginia Steel Mill, Nucor proposed the use of Good Combustion Practices and the use of natural gas as a fuel as BACT for the other pollutants including CO.

BACT emission rates were based on the AP-42, Section 1.4 for all pollutants (excluding GHGs) with the exception of NO_x from the following units: a NO_x emission factor of 0.05 lb/mmBtu was used for the Box Annealing Furnaces and the Galvanizing Furnaces and 0.07 lb/mmBtu was used for the Hot Mill Tunnel Furnace. These BACT emission limits were based on expected available vendor guarantees and consistency with recent RBLC data. GHG BACT was based on the TPY limits of the units in turn based on emission factors taken from 40 CFR Part 98 - "Mandatory Greenhouse Gas Reporting," Tables C-1 and C-2.

Additional GHG BACT Requirements

Nucor, under Section 4.8 of the permit application, provided a separate pollutant-specific GHG BACT analysis. This is appropriate as beyond unit-specific GHG BACT control technologies or pollution prevention strategies, as GHG BACT selections often involve plant-wide and systemic strategies that focus on energy efficiency or maintenance activities. Table 4-60 of the permit application (p 89) provides a suite of GHG BACT technologies for both plant-wide application and on specific units. This table is integrated into the draft permit under 4.1.11 and specific EAF/LMF GHG BACT requirements are also given under 4.1.4(c)(5).

DAQ Conclusion on BACT Analysis

The DAQ has concluded that Nucor reasonably conducted a BACT analysis using, where appropriate, the top-down analysis and eliminated technologies for valid reasons. The DAQ concludes that the selected BACT emission rates given in the draft permit are achievable, are consistent where appropriate with recent applicable BACT determinations, and are accepted as BACT. Further, the DAQ accepts the selected control technologies and control strategies as BACT.

Modeling Analysis - 45CSR14, Section 9 and Section 10

§45-14-9 and §45-14-10 contain requirements relating to a proposed major source's impact on air quality (Section 9) and the requirements for the air dispersion modeling used to determine the potential impact (Section 10). Specifically, §45-14-9.1 requires subject sources to demonstrate that "*allowable emission increases from the proposed source or modification, in conjunction with all other applicable emission increases or reductions (including secondary emissions), would not cause or contribute to*" (1) a NAAQS violation or (2) an exceedance of a maximum allowable increase over the baseline concentration in any area (exceed the increment).

Pursuant to the above, Nucor was required to do an air dispersion modeling analysis to determine the potential impacts on Class II areas only. To this end, Nucor provided a detailed Modeling Report submitted on March 23, 2022. Class I area modeling was not performed (as explained below). The pollutants required to be modeled were CO, NO_x, $PM_{2.5}$, PM_{10}, SO_2, and lead. GHGs are not modeled as part of the PSD application review process and VOC emissions (as a precursor to tropospheric ozone formation) were addressed in Section 7.1 of the modeling report. The results of the modeling analyses are summarized below. More detailed descriptions of these modeling analyses and quantitative results are contained in Attachment A prepared by Mr. Jon McClung of DAQ's Planning Section.

Class I Modeling

As part of the Clean Air Act Amendments (CAA) of 1977, Congress designated a list of national parks, memorial parks, wilderness areas, and recreational areas as federal Class I air quality areas. Federal Class I areas are defined as national parks over 6,000 acres, and wilderness areas and memorial parks over 5,000 acres. As part of this designation, the CAA gives designated Federal Land Managers (FLM's) an affirmative responsibility to protect the natural and cultural resources of Class I areas from the adverse impacts of air pollution. The impacts on a Class I area from an emissions source are determined through complex computer models that take into account the source's emissions, stack parameters, meteorological conditions, and terrain.

If an FLM demonstrates that emissions from a proposed source will cause or contribute to adverse impacts on the air quality related values (AQRV's) of a Class I area, and the permitting authority concurs, the permit will not be issued. The AQRVs typically reviewed, in the case of evaluating adverse impacts, are visibility (both regional and direct plume impact) and acid deposition (including both nitrogen and sulfur).

Additionally, the Class I Increments may not be exceeded. Class I Increments are limits to how much the air quality may deteriorate from a reference point (called the baseline). There are Class I Increments for NO_2, $PM_{2.5}$, PM_{10}, and SO_2. Based on EPA guidance, a full increment analysis is not required if the source's impacts alone do not exceed a calculated Class I Area Significant Impact Level (SIL) - based on the same ratio of the Class II increment levels and the associated Class II SILs as applied to the Class I Increment.

There are generally four Class I areas that may have to be considered when conducting PSD reviews in West Virginia. These are, in West Virginia, the Otter Creek Wilderness Area and the Dolly Sods Wilderness Area; both of which are managed by the US Forest Service. The Shenandoah National Park, managed by the National Park Service (NPS), and the James River Face Wilderness Area, managed by the US Forest Service (USFS), are in Virginia. The West Virginia Steel Mill is approximately 220 kilometers (km) from the Otter Creek Wilderness Area, 240 km from the Dolly Sods Wilderness Area, 302 km from the Shenandoah National Park, and 318 km from the James River Face Wilderness Area.

The FLMs responsible for evaluating affects on AQRVs for federally protected Class I areas were, through standard procedure, provided with information concerning the proposed facility upon the submission of the permit application. On February 4, 2022 (USFS) and on February 10, 2022 (NPS), the USFS and the NPS notified the DAQ that an AQRV analysis was not required for the proposed West Virginia Steel Mill.

Nucor evaluated the project related increase of NO_2, PM_{10}, $PM_{2.5}$, and SO_2 against the Class I SILs by placing an arc of receptors at a distance of 50 km in the direction each Class I area within 300 km, to demonstrate that impacts are below the Class I SILs. Using this methodology, the maximum modeled concentrations at the 50 km receptors were less than the Class I SILs for all modeled pollutants (see Table 5-3 of the Nucor Modeling Report), and it is therefore reasonable to assume that the project also had maximum potential impacts that were less than the Class I SILs at the much more distant Class I areas. As stated above, pollutants modeled below the Class I SILs are not required to perform a full Class I increment modeling analysis.

Class II Modeling

A Class II Modeling analysis can require up to three runs to determine compliance with Rule 14. First, the proposed source is modeled by itself, on a pollutant by pollutant basis, to determine if it produces a "significant impact" - an ambient concentration published by US EPA (the Class II SIL). If the dispersion model determines that the proposed source produces significant impacts, then the demonstration proceeds to the second stage. If the model finds that the proposed source produces "insignificant impacts", no further modeling is needed (on a pollutant-by-pollutant basis). The modeling, the results of which are given in Table 6-1 and 6-2 of the Modeling Report, indicated that CO (1-hr and 8-hr) and SO_2 (3-hr and annual) were not significant. No further modeling was therefore required for these pollutants and the associated averaging times. The other pollutants (NO_2 1-hr and annual, $PM_{2.5}$ 24-hr and annual, PM_{10} 24-hr and annual, and SO_2 1-hr and 24-hr) were "significant," thereby requiring the applicant to proceed to the next stage of the modeling process for those pollutants and the associated averaging times.

The next tier of the modeling analysis is to determine if the proposed facility, in combination with the existing sources, will produce an ambient impact that is less than the National Ambient Air Quality Standards (NAAQS). As shown in Table 6-3 of the Modeling Report, the total concentration of each pollutant is less than the NAAQS for all relevant averaging periods.

This final stage is usually to determine how much of the PSD Increment the proposed construction of the facility consumes, along with all other increment consuming sources. This value may not exceed the PSD Increment. PSD Increments are the maximum concentration increases above a baseline concentration that are allowed in a specific area. As shown in Table 6-4 of the Modeling Report, the total concentration is less than the PSD increment for each pollutant and all relevant averaging times.

Nucor, therefore, passes all the required Air Quality Impact Analysis tests as required for Class II Areas under 45CSR14. Attachment A to this evaluation is a report prepared by Jon McClung on March 28, 2022 (for the complete report with all the attachments, please see Nucor's Modeling Report) that discusses in depth the above summarized analysis.

Additional Impacts Analysis - 45CSR14, Section 12

§45-14-12 requires an applicant to provide "*an analysis of the impairment to visibility, soils, and vegetation that would occur as a result of the source or modification and general commercial, residential, industrial, and other growth associated with the source or modification*." Nucor provided an Additional Impacts Analysis in Section 8.1 of their Modeling Report submitted on March 23, 2022. The following is a summary of that analysis. It is important to note that no specific thresholds (other than indirectly the secondary NAAQS) have been promulgated by USEPA to determine if any quantified additional impacts are beyond those considered reasonable for a proposed source.

<u>Growth Analysis</u>

Nucor provided a qualitative growth analysis in determining the impact of the proposed operation of the facility. While they expect the Nucor facility to "increase full-time employment after the construction phase," they state that the "proposed project . . . is anticipated to have a limited growth impact on Mason County, WV with the potential to contribute to adverse air quality impacts for the PSD triggering pollutants." Further, Nucor expects most of the permanent employees to already reside in the area and that the "installation of the plant is not expected to significantly contribute to substantial residential or commercial growth that would cause quantifiable air quality impacts." Finally, Nucor concluded that the proposed facility "would not expect any growth attributable to this proposed project to cause quantifiable air quality impacts."

<u>Soil and Vegetation Analysis</u>

The USEPA developed the secondary NAAQS to represent levels that "provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings." Therefore, if the impacts from a source are found to be less than the secondary NAAQS, emissions from that project may be reasonably determined to not result in harmful effects to either soils or vegetation. Based on the air dispersion modeling report, (see Attachment A), the facility has shown that the impacts from the facility will be below the secondary NAAQS.

Additional Visibility Analysis

In addition to Nucor's visibility analysis contained within the review of a source's secondary NAAQS impact, they also provided a specific screening analysis to determine the impact on visibility at Beech Fork State Park. Beech Fork State Park is located approximately 40 kilometers (km) to the south-southwest of the proposed location of the plant. Using VISCREEN - a conservative screening model to determine viability impacts from a plume - Nucor determined that at Beech Fork State Park, the impact of the plume would not exceed the Level 1 screening thresholds that would indicate the need to perform a more refined Level 2 analysis. This indicates that even a conservative estimate of the visibility impact of the proposed source on this specific area shows that the impact would be nominal.

Conclusions Regarding Additional Impacts Analysis

As noted above, no quantified state or federal standards have been promulgated concerning the potential impacts analyzed under Section 12. In the absence of statutory thresholds, it is the role of the regulatory agency to make a qualitative assessment of the potential impacts on the values identified under Section 12. Based on the size, nature, and location of the proposed source, as well as the submitted analysis, the DAQ concludes that none of the metrics identified in Section 12 (visibility, soils, and vegetation) will be substantively impaired from the construction of the steel mill.

Minor Source Baseline Date - Section 2.42.b

On March 23, 2022, Permit Application R14-0039 was deemed complete. This action, pursuant to 45CSR14, Section 2.42(b), has triggered the minor source baseline date (MSBD) for the specific pollutants in the following areas:

Table 14: Minor Source Baseline Triggering

Pollutant	Mason County
NO_2	n/a(1)
$PM_{2.5}$	Yes
PM_{10}	n/a(1)
SO_2	Yes

(1) Previously Triggered.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides information on those regulated pollutants that may be emitted from the proposed West Virginia Steel Mill and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM_{10} and $PM_{2.5}$), and Sulfur Dioxide (SO_2). These pollutants have NAAQS set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria *and without national concentration standards*, are regulated through various state and federal programs designed to limit their emissions and public exposure. These programs include federal source-specific HAP regulations promulgated under 40 CFR 61 and 40 CFR 63 (NESHAPS/MACT), and WV Legislative Rule 45CSR27 that regulates certain HAPs defined as Toxic Air Pollutants (TAPs). Any potential applicability to these programs is discussed above under REGULATORY APPLICABILITY.

The majority of non-criteria regulated pollutants fall under the definition of HAPs which are compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects *may* cause cancer or other serious human health effects. These adverse health affects, however, may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no applicable federal or state ambient air quality standards for these specific chemicals*. For a complete discussion of the potential health effects of each compound listed in this section, refer to the IRIS database located at www.epa.gov/iris. It is important to note that the USEPA does not divide the various HAPs into further classifications based on toxicity or if the compound is a suspected carcinogen.

Table 15 lists each HAP currently identified in the permit application as potentially emitted in an amount greater than 20 lbs/year (0.01 tons/year) from the proposed facility. Additionally, information concerning the pollutant, and the associated carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)), and any potentially applicable MACT is provided in Attachment B.

Table 15: Hazardous Air Pollutants

Pollutant	CAS #	PTE (tons/yr)
VOC-HAPs		
Acetaldehyde	75-07-0	0.035
Acrolein	107-02-8	0.033
Benzene	71-43-2	0.013
Formaldehyde	50-00-0	0.416
n-Hexane	110-54-3	4.427
Hydrochloric Acid (HCl)	7647-01-0	1.159
Methanol	67-56-1	0.013

Pollutant	CAS #	PTE (tons/yr)
Tetrachloroethylene	127-18-4	0.010
Toluene	108-88-3	0.012
PM-HAPs		
Lead[(1)]	7439-92-1	0.675
Manganese	7439-96-5	0.450
Mercury	7439-97-6	0.165

(1) Although Nucor has stated that the lead emitted from the Melt Shop sources will be almost all elemental lead (which is not defined as a HAP), to be conservative, all lead is assumed to fall in the category of "Lead Compounds," which are defined as HAPs.

Fluoride

Nucor has estimated a facility-wide PTE of Fluoride (16984-48-8) of 5.25 tons/year. Fluoride is not defined as a HAP under Section 112(b) but is defined under this section as a non-criteria regulated pollutant (regulated under 45CSR14). Fluoride is a naturally-occurring component of rocks and soil (the largest emitter of which is volcanoes) and is also found naturally in the air, water, plants, and animals. Fluoride in many areas is added to drinking water to promote healthy teeth. Anthropogenic sources of fluoride air emissions include many industrial sources including steel production. The fluorides emitted from the proposed Nucor facility are in the form of particulate matter and are emitted only from the EAFs. Particulate matter emissions of fluoride settle in the environment and may then be introduced into the ecosystem through absorption and consumption by animals. There is no entry in the IRIS database for fluoride. An article on the extant toxicology studies of fluoride is located at:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7261729/.

As a pollutant subject to BACT, the emissions of fluoride are strongly controlled through the use of BACT-level particulate matter control technology as described above: the EAFs DEC system, canopy hood, and the EAF baghouses.

GHGs

GHGs (gases that trap heat in the atmosphere) is collectively the air pollutant defined in 40 CFR 86, Section §86.1818-12(a)(1) as the aggregate group of six greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6). GHGs are included in this section as they are regulated under 45CSR14 and are subject to the BACT requirements therein (see PSD Requirements above). GHGs as regulated collectively have no direct toxicity and have no entry in the IRIS database. For information on GHGs, see the information on EPA's website:

https://www.epa.gov/ghgemissions.

MONITORING, COMPLIANCE DEMONSTRATIONS, REPORTING, AND RECORDING OF OPERATIONS

Monitoring and Compliance Demonstrations

The primary purpose of emissions monitoring is to determine continuous compliance with emission limits and operating restrictions in the permit over a determined averaging period. Emissions monitoring may include any or all of the following:

- Real-time continuous emissions monitoring to sample and record pollutant emissions (CEMS, COMS);
- Monitoring of plant-wide variables to limit the scope of the plant as applied for;
- Parametric monitoring of variables pre-determined to be proportional (at a known ratio) to emissions (recording of material throughput, fuel usage, production, etc.);
- Real-time tracking of materials and pollutant percentages used in processes where evaporation emissions are expected;
- Monitoring of control device performance indicators (pressure drops, liquid flow rates, oxidizer temperatures, etc.) to guarantee efficacy of pollution control equipment; and
- Visual stack observations to monitor opacity.

It is the permittee's responsibility to record, certify, and report the monitoring results so as to verify compliance with the emission limits. Where emissions are based on the maximum rated short and long-term capacity of units, generally no continuous emissions or parametric monitoring is required as compliance with the emission limits is based on the specific limited capacity of the units.

For the proposed West Virginia Steel Mill, a mix of the above methods are used to give a reasonable assurance that continuous compliance with emission limits is being maintained. Specifically, some examples include:

- Use of CEMS (for CO, NO_x, and SO_2) on the EAF Baghouses [4.2.4];
- Plant-wide monitoring of the production of steel [Table 4.2.3];
- Parametric throughput monitoring on selected material handling throughputs, storage tank throughputs, and hours of operation on the emergency engines [Table 4.2.3];
- Control device monitoring on selected baghouses and scrubbers [Table 4.2.11]; and
- Visible emissions monitoring, both based on statutory requirements and source specific requirements, will be required on all applicable sources with opacity requirements [Table 4.2.12].

In addition to site-specific monitoring and compliance demonstrations, Nucor is required to meet all applicable statutory requirements including those given under 40 CFR 60, Subpart AAa and 40 CFR 63, Subparts YYYYY and CCCCCC.

Refer to Section 4.2 of the draft permit for all the unit-specific monitoring, compliance demonstration, reporting, and record-keeping requirements (MRR).

Record-Keeping

Nucor will be required to follow the standard record-keeping boilerplate language as given under Section 4.4 of the draft permit. This will require Nucor to maintain records of all data monitored in the permit and keep the information for a minimum of five years. All collected data will be available to the Director upon request. Nucor will also be required to follow all the record-keeping requirements as applicable under the variously applicable state and federal rules and regulations.

Reporting

Beyond the requirement to follow all reporting requirements as applicable under the variously applicable state and federal rules and regulations, Nucor will be required to submit the following substantive reports:

- The results of stack testing within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives [3.3.1(d)];

- When necessary, any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned [4.2.12(f)];

- A report detailing all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports [4.5.1(a)]; and

- On or before March 15, a certification of compliance with all requirements of the draft permit for the previous calendar year ending on December 31 [4.5.1(b)].

PERFORMANCE TESTING OF OPERATIONS

Performance testing is required to verify, where reasonable and appropriate, the emissions or emission factors used to determine emission units' potential-to-emit and to show initial or periodic compliance with permitted emission limits. Performance testing must be conducted in accordance with accepted test methods and according to a protocol approved by the Director prior to testing (as outlined under 3.3 of the draft permit). The following table details the initial (within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit) performance testing required of specific emission units:

Table 16: Performance Testing Requirements

Emission Unit(s)	Emission Point(s)	Pollutants	Limit(1)
EAF1/LMF1/CAST1	BHST-1(2)	All Pollutants under Table 4.1.4(a) with the exception of Total HAPs, and CO_2e.	PPH gr/dcsf (PM)
EAF2/LMF2/CAST2	BHST-2(2)		
TF1	TFST-1	CO and NO_x	PPH
GALVFN1 GALVFN2(3)	GALVFN1-ST GALVFN2-ST		
ASP	ASP-1		
RM	RM-BH	$PM_{2.5}$, PM_{10}, PM(4)	PPH gr/dscf
SPM1 SPM2(3)	SPMST1 SPMST2		

(1) Where applicable, test results will also be used to show compliance with lb/ton, lb/mmBtu, or other BACT performance limits.
(2) Initial and periodic performance testing on PM emitted from BHST-1 and BHST-2 shall be in accordance with the procedures outlined under §60.18 and §60.275a.
(3) Permittee may choose one of the identical listed units to test.
(4) Filterable Only.

Periodic testing will then be required as based on the schedule given in Table 4.3.3. of the draft permit. Refer to Section 4.3 of the draft permit for all performance testing requirements.

RECOMMENDATION TO DIRECTOR

The WVDAQ has preliminarily determined that the proposed construction of Nucor Steel West Virginia LLC's West Virginia Steel Mill located near Apple Grove, Mason County will meet the emission limitations and conditions set forth in the DRAFT permit and will comply with all current applicable state and federal air quality rules and regulations including 45CSR14, the WV Legislative Rule implementing the Prevention of Significant Deterioration (PSD) program. A final decision regarding the DRAFT permit will be made after consideration of all public comments. It is the recommendation of the undersigned, upon review and approval of this document and the DRAFT permit, that the WVDAQ, pursuant to §45-14-17, go to public notice on Permit Application R14-0039.

Joseph R. Kessler, PE
Engineer

Attachment A: Air Dispersion Modeling Report

Nucor Corporation: West Virginia Steel Mill

Permit Number R14-0039: Facility ID 053-00085

MEMO

To: Joe Kessler Jonathan D. McClung Digitally signed by: Jonathan D. McClung DN: CN = Jonathan D. McClung email = JON.D. MCCLUNG@WV.GOV C = AD O = Department of Environmental Protection OU = Division of Air Quality Date: 2022.03.28 15:32:05 -04'00'
From: Jon McClung
CC: David Fewell, Bev McKeone, Ed Andrews, Steve Pursley, Rex Compston
Date: March 28, 2022
Re: Air Quality Impact Analysis Review
Nucor Steel West Virginia LLC
West Virginia Steel Mill
PSD Permit Application: R14-0039
Plant ID: 053-00085

I have completed my review and replication of the air quality impact analysis submitted by Nucor Steel West Virginia LLC (Nucor) in support of the PSD permit application (R14-0039) for the proposed construction of a steel making plant in Apple Grove, West Virginia, within Mason County. Review and replication of various components of the modeling analysis were performed by Ed Andrews, Joe Kessler, Steve Pursley, and Rex Compston. This dispersion modeling analysis is required pursuant to §45-14-9 (Requirements Relating to the Source's Impact on Air Quality). Nucor has demonstrated that the proposed project will not cause or contribute to any violations of applicable NAAQS or increment standards.

The protocol for the modeling analysis was submitted by Nucor on January 13, 2022 and approved by West Virginia Division of Air Quality (DAQ) on January 13, 2022. The initial PSD permit application, which did not contain a modeling analysis report, was received on January 21, 2022. A revised permit application with a modeling analysis report was received on March 23, 2022. A land-use sensitivity analysis and related electronic modeling files were submitted by Nucor on February 9, 2022. Additional electronic modeling files related to the land-use analysis were submitted on February 11, 2022. Multi-processor electronic modeling files were submitted by Nucor on March 8, 2022 and single-processor electronic modeling files were submitted on March 23, 2022.

As part of the review process, an applicant for a PSD permit performs the air quality impact analysis and submits a report and the results to the DAQ. The DAQ then reviews and replicates the modeling analysis to confirm the modeling inputs, procedures, and results. This memo contains a synopsis of the modeling analysis. For a complete technical description of the modeling analysis, please consult the complete administrative record that contains communications with the applicant, the protocol, modeling analysis reports, and electronic modeling files submitted by the applicant.

This review is for the Class II area surrounding the proposed project site. Class I areas within 318 km of the project site are: Dolly Sods Wilderness (WV), Otter Creek Wilderness (WV), James River Face Wilderness (Virginia), and Shenandoah National Park (Virginia). The Federal Land Managers (FLMs) responsible for evaluating potential affects on Air Quality Related

Values (AQRVs) for federally protected Class I areas were consulted. Based on the emissions from the proposed project and the distances to the Class I areas the National Park Service and U.S. Forest Service have stated a Class I analysis for this project is not required.

Nucor will manufacture sheets of steel primarily from scrap steel, direct reduced iron (DRI), and other scrap substitutes. Iron ore will not be processed at the proposed mill and the proposed mill will not utilize coke ovens or blast furnaces. The proposed West Virginia Steel Mill is expected to produce approximately 3 million tons of steel product per year. The following air emission units are proposed for the steel manufacturing plant:

Melt Shop

- Two (2) single shell DC EAFs and two (2) LMFs each with a maximum hourly capacity of 171 tph and annual capacity of 1.5 million tons per year; each controlled with a DEC system and negative pressure baghouses,
- One (1) ladle dryer firing natural gas with a rating of 15 MMBtu/hr
- Seven (7) ladle preheaters firing natural gas each with a rating of 15 MMBtu/hr
- One (1) tundish dryer firing natural gas with a rating of 6 MMBtu/hr
- Two (2) tundish preheaters firing natural gas each with a rating of 9 MMBtu/hr
- Two (2) subentry nozzle preheaters firing natural gas each with a rating of 1 MMBtu/hr
- Two (2) vacuum degassers each with a maximum hourly capacity of 171 tph and annual capacity of 0.875 million tons per year.
- One (1) continuous caster with a maximum hourly capacity of 171 tph and annual capacity of 1.5 million tons per year

Hot Mill

- One (1) tunnel furnace firing natural gas with a rating of 150 MMBtu/hr
- One (1) rolling mill with a rating of 342 tph and annual capacity of 3 million tons per year

Cold Mill

- One (1) scale breaker with a rating of 342 tph and annual capacity of 3 million tons per year
- One (1) pickling line and two (2) galvanizing lines each with a rating of 171 tpy and annual capacity of 1.5 million tons per year
- Two (2) galvanizing furnaces firing natural gas each with a rating of 83 MMBtu/hr
- Twenty-two (22) box annealing furnaces firing natural gas each with a rating of 10 MMBtu/hr
- One (1) tandem cold mill with a rating of 342 tph and annual capacity of 3 million tons per year
- One (1) temper mill with a rating of 342 tph and annual capacity of 3 million tons per year
- Two (2) skin pass mills each with a rating of 114 tph and annual capacity of 1 million tons per year

Raw Material Handling

- One (1) lime handling system consisting of dump station, conveyor systems, and silos
- One (1) carbon handling system consisting of dump station, conveyor systems, and silos
- One (1) alloy handling system consisting of dump station, conveyor systems, and silos
- One (1) DRI handling system consisting of dump station, conveyor systems, and silos
- One (1) scrap handling system

Slag Handling

- One (1) slag handling system consisting of various conveyors systems, screen, piles, and crushers.

Storage Piles

- Three (3) slag stockpiles
- Four (4) scrap metal stockpiles

Auxiliary Equipment

- One (1) air separation unit including a 10 MMBtu/hr water vaporizer bath
- Eight (8) contact and non-contact cooling towers with a total recirculation rate of 204,150 gallons per minute
- Six (6) natural gas fired emergency engines each with a rating of 2,000 hp
- Ten (10) storage tanks containing organic liquids (e.g., diesel, gasoline, hydraulic oil, used oil)
- Fourteen (14) storage tanks containing virgin or spent hydrochloric acid
- Five (5) cold degreasers
- Paved and unpaved roadways will be constructed in and around the facility

Mason County, WV is in attainment or unclassifiable/attainment status for all criteria pollutants. The following pollutants are emitted in excess of the significant emission rate and are subject to PSD review though dispersion modeling: Lead, NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$. Also, Nucor addressed secondary formation of $PM_{2.5}$ as a result of NO_x and SO_2 emissions as well as formation of ozone from NO_x and VOC emissions. The facility wide maximum Project emission rates are in Table 1 (from Page 2-8 of the revised permit application, 3/23/2022).

Table 1. Project Emission Rates

	NO_x (tpy)	CO (tpy)	SO_2 (tpy)	VOC (tpy)	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	Total HAPs (tpy)	CO_2e (tpy)
West Virginia Steel Mill PTE	702	3,263	361	178	396	618	570	0.68	7.50	673,848

Table 2 presents a summary of the air quality standards that were addressed for the Nucor Project. The pollutants, averaging times, increments, significant impact levels (SILs) and National Ambient Air Quality Standards (NAAQS) are listed. The NAAQS are incorporated by reference in WV Legislative Rule 45CSR8 and the PSD increments are found in 45CSR14. The SIL for 1-hour NO_2 and 1-hour SO_2 represents the values the Division of Air Quality has implemented as described in the memorandum included in Attachment A.

Table 2. Ambient Air Quality Standards, SILs, and PSD Increments (µg/m3)

Pollutant	Averaging Period	SIL	Class II PSD Increment	NAAQS
Ozone	8-hr	1 ppb	-	70 ppb
Lead	Rolling 3-month avg.	-	-	0.15
CO	1-hour	2000	-	40,000
	8-hour	500	-	10,000
SO_2	1-hr	7.8	-	196
	3-hr	25	512	-
	24-hr	5	91	-
	Annual	1	20	-
NO_2	1-hour	7.5	-	188
	Annual	1	25	100
PM_{10}	24-hour	5	30	150
	Annual	1	17	-
$PM_{2.5}$	24-hour	1.2	9	35
	Annual	0.2	4	12

An air quality impact analysis, as a part of the PSD review process, is a two tiered process. First, a proposed facility is modeled by itself, on a pollutant-by-pollutant and averaging-time basis, to determine if ambient air concentrations estimated by the model exceed the significant impact level (SIL). If ambient impacts are below the SIL then the proposed source is deemed to not have a significant impact and no further modeling is required. If ambient impacts exceed the SIL, then the modeling analysis proceeds to the second tier of cumulative modeling. The cumulative modeling analysis consists of modeling the proposed facility with existing off-site sources and adding representative background concentrations and comparing the results to PSD increments (increment consuming and expanding sources only, no background concentration) and NAAQS. To receive a PSD permit, the proposed source must not cause or contribute to an exceedance of the NAAQS or PSD increments. In cases where the PSD increments or NAAQS are predicted to be exceeded in the cumulative analysis, the proposed source would not be considered to cause or contribute to the exceedance if the project-only impacts are less than the SIL, and the applicant may still receive a permit if all other requirements are met.

On January 22, 2013, the U.S. Court of Appeals for the District of Columbia Circuit vacated two provisions in EPA's PSD regulations containing SILs for $PM_{2.5}$. The court granted the EPA's request to remand and vacate the SIL provisions in Sections 51.166(k)(2) and 52.21(k)(2) of the regulations so that EPA could address corrections. EPA's position remains that the court decision does not preclude the use of SILs for $PM_{2.5}$ but special care should be taken in applying the SILs for $PM_{2.5}$. This special care involves ensuring that the difference between the NAAQS and the representative measured background concentration is greater than the SIL. If this difference is greater than the SIL, then it is appropriate to use the SIL as a screening tool to inform the decision as to whether to require a cumulative air quality impact analysis. As shown in Table 3, for both the 24-hr and annual averaging time for $PM_{2.5}$, this difference is greater than the SIL and it is appropriate to use the SIL as a screening tool.

Table 3. NAAQS, Monitor Design Values, and Significant Impact Levels

Pollutant	Avg. Period	NAAQS ($\mu g/m^3$)	SIL ($\mu g/m^3$)	Background ($\mu g/m^3$)	NAAQS - Background difference ($\mu g/m^3$)	Greater than SIL?
$PM_{2.5}$	24-hr	35	1.2	15.57	19.43	Yes
$PM_{2.5}$	Annual	12	0.2	7.7	4.3	Yes

<u>Modeling Basis</u>

The modeling system used conforms to 40 CFR 51 Appendix W, applicable guidance, the approved protocol, and is summarized below:

- Nucor used the regulatory dispersion model and supporting programs: AERMOD (version 21112), AERMET (version 21112), AERMINUTE (version 15272), AERMAP (version 18081), AERSURFACE (version 20060), and BPIPPRM (version 04274). The AERMOD modeling system (AERMOD, AERMET, AERMAP) is the regulatory default modeling system for near-field (<50km) regulatory dispersion modeling.
- AERMET was used to process five years of surface meteorological data from the

Huntington Tri-State, WV Airport (ICAO code: KHTS; WBAN Station ID 3860). Upper air data from Pittsburgh, PA airport (ICAO code: KPIT; WBAN Station ID 94823) were used.

- AERSURFACE was used to develop appropriate surface characteristic (albedo, Bowen ratio, surface roughness length) inputs to AERMET.
- A nested receptor grid was developed and AERMAP was used to determine terrain heights and hill height scales for use by AERMOD to determine maximum modeled concentrations.
- The background monitoring data used in the cumulative modeling analysis is in Table 4 (from Page 2-5 of the Nucor modeling report, 3/23/2022). The 1-hr NO_2 background concentrations vary by season-and-hour-of-day.

Table 4. Background Monitor Design Values

Pollutant	Averaging Period	Monitor	Background Concentration ($\mu g/m^3$)
SO_2	1-Hour	Ashland (21-019-0017)	14.83
NO_2	1-Hour	Ashland (21-019-0017)	Varies
	Annual	Ashland (21-019-0017)	8.91
$PM_{2.5}$	24-Hour	Ashland (21-019-0017)	15.57
	Annual	Ashland (21-019-0017)	7.70
PM_{10}	24-Hour	Ironton (39-087-0012)	25.33
Lead	Rolling 3-Month Avg.	--	--
Ozone	8-Hour	Ashland (21-019-0017)	61 ppb

Ozone Analysis and Secondary Formation of $PM_{2.5}$

In April 2019, EPA released a guidance memorandum[1] (MERP Memorandum) that describes how modeled emission rates of precursors (MERPs) could be calculated as part of a Tier 1 ozone and secondary $PM_{2.5}$ formation analysis to assess a project's emissions of precursor pollutants. The MERPs may be used to describe an emission rate of a precursor that is expected to result in ambient ozone (O_3) or fine particulate matter ($PM_{2.5}$) impact that would be less than a specific air quality concentration threshold for O_3 or $PM_{2.5}$ that a permitting authority chooses to use to determine whether an impact is significant. Additionally, the methods in this guidance can be used to quantify an estimate of impact to perform a cumulative impact analysis. Based on this guidance, Nucor has quantified the potential secondary formation of $PM_{2.5}$ from NO_x and SO_2 and the quantified the impact of the Project's NO_x and VOC emissions on ozone.

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[1]Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.s under the PSD Permitting Program (4/30/19)

The MERP Memorandum defines a MERP as:

MERP = Critical Air Quality Threshold * (Modeled emission rate from hypothetical source/ Modeled air quality impact from hypothetical source)

For ozone, EPA has proposed a Significant Impact Level (SIL) of 1 ppb and this value can be used to represent the critical air quality threshold. Table 5 shows the ozone SIL analysis for the Project (from Page 7-2 of the Nucor modeling report, 3/23/2022). Since the estimated ozone impacts from the proposed Nucor facility exceed the SIL, a cumulative analysis for ozone was performed.

Table 5. Ozone SIL Analysis Results

Averaging Period	Precursor	Critical Air Quality Threshold (ppb)	Modeled ER from Hypo. Source[a] (tpy)	Modeled Impact from Hypo. Source[a] (ppb)	Ozone MERP (tpy)	Net Emissions Increase (tpy)	% of Critical Air Quality Threshold	Ozone Project Impact (ppb)	SIL (ppb)
8-hour	NO_X	1.0	1,000	3.794	264	760.7	288.6	2.89	
	VOC	1.0	500	0.170	2,939	183.5	6.2	0.06	
							Total	**2.95**	**1.0**

[a] Hypothetical source is lower release height source located in Boyd County, Kentucky from EPA's MERPs View Qlik website. Hypothetical source emission rate represents the closest value available in MERPs View Qlik to the source-wide PTE for NO_X and VOC for the project.

Table 6 presents the results of the ozone NAAQS analysis for Nucor (from Page 7-3 of the Nucor modeling report, 3/23/2022). This analysis demonstrates that Nucor's estimated impact on ozone combined with a representative background concentration of ozone will be below the 8-hr ozone NAAQS.

Table 6. Ozone NAAQS Analysis Results

Averaging Period	Pollutant	Ozone Project Impact (ppb)	Ozone Background Conc.[a] (ppb)	Cumulative Ozone Impact (ppb)	NAAQS (ppb)
8-hour	Ozone	2.95	61	**63.9**	**70**

[a] Three-year average for 2018-2020 of the annual 4th highest daily maximum 8-hour concentrations measured at the Ashland, KY monitor (21-019-0017).

Nucor utilized EPA's website at https://www.epa.gov/scram/merps-view-qlik to obtain information necessary to assess the Project's formation of secondary $PM_{2.5}$ from NO_x and SO_2. The USEPA model results for the hypothetical source in Boyd County, KY are representative the area of the proposed Nucor facility and were used to assess secondary formation of $PM_{2.5}$ concentrations from direct emissions of NO_x and SO_2 as shown in Table 7 (from Page 7-4 of the

Nucor modeling report, 3/23/22). The total secondary 24- hr $PM_{2.5}$ project impact is 0.06013 $\mu g/m^3$ + 0.12404 $\mu g/m^3$ = 0.18417 $\mu g/m^3$. This value is added to the AERMOD-modeled direct impact of 24-hr $PM_{2.5}$ in the SIL, NAAAQS, and increment analyses. The total secondary Annual $PM_{2.5}$ project impact is 0.00343 $\mu g/m^3$ + 0.00269 $\mu g/m^3$ = 0.00612 $\mu g/m^3$. This value is added to the AERMOD-modeled direct impact of Annual $PM_{2.5}$ in the SIL, NAAAQS, and increment analyses.

Table 7. Class II Assessment of Secondary Formation of $PM_{2.5}$

Averaging Period	Precursor	Critical Air Quality Threshold ($\mu g/m^3$)	Modeled ER from Hypo. Source[a] (tpy)	Modeled Impact from Hypo. Source[a] ($\mu g/m^3$)	$PM_{2.5}$ MERP (tpy)	Net Emissions Increase (tpy)	% of Critical Air Quality Threshold	Secondary $PM_{2.5}$ Project Impact ($\mu g/m^3$)
24-hour	NO_X	1.2	1,000	0.079	15,183	760.7	5.010	**0.06013**
24-hour	SO_2	1.2	1,000	0.343	3,502	362.0	10.337	**0.12404**
Annual	NO_X	0.2	1,000	0.005	44,419	760.7	1.713	**0.00343**
Annual	SO_2	0.2	1,000	0.007	26,874	362.0	1.347	**0.00269**

[a] Hypothetical source is lower release height source located in Boyd County, Kentucky from EPA's MERPs View Qlik website. Hypothetical source emission rate represents the closest value available in MERPs View Qlik to the source-wide PTE for NO_X and SO_2 for the project.

SIL Analysis Results (Tier I)

The results of the Significant Impact Analysis for the Nucor Project sources are included in Tables 8a. and 8b. (from Page 6-1 of the Nucor report, 3/23/2022). Secondary impacts of $PM_{2.5}$ are added to the direct impacts of $PM_{2.5}$ to compare to the $PM_{2.5}$ SILs. Any pollutant/averaging time result exceeding the Significant Impact Level (SIL) must be addressed in a cumulative analysis. A pollutant/averaging time with a result below the SIL is considered insignificant and no further modeling analysis is required. A cumulative modeling analysis is required for the following pollutant(s)/averaging time(s): 1-hr and Annual NO_2, 24-hr and annual PM_{10}, 24-hr and Annual $PM_{2.5}$, 1-hr and 24-hr SO_2. No further modeling is required for 1-hr and 8-hr CO and 3-hr and Annual SO_2. No SIL exists for lead so a cumulative analysis was performed by Nucor.

Tables 8a. and 8b. SIL Analysis Results

Table 8a. Class II Significance Results for CO, PM_{10}, SO_2, and NO_2

Pollutant	Averaging Period	SIL ($\mu g/m^3$)	Maximum Impact ($\mu g/m^3$)	Exceed SIL?	SIA (km)
PM_{10}	24-hr	5	28.9	**Yes**	3.15
	Annual	1	5.6	**Yes**	2.01
CO	1-hr	2,000	1,138.7	No	--
	8-hr	500	106.7	No	--
NO_2	1-hr	7.5	92.1	**Yes**	29.22
	Annual	1	5.4	**Yes**	2.62
SO_2	1-hr	7.8	19.1	**Yes**	3.38
	3-hr	25	12.5	No	--
	24-hr	5	5.5	**Yes**	0.73
	Annual	1	0.9	No	--

Table 8b. Class II Significance Results for $PM_{2.5}$

Pollutant	Averaging Period	SIL ($\mu g/m^3$)	Maximum Impact ($\mu g/m^3$)	Secondary Impact ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Exceed SIL?	SIA (km)
$PM_{2.5}$	24-hr	1.2	7.94	0.184	8.1	**Yes**	9.71
	Annual	0.2	2.77	0.006	2.8	**Yes**	8.55

<u>Cumulative Analysis Results (Tier II)</u>

The cumulative analysis consists of both the NAAQS analysis and PSD increment analysis. The cumulative analysis for demonstrating compliance with the applicable NAAQS includes the modeled impacts from the Nucor Project sources, off-site existing sources, and representative monitored background concentrations. For off-site existing sources, the modeled emission rates represent the two-year average actual emissions. Nucor proposed and followed a procedure to identify the appropriate off-site sources to include in the NAAQS modeling source inventory. The background concentration data is summarized above with detailed information in the applicant's modeling report. Secondary impacts of $PM_{2.5}$ are added to the direct impacts of $PM_{2.5}$ to compare to the $PM_{2.5}$ NAAQS.

The SIL analysis is based on the highest-first-high modeled concentration. The cumulative analysis is based on the modeled concentration in the form of the standard for each pollutant and averaging time and varies for NAAQS and PSD increments. The results of the NAAQS analysis are included in Table 9. No modeled violations of the NAAQS are predicted.

Table 9. Class II NAAQS Analysis Results

Pollutant	Averaging Period	Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Secondary Impact ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Exceeds NAAQS?
PM_{10}	24-hr	33.44	25.33	--	58.78	150	No
$PM_{2.5}$	24-hr	10.27	15.57	0.184	26.02	35	No
	Annual	2.86	7.70	0.006	10.56	12	No
NO_2	1-hr	140.72	Incl. in Model	--	140.72	188	No
	Annual	8.54	8.91	--	17.45	100	No
SO_2	1-hr	14.79	14.83	--	29.62	196	No
Lead	Rolling 3-Month Avg.	2.37E-03	--	--	2.37E-03	0.15	No

Table 10 shows the results of the Class II PSD Increment Analysis. Pursuant to 45CSR14, actual emissions from any major stationary source on which construction commenced after the major source baseline date and actual emissions increases at any stationary source occurring after the minor source baseline date affect the baseline concentration by consuming increment.

The major source baseline dates are: January 6, 1975 for PM_{10} and sulfur dioxide; February 8, 1988 for NO_2; and October 20, 2010 for $PM_{2.5}$. All major sources of these pollutants in the maximum impact area were constructed prior to the earliest major source baseline date and are included in the baseline concentration and do not consume increment.

The minor source baseline date in Mason County, WV for $PM_{2.5}$ and SO_2 has been set by Nucor's complete PSD application on March 23, 2022. The minor source baseline date for Mason County, WV for TSP, NO_2, and PM_{10} is July 8, 1994. Both APG Polytech, LLC and ICL-North America Inc - Gallipolis Ferry Plant had their original permits (issued in 1975 and 1978, respectively) approved prior to the the minor source baseline date for TSP, NO_2 and PM_{10}.

Accordingly, Nucor is the only source consuming increment and is the only source included in the increment analysis.

Table 10. PSD Class II Increment Analysis Results

Pollutant	Averaging Period	Cumulative Model Impact ($\mu g/m^3$)	Secondary Impact [a] ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	Class II PSD Increment ($\mu g/m^3$)	Exceeds PSD Increment?
PM_{10}	24-hr	28.00	--	28.00	30	No
	Annual	5.59	--	5.59	17	No
$PM_{2.5}$	24-hr	8.15	0.184	8.34	9	No
	Annual	2.89	0.006	2.90	4	No
NO_2	Annual	5.45	--	5.45	25	No
SO_2	24-hr	3.96	--	3.96	91	No

Summary

The air quality impact analysis prepared and submitted by Nucor to the DAQ has been reviewed and replicated and conforms to 40 CFR 51 Appendix W, applicable guidance, and the modeling protocol. No modeled violations are predicted for the applicable NAAQS and PSD increment standards, and, accordingly, Nucor does not cause or contribute to any violations of the applicable NAAQS or PSD increments. No further modeling is required by Nucor.

ATTACHMENT A

Division of Air Quality Memorandum regarding Interim 1-Hour Significant Impact Levels for Nitrogen Dioxide and Sulfur Dioxide

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
dep.wv.gov

MEMORANDUM

To: Jay Fedczak
Fred Durham

Cc: John Benedict
Bev McKeone
Joe Kessler
Steve Pursley

From: Jon McClung JDM

Date: January 28, 2014

Subject: Interim 1-Hour Significant Impact Levels for Nitrogen Dioxide and Sulfur Dioxide

Summary

As a follow-up to our discussions regarding the use of interim significant impact levels (SILs) for the 1-hour nitrogen dioxide (NO_2) and 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standards (NAAQS), I have conducted a detailed review of EPA's relevant guidance concerning their recommended SILs. EPA's guidance provides recommended SILs for 1-hr NO_2 and 1-hr SO_2 to serve as a useful screening tool for implementing the PSD requirements for an air quality analysis. EPA has provided recommended interim SILs since they have not yet codified final SILs through rulemaking. I have confirmed via discussions with the EPA Region 3 Modeler, Timothy A. Leon Guerrero, that the recommended SILs are consistent for use with EPA's PSD permitting program, as codified in 40 CFR 51. We have reviewed EPA's recommended interim SILs for 1-hr NO_2 and 1-hr SO_2 and concur with EPA's finding that an applicant for a PSD permit demonstrating an air quality impact at or below the SIL is *de minimis* in nature and would not cause a violation of the NAAQS. The interim SILs should be used in air quality impact assessments for PSD permit applications until EPA issues a final rule establishing SILs for 1-hr NO_2 and 1-hr SO_2.

Discussion

On February 9, 2010, EPA published a final rule, which became effective on April 12, 2010, establishing a new 1-hour NO_2 NAAQS at 100 ppb (188 $\mu g/m^3$ at 25 °C and 760 mm Hg), based on the 3-year average of the 98^{th}-percentile of the annual distribution of the daily maximum 1-hour concentrations.

On June 22, 2010, EPA published a final rule, which became effective on August 23, 2010, establishing a new 1-hour SO_2 NAAQS at 75 ppb (196 $\mu g/m^3$ at 25 °C and 760 mm Hg), based on the 3-year average of the 99^{th}-percentile of the annual distribution of the daily maximum 1-hour concentrations.

EPA guidance establishes that an air quality assessment for a PSD application begins with the applicant estimating the potential air quality impacts from the project source alone. If a source demonstrates an impact above a SIL then a cumulative impact analysis and PSD increment analysis is required. If modeled impacts do not exceed the SIL, the permitting authority may conclude that the project would not cause or contribute to a violation of the NAAQS and EPA would not consider it necessary to conduct a more comprehensive cumulative impact assessment. Establishing an appropriate SIL is an integral part of the PSD air quality analysis process since without it a permitting authority may not conclude that impacts below a SIL are *de minimis* and further analyses that may not be necessary to demonstrate compliance would automatically be required.

Interim 1-Hour NO_2 and 1-Hour SO_2 SILs

This memo documents the establishment, for the West Virginia PSD program, of an interim 1-hour NO_2 SIL of 4 ppb (7.5 $\mu g/m^3$), which is the same as that recommended by EPA in the June 29, 2010 memorandum from Stephen D. Page, *Guidance Concerning the Implementation of the 1-hour NO_2 NAAQS for the Prevention of Significant Deterioration Program.* This memorandum, which contains the technical analysis to determine the SIL, is appended as Attachment 1.

This memo also documents the establishment, for the West Virginia PSD program, an interim 1-hour SO_2 SIL of 3 ppb (7.8 $\mu g/m^3$), which is the same as that recommended by EPA in the August 23, 2010 memorandum from Stephen D. Page, *Guidance Concerning the Implementation of the 1-hour SO_2 NAAQS for the Prevention of Significant Deterioration Program.* This memorandum, which contains the technical analysis to determine the SIL, is appended as Attachment 2.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

JUN 29 2010

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Guidance Concerning the Implementation of the 1-hour NO_2 NAAQS for the Prevention of Significant Deterioration Program

FROM: Stephen D. Page, Director
Office of Air Quality Planning and Standards

TO: Regional Air Division Directors

On January 22, 2010, the Environmental Protection Agency (EPA) announced a new 1-hour nitrogen dioxide (NO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour NO_2 NAAQS or 1-hour NO_2 standard) of 100 parts per billion (ppb), which is attained when the 3-year average of the 98th-percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 100 ppb at each monitor within an area. EPA revised the primary NO_2 NAAQS to provide the requisite protection of public health. The final rule for the new 1-hour NO_2 NAAQS was published in the Federal Register on February 9, 2010 (75 FR 6474), and the standard became effective on April 12, 2010. EPA policy provides that any federal Prevention of Significant Deterioration (PSD) permit issued under 40 CFR 52.21 on or after that effective date must contain a demonstration of source compliance with the new 1-hour NO_2 standard.

EPA is aware of reports from stakeholders indicating that some sources—both existing and proposed—are modeling potential violations of the 1-hour NO_2 standard. In many cases, the affected units are emergency electric generators and pump stations, where short stacks and limited property rights exist. However, larger sources, including coal-fired and natural gas-fired power plants, refineries, and paper mills, could also model potential violations of the new NO_2 NAAQS.

To respond to these reports and facilitate the PSD permitting of new and modified major stationary sources, we are issuing the attached guidance, in the form of two memoranda, for implementing the new 1-hour NO_2 NAAQS under the PSD permit program. The guidance contained in the attached memoranda addresses two areas. The first memorandum, titled, "General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level," includes guidance for the preparation and review of PSD permits with respect to the new 1-hour NO_2 standard. This guidance memorandum sets forth a recommended interim 1-hour NO_2 significant impact level (SIL) that states may consider when carrying out the required

PSD air quality analysis for NO_2, until EPA promulgates a 1-hour NO_2 SIL via rulemaking. The second memorandum, titled "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard," includes specific modeling guidance for estimating ambient NO_2 concentrations and determining compliance with the new 1-hour NO_2 standard.

This guidance does not bind state and local governments and the public as a matter of law. Nevertheless, we believe that state and local air agencies and industry will find this guidance useful when carrying out the PSD permit process. We believe it will provide a consistent approach for estimating NO_2 air quality impacts from proposed construction or modification of NOx emissions sources. For the most part, the attached guidance reiterates existing policy and guidance, but focuses on how this information is relevant to implementation of the new 1-hour NO_2 NAAQS.

Please review the guidance included in the two attached memoranda. If you have questions regarding the general implementation guidance contained in the first memorandum, please contact Raj Rao (rao.raj@epa.gov). If you have questions regarding the modeling guidance in the second memorandum, please contact Tyler Fox (fox.tyler@epa.gov). We are continuing our efforts to address permitting issues related to NO_2 and other NAAQS including the recently-signed 1-hour sulfur dioxide NAAQS. We plan to issue additional guidance to address these new 1-hour standards in the near future.

Attachments:

1. Memorandum from Anna Marie Wood, Air Quality Policy Division, to EPA Regional Air Division Directors, "General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level" (June 28, 2010).
2. Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" (June 28, 2010).

cc: Anna Marie Wood
Richard Wayland
Raj Rao
Tyler Fox
Dan deRoeck
Roger Brode
Rich Ossias
Elliott Zenick
Brian Doster

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

June 28, 2010

MEMORANDUM

SUBJECT: General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level

FROM: Anna Marie Wood, Acting Director /s/
Air Quality Policy Division

TO: Regional Air Division Directors

INTRODUCTION

We are issuing the following guidance to explain and clarify the procedures that may be followed by applicants for Prevention of Significant Deterioration (PSD) permits and permitting authorities reviewing such applications to properly demonstrate that proposed construction will not cause or contribute to a violation of the new 1-hour nitrogen dioxide (NO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour NO_2 NAAQS or 1-hour NO_2 standard) that became effective on April 12, 2010. EPA revised the primary NO_2 NAAQS by promulgating a 1-hour NO_2 NAAQS to provide the requisite protection of public health. Under section 165(a)(3) of the Clean Air Act (the Act) and sections 52.21(k) and 51.166(k) of EPA's PSD regulations, to obtain a permit, a source must demonstrate that its proposed emissions increase will not cause or contribute to a violation of any NAAQS.

This guidance is intended to: (1) explain the recommended procedures for stakeholders to follow to properly address concerns over high preliminary modeled estimates of ambient NO_2 concentrations that suggest potential violations of the new 1-hour NO_2 standard under some modeling and permitting scenarios; (2) help reduce the burden of modeling for the hourly NO_2 standard where it can be properly demonstrated that a source will not have a significant impact on ambient 1-hour NO_2 concentrations; and (3) identify approaches that allow sources and permitting authorities to mitigate, in a manner consistent with existing regulatory requirements, potential modeled violations of the 1-hour NO_2 NAAQS, where appropriate. Accordingly, the techniques described in this memorandum may be used by permit applicants and permitting authorities to configure projects and permit conditions in order to reasonably conclude that a proposed source's emissions do not cause or contribute to modeled 1-hour NO_2 NAAQS violations so that permits can be issued in accordance with the applicable PSD program requirements.

This guidance discusses existing provisions in EPA regulations and previous guidance for applying those provisions but focuses on the relevancy of this information for implementing the new NAAQS for NO_2. Importantly, however, this guidance also sets forth a recommended interim 1-hour NO_2 significant impact level (SIL) that EPA will use for implementing the federal PSD program, and that states may choose to rely upon to implement their PSD programs for NOx if they agree that these values represent *de minimis* impact levels and incorporate into each permit record a rationale supporting this conclusion. This interim SIL is a useful screening tool that can be used to determine whether or not the emissions from a proposed source will significantly impact hourly NO_2 concentrations, and, if significant impacts are predicted to occur, whether the source's emissions "cause or contribute to" any modeled violations of the new 1-hour NO_2 NAAQS.

BACKGROUND

On April 12, 2010, the new 1-hour NO_2 NAAQS became effective. EPA interprets its regulations at 40 CFR 52.21 (the federal PSD program) to require permit applicants to demonstrate compliance with "any" NAAQS that is in effect on the date a PSD permit is issued. (See, e.g., EPA memo dated April 1, 2010, titled "Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards.") Due to the introduction of a short-term averaging period for the 1-hour NO_2 NAAQS, we anticipate that some stationary sources with relatively short stacks may experience increased difficulty demonstrating that emissions from new construction or modifications will not cause or contribute to a violation of the 1-hour NO_2 NAAQS.

We are responding to reports from stakeholders which indicate that some sources, existing and proposed, are modeling high hourly NO_2 concentrations showing violations of the 1-hour NO_2 NAAQS—based only on the source's projected emissions of NOx under some modeling and permitting scenarios. We find that, in many cases, the modeled violations are resulting from emissions at emergency electric generators and pump stations, where short stacks and limited property rights exist. In other cases, the problem may occur during periods of unit startup, particularly where controls may initially not be in operation. Finally, certain larger sources, including coal-fired and natural gas-fired power plants, refineries, and paper mills could also experience problems in meeting the new 1-hour NO_2 NAAQS using particular modeling assumptions and permit conditions.

We believe that, in some instances, the projected violations result from the use of maximum modeled concentrations that do not adequately take into account the form of the 1-hour standard, and are based on the conservative assumption of 100% NOx-to-NO_2 conversion in the ambient air. To the extent that this is the case, it may be possible to provide more accurate projections of ambient NO_2 concentrations by applying current procedures which account for the statistical form of the 1-hour NO_2 standard, as well as more realistic estimates of the rate of conversion of NOx emissions to ambient NO_2 concentrations. See EPA Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" (June 28, 2010) for specific modeling guidance for estimating ambient NO_2 concentrations consistent with the new 1-hour NO_2 NAAQS. In addition, where short stacks are currently being used, or are under design, it may be possible to lessen the source's air quality impacts without improper dispersion by implementing "good engineering practice" (GEP) stack heights to increase the height of existing or designed stacks to avoid excessive concentrations due to downwash, as described in the guidance below.

It is EPA's expectation that the guidance in this memorandum and available modeling guidance for NO_2 assist in resolving some of the issues arising from preliminary analyses that are reportedly showing potential exceedances of the new 1-hour NO_2 NAAQS that would not be present under more refined modeling applications. In addition, the techniques described in this memorandum may also help avoid violations of the standard through design of the proposed source or permit conditions, consistent with existing regulatory requirements, which enable the source to demonstrate that its proposed emissions increase will not cause or contribute to a modeled violation of the 1-hour NO_2 standard. Moreover, the interim 1-hour NO_2 SIL that is included in this guidance will provide a reasonable screening tool for efficiently implementing the PSD requirements for an air quality impact analysis.

The following discussion provides guidance concerning demonstrating compliance with the new NAAQS and mitigating modeled violations using air quality-based permit limits more stringent than what the Best Available Control Technology provisions may otherwise require, air quality offsets, the use of GEP stack heights, possible permit conditions for emergency generators, and an interim 1-hour NO_2 SIL.

AIR-QUALITY BASED EMISSIONS LIMITATIONS

Once a level of control required by the Best Available Control Technology provisions is proposed by the PSD applicant, the proposed source's emissions must be modeled at the BACT emissions rate(s) to demonstrate that those emissions will not cause or contribute to a violation of any NAAQS or PSD increment. EPA's 1990 Workshop Manual (page B.54) describes circumstances where a source's emissions based on levels proposed through the top-down process may not be sufficiently controlled to prevent modeled violations of an increment or NAAQS. In such cases, it may be appropriate for PSD applicants to propose a more stringent control option (that is, beyond the level identified via the top-down process) as a result of an adverse impact on the NAAQS or PSD increments.

DEMONSTRATING COMPLIANCE WITH THE NEW NAAQS & MITIGATING MODELED VIOLATIONS WITH AIR QUALITY OFFSETS

A 1988 EPA memorandum provides procedures to follow when a modeled violation is identified during the PSD permitting process. See Memorandum from Gerald A. Emison, EPA OAQPS, to Thomas J. Maslany, EPA Air Management Division, "Air Quality Analysis for Prevention of Significant Deterioration (PSD)." (July 5, 1988). In brief, a reviewing authority may issue a proposed new source or modification a PSD permit only if it can be shown that the proposed project's emissions will not "cause or contribute to" any modeled violations.

To clarify the above statement, in cases where modeled violations of the 1-hour NO_2 NAAQS are predicted, but the permit applicant can show that the NOx emissions increase from the proposed source will not have a significant impact *at the point and time of any modeled violation*, the permitting authority has discretion to conclude that the source's emissions will not contribute to the modeled violation. As provided in the July 5, 1988, guidance memo, in such instances, because of the proposed source's *de minimis* contribution to any modeled violation, the source's impact will not be considered to cause or contribute to such modeled violations, and the permit could be issued. This concept continues to apply, and the significant impact level (described further below) may be used as part of this analysis. A 2006 decision by the EPA Environmental Appeals Board (EAB) provides detailed reasoning that demonstrates the permissibility of finding that a PSD source would not be considered to cause or contribute to a modeled NAAQS violation because its estimated air quality impact was insignificant at the time and place of the modeled violations.[1] See In re *Prairie State Gen. Co.*, 13 E.A.D. ___, ___, PSD Appeal No. 05-05, Slip. Op. at 137-144 (EAB 2006)

However, where it is determined that a source's impact does cause or contribute to a modeled violation, a permit cannot be issued without some action taken to mitigate the source's impact. In accordance with 40 CFR 51.165(b)[2], a major stationary source or major modification (as defined at §51.165(a)(1)(iv) and (v)) that locates in an NO_2 attainment area, but would cause or contribute to a violation of the 1-hour NO_2 NAAQS anywhere may "reduce the impact of its emissions upon air quality by obtaining sufficient emission reductions to, at a minimum, compensate for its adverse ambient [NO_2] impact where the major source or major modification would otherwise cause or contribute to a violation ...." An applicant can meet this requirement for obtaining additional emissions reductions by either reducing its emissions at the source, e.g., promoting more efficient production methodologies and energy efficiency, or by obtaining air quality offsets (see below). See, e.g., In re *Interpower of New York, Inc.*, 5 E.A.D. 130, 141 (EAB 1994).[3] A State may also provide the necessary emissions reductions by imposing emissions limitations on other sources through an approved State Implementation Plan (SIP) revision. These approaches may also be combined as necessary to demonstrate that a source will not cause or contribute to a violation of the NAAQS.

Unlike emissions offset requirements in nonattainment areas, in addressing the air quality offset concept, it may not be necessary for a permit applicant to fully offset the proposed emissions increase if an emissions reduction of lesser quantity will mitigate the adverse air quality impact on a modeled violation. ("Although full emission offsets are not required, such a source must obtain emission offsets sufficient to compensate for its air quality impact where the violation occurs." 44 FR 3274, January 16, 1979, at 3278.) To clarify this, the 1988 guidance memo referred to above states that:

> offsets sufficient to compensate for the source's significant impact must be obtained pursuant to an approved State offset program consistent with State Implementation Plan (SIP) requirements under 40 CFR 51.165(b). Where the source is contributing to an

[1] While there is no 1-hour NO_2 significant impact level (SIL) currently defined in the PSD regulations, we believe that states may adopt interim values, with the appropriate justification for such values, to use for permitting purposes. In addition, we are recommending an interim SIL as part of this guidance for implementing the NO_2 requirements in the federal PSD program, and in state programs where states choose to use it.

[2] The same provision is contained in EPA's Interpretative Ruling at 40 CFR part 51 Appendix S, section III.

[3] In contrast to Nonattainment New Source Review permits, offsets are not mandatory requirements in PSD permits if it can otherwise be demonstrated that a source will not cause or contribute to a violation of the NAAQS. See, In re *Knauf Fiber Glass, GMBH*, 8 E.A.D. 121, 168 (EAB 1999).

existing violation, the required offset may not correct the violation. Such existing violations must be addressed [through the SIP].

In addition, in order to determine the appropriate emissions reductions, the applicant and permitting authority should take into account modeling procedures for the form of the 1-hour standard and for the appropriate NOx-NO_2 conversion rate that applies in the area of concern. As part of this process, existing ambient ozone concentrations and other meteorological conditions in the area of concern may need to be considered. Note that additional guidance for this and other aspects of the modeling analysis for the impacts of NOx emissions on ambient concentrations of NO_2 are addressed in EPA modeling guidance, including the June 28, 2010, Memorandum titled, "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard."

"GOOD ENGINEERING PRACTICE" STACK HEIGHT & DISPERSION TECHNIQUES

If a permit applicant is unable to show that the source's proposed emissions increase will not cause or contribute to a modeled violation of the new 1-hour NO_2 NAAQS, the problem could be the result of plume downwash effects which may cause high ambient concentrations near the source. In such cases, a source may be able to raise the height of its existing stacks (or designed stacks if not yet constructed) to a GEP stack height of at least 65 meters, measured from the ground-level elevation at the base of the stack.

While not necessarily totally eliminating the effects of downwash in all cases, raising stacks to GEP height may provide substantial air quality benefits in a manner consistent with statutory provisions (section 123 of the Act) governing acceptable stack heights to minimize extensive concentrations due to atmospheric downwash, eddies or wakes. Permit applicants should also be aware of the regulatory restrictions on stack heights for the purpose of modeling for compliance with NAAQS and increments. Section 52.21(h) of the PSD regulations currently prohibits the use of dispersion techniques, such as stack heights above GEP, merged gas streams, or intermittent controls for setting NOx emissions limits or to meet the annual and 1-hour NAAQS and annual NO_2 increments. However, stack heights in existence before December 31, 1970, and dispersion techniques implemented before then, are not affected by these limitations. EPA's general stack height regulations are promulgated at 40 CFR 51.100(ff), (gg), (hh), (ii), (jj), (kk) and (nn), and 40 CFR 51.118.

a. *Stack heights*: A source cannot take credit for that portion of a stack height in excess of the GEP height when modeling to develop the NOx emissions limitations or to determine source compliance with the annual and 1-hour NO_2 NAAQS. It should be noted, however, that this limitation <u>does not limit</u> the actual height of any stack constructed by a new source or modification.

The following limitations apply in accordance with §52.21(h):

- For a stack height less than GEP, the actual stack height must be used in the source impact analysis for NOx emissions;

- For a stack height equal to or greater than 65 meters, the impact on NOx emission limits may be modeled using the greater of:
    - A *de minimis* stack height equal to 65 meters, as measured from the ground-level elevation at the base of the stack, without demonstration or calculation (40 CFR 51.100(ii)(1));
    - The refined formula height calculated using the dimensions of nearby structures in accordance with the following equation:

  GEP = H + 1.5L, where H is the height of the nearby structure and L is the lesser dimension of the height or projected width of the nearby structure (40 CFR 51.100(ii)(2)(ii)).[4]

- A GEP stack height exceeding the refined formula height may be approved when it can be demonstrated to be necessary to avoid "excessive concentrations" of NO_2 caused by atmospheric downwash, wakes, or eddy effects by the source, nearby structures, or nearby terrain features.
  (40 CFR 51.100(ii)(3), (jj), (kk));

- For purposes of PSD (and NOx/NO_2), "excessive concentrations" means a maximum ground-level concentration of NO_2 due to NOx emissions from a stack due in whole or in part to downwash, wakes, and eddy effects produced by nearby structures or nearby terrain features which individually is at least 40 percent in excess of the maximum NO_2 concentration experienced in the absence of such effects and (a) which contributes to a total NO_2 concentration due to emissions from all sources that is greater than the annual or 1-hour NO_2 NAAQS or (b) greater than the PSD (annual) increment for NO_2.
  (40 CFR 51.100(kk)(1)).

Reportedly, for economic and other reasons, many existing source stacks have been constructed at heights less than 65 meters, and source impact analyses may show that the source's emissions will cause or contribute to a modeled violation of the annual or 1-hour NO_2 NAAQS. Where this is the case, sources should be aware that they can increase their stack heights up to 65 meters without a GEP demonstration.

b. *Other dispersion techniques*: The term "dispersion technique" includes any practice carried out to increase final plume rise, subject to certain exceptions (40 CFR 51.100(hh)(1)(iii), (2)(i) – (v)). Beyond the noted exceptions, such techniques are not allowed for getting credit for modeling source compliance with the annual and 1-hour NO_2 NAAQS and annual NO_2 increment.

[4] For stacks in existence on January 12, 1979, the GEP equation is GEP = 2.5 H (provided the owner or operator produces evidence that this equation was actually relied on in establishing an emission limitation for NOx (40 CFR 51.100(ii)(2)(i)

OPERATION OF EMERGENCY EQUIPMENT & GENERAL STARTUP CONDITIONS

In determining an emergency generator's potential to emit, existing guidance (EPA memo titled "Calculating Potential to Emit (PTE) for Emergency Generators," September 6, 1995) allows a default value of 500 hours "for estimating the number of hours that an emergency generator could be expected to operate under worst-case conditions." The guidance also allows for alternative estimates to be made on a case-by-case basis for individual emergency generators. This time period must also consider operating time for both testing/maintenance as well as for emergency utilization. Likewise, existing EPA policy does not allow NOx emissions to be excluded from the source impact analysis (NAAQS and increments) when the emergency equipment is operating during an emergency. EPA provides no exemption from compliance with the NAAQS during periods of emergency operation. Thus, it is not sufficient to consider only emissions generated during periods of testing/maintenance in the source impact analysis.

If during an emergency, emergency equipment is never operated simultaneously with other emissions units at the source that the emergency equipment will back up, a worst-case hourly impact analysis may very well occur during periods of normal source operation when other emissions units at the facility are likely to be operating simultaneously with the scheduled testing of emergency equipment. To avoid such worst-case modeling situations, a permit applicant may commit to scheduling the testing of emergency equipment during times when the source is not otherwise operating, or during known off-peak operating periods. This could provide a basis to justify not modeling the 1-hour impacts of the emergency equipment under conditions that would include simultaneous operation with other onsite emissions units. Accordingly, permits for emergency equipment may include enforceable conditions that specifically limit the testing/maintenance of emergency equipment to certain periods of time (seasons, days of the week, hours of the day, etc.) as long as these limitations do not constitute dispersion techniques under 40 CFR 51.1(hh)(1)(ii).

We also note that similar problems associated with the modeling of high 1-hour NO_2 concentrations have been reported to occur during startup periods for certain kinds of emissions units—often because control equipment cannot function during all or a portion of the startup process. EPA currently has no provisions for exempting emissions occurring during equipment startups from the air quality analysis to demonstrate compliance with the NAAQS. Startup emissions may occur during only a relatively small portion of the unit's total annual operating schedule; however, they must be included in the required PSD air quality analysis for the NAAQS. Sources may be willing to accept enforceable permit conditions limiting equipment startups to certain hours of the day when impacts are expected to be lower than normal. Such permit limitations can be accounted for in the modeling of such emissions. Applicants should direct other questions arising concerning procedures for modeling startup emissions to the applicable permitting authority to determine the most current modeling guidance.

SCREENING VALUES

In the final rule establishing the hourly NO_2 standard, EPA discussed various implementation considerations for the PSD permitting program. 75 FR.6474, 6524 (Feb. 9, 2010). This discussion included the following statements regarding particular screening values that have historically been used on a widespread basis to facilitate implementation of the PSD permitting program:

> We also believe that there may be a need to revise the screening tools currently used under the NSR/PSD program for completing NO_2 analyses. These screening tools include the significant impact levels (SILs), as mentioned by one commenter, but also include the significant emissions rate for emissions of NOx and the significant monitoring concentration (SMC) for NO_2. EPA intends to evaluate the need for possible changes or additions to each of these important screening tools for NOx/NO_2 due to the addition of a 1-hour NO_2 NAAQS. If changes or additions are deemed necessary, EPA will propose any such changes for public notice and comment in a separate action. 75 FR 6525.

EPA intends to conduct an evaluation of these issues and submit our findings in the form of revised significance levels under notice and comment rulemaking if any revisions are deemed appropriate. In the interim, for the reasons provided below, we recommend the continued use of the existing significant emissions rates (SER) for NOx emissions as well as an interim 1-hour NO_2 SIL that we are setting forth today for conducting air quality impact analyses for the 1-hour NO_2 NAAQS. As described in the section titled Introduction, EPA intends to implement the interim 1-hour NO_2 SIL contained herein under the federal PSD program and offers states the opportunity to use it in their PSD programs if they choose to do so. EPA is not addressing the significant monitoring concentrations in this memorandum.

SIGNIFICANT EMISSIONS RATE

Under the terms of existing EPA regulations, the applicable significant emissions rate for nitrogen oxides is 40 tons per year. 40 CFR 52.21(b)(23); 40 CFR 51.166(b)(23). The significant emissions rates defined in those regulations are specific to individual pollutants but are not differentiated by the averaging times of the air quality standards applicable to some of the listed pollutants. Although EPA has not previously promulgated a NO_2 standard using an averaging time of less than one year, the NAAQS for SO_2 have included standards with 3-hour and 24-hour averaging times for many years. EPA has applied the 40 tons per year significant emissions rate for SO_2 across all of these averaging times. Until the evaluation described above and any associated rulemaking is completed, EPA does not believe it has cause to apply the NO_2 significant emissions rate any differently than EPA has historically applied the SO_2 significant emissions rate and others that apply to standards with averaging times less than 1 year.

Under existing regulations, an ambient air quality impact analysis is required for "each pollutant that [a source] would have the potential to emit in significant amounts." 40 CFR 52.21(m)(1)(i)(a); 40 CFR. 51.166(m)(1)(i)(a). For modifications, these regulations require this analysis for "each pollutant for which [the modification] would result in a significant net emissions increase." 40 CFR.52.21(m)(1)(i)(b); 40 CFR.51.166(m)(1)(i)(b). EPA construes this regulation to mean that an ambient impact analysis is not necessary for pollutants with emissions rates below the significant emissions rates in paragraph (b)(23) of the regulations. No additional action by EPA or permitting authorities is necessary at this time to apply the 40 tpy significant emissions rate in existing regulations to the hourly NO_2 standard.

INTERIM 1-HOUR NO_2 SIGNIFICANT IMPACT LEVEL

A significant impact level (SIL) serves as a useful screening tool for implementing the PSD requirements for an air quality analysis. The primary purpose of the SIL is to serve as a screening tool to identify a level of ambient impact that is sufficiently low relative to the NAAQS or PSD increments such that the impact can be considered trivial or *de minimis*. Hence, the EPA considers a source whose individual impact falls below a SIL to have a *de minimis* impact on air quality concentrations that already exist. Accordingly, a source that demonstrates that the projected ambient impact of its proposed emissions increase does not exceed the SIL for that pollutant at a location where a NAAQS or increment violation occurs is not considered to cause or contribute to that violation. In the same way, a source with a proposed emissions increase of a particular pollutant that will have a significant impact at some locations is not required to model at distances beyond the point where the impact of its proposed emissions is below the SILs for that pollutant. When a proposed source's impact by itself is not considered to be "significant," EPA has long maintained that any further effort on the part of the applicant to complete a cumulative source impact analysis involving other source impacts would only yield information of trivial or no value with respect to the required evaluation of the proposed source or modification. The concept of a SIL is grounded on the *de minimis* principles described by the court in *Alabama Power Co. v. Costle*, 636 F.2d 323, 360 (D.C. Cir. 1980); See also *Sur Contra La Contaminacion v. EPA*, 202 F.3d 443, 448-49 (1st Cir. 2000) (upholding EPA's use of SIL to allow permit applicant to avoid full impact analysis); *In re: Prairie State Gen. Co.*, PSD Appeal No. 05-05, Slip. Op. at 139 (EAB 2006)

EPA has codified several SILs into regulations at 40 CFR 51.165(b). EPA plans to undertake rulemaking to develop a 1-hour NO_2 SIL for the new NAAQS for NO_2. However, EPA has recognized that the absence of an EPA-promulgated SIL does not preclude permitting authorities from developing interim SILs for use in demonstrating that a cumulative air quality analysis would yield trivial gain. Response to Comments, Implementation of New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers in Diameter ($PM_{2.5}$), pg. 82 (March 2008) [EPA-HQ-OAR-2003-0062-0278].

Until such time as a 1-hour NO_2 SIL is defined in the PSD regulations, we are herein providing a recommended interim SIL that we intend to use as a screening tool for completing the required air quality analyses for the new 1-hour NO_2 under the federal PSD program at 40 CFR 52.21. To support the application of this interim SIL in each instance, a permitting authority that utilizes this SIL as part of an ambient air quality analysis should include in the permit record the analysis reflected in this memorandum and the referenced documents to demonstrate that an air quality impact at or below the SIL is *de minimis* in nature and would not cause a violation of the NAAQS.

Using the interim 1-hour NO_2 SIL, the permit applicant and permitting authority can determine: (1) whether, based on the proposed increase in NOx emissions, a cumulative air quality analysis is required; (2) the area of impact within which a cumulative air quality analysis should focus; and (3) whether, as part of a cumulative air quality analysis, the proposed source's NOx emissions will cause or contribute to a modeled violation of the 1-hour NO_2 NAAQS.

In this guidance, EPA recommends an interim 1-hour NO_2 SIL value of 4 ppb. To determine initially whether a proposed project's emissions increase will have a significant impact (resulting in the need for a cumulative air quality analysis), this interim SIL should be compared to either of the following:

- The highest of the 5-year averages of the maximum modeled 1-hour NO_2 concentrations predicted each year at each receptor, based on 5 years of National Weather Service data; or
- The highest modeled 1-hour NO_2 concentration predicted across all receptors based on 1 year of site-specific meteorological data, or the highest of the multi-year averages of the maximum modeled 1-hour NO_2 concentrations predicted each year at each receptor, based on 2 or more, up to 5 complete years of available site-specific meteorological data.

Additional guidance will be forthcoming for the purpose of comparing a proposed source's modeled impacts to the interim 1-hour NO_2 SIL in order to make a determination about whether that source's contribution is significant when a cumulative air quality analysis identifies violations of the 1-hour NO_2 NAAQS (i.e., "causes or contributes to" a modeled violation).

We derived this interim 1-hour NO_2 SIL by using an impact equal to 4% of the 1-hour NO_2 NAAQS (which is 100 ppb). We have chosen this approach because we believe it is reasonable to base the interim 1-hour NO_2 SIL directly on consideration of impacts relative to the 1-hour NO_2 NAAQS. In 1980, we defined SER for each pollutant subject to PSD. 45 FR 52676, August 7, 1980 at 52705-52710. For PM and SO_2, we defined the SER as the emissions rate that resulted in an ambient impact equal to 4% of the applicable short-term NAAQS. The 1980 analysis focused on levels no higher than 5% of the primary standard because of concerns that higher levels were found to result in unreasonably large amounts of increment being consumed by a single source. Within the range of impacts analyzed, we considered two factors that had an important influence on the choice of *de minimis* emissions levels: (1) cumulative effect on increment consumption of multiple sources in an area, each making the maximum *de minimis* emissions increase; and (2) the projected consequence of a given *de minimis* level on administrative burden. As explained in the preamble to the 1980 rulemaking and the supporting documentation,[5] EPA decided to use 4% of the 24-hour primary NAAQS for PM and SO_2 to define the significant emissions rates (SERs) for those pollutants. It was noted that, at the time, only an annual NO_2 NAAQS existed. Thus, for reasons explained in the 1980 preamble, to define the SER for NOx emissions we used a design value of 2% of the annual NO_2 NAAQS. See 45 FR 52708. Looking now at a short-term NAAQS for NO_2, we believe that it is reasonable as an interim approach to use a SIL value that represents 4% of the 1-hour NO_2

[5] EPA evaluated de minimis levels for pollutants for which NAAQS had been established in a document titled "Impact of Proposed and Alternative De Minimis Levels for Criteria Pollutants"; EPA-450/2-80-072, June 1980.

NAAQS. EPA will consider other possible alternatives for developing a 1-hour NO_2 SIL in a future rulemaking that will provide an opportunity for public participation in the development of a SIL as part of the PSD regulations.

Several state programs have already adopted interim 1-hour NO_2 SILs that differ (both higher and lower) from the interim value being recommended herein. The EPA-recommended interim 1-hour NO_2 SIL is not intended to supersede any interim SIL that is now or may be relied upon to implement a state PSD program that is part of an approved SIP, or to impose the use of the SIL concept on any state that chooses to implement the PSD program—in particular the ambient air quality analysis—without using a SIL as a screening tool. Accordingly, states that implement the PSD program under an EPA-approved SIP may choose to use this interim SIL, another value that may be deemed more appropriate for PSD permitting purposes in the state of concern, or no SIL at all. The application of any SIL that is not reflected in a promulgated regulation should be supported by a record in each instance that shows the value represents a *de minimis* impact on the 1-hour NO_2 standard, as described above.

In the event of questions regarding the general implementation guidance contained in this memorandum, please contact Raj Rao (rao.raj@epa.gov).

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June 28, 2010

MEMORANDUM

SUBJECT: Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard

FROM: Tyler Fox, Leader
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TO: Regional Air Division Directors

INTRODUCTION

On January 22, 2010, EPA announced a new 1-hour nitrogen dioxide (NO_2) National Ambient Air Quality Standard (1-hour NO_2 NAAQS or 1-hour NO_2 standard) which is attained when the 3-year average of the 98th-percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 100 ppb at each monitor within an area. The final rule for the new 1-hour NO_2 NAAQS was published in the Federal Register on February 9, 2010 (75 FR 6474-6537), and the standard became effective on April 12, 2010 (EPA, 2010a). This memorandum clarifies the applicability of current guidance in the *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W) for modeling NO_2 impacts in accordance with the Prevention of Significant Deterioration (PSD) permit requirements to demonstrate compliance with the new 1-hour NO_2 standard.

SUMMARY OF CURRENT GUIDANCE

While the new 1-hour NAAQS is defined relative to ambient concentrations of NO_2, the majority of nitrogen oxides (NOx) emissions for stationary and mobile sources are in the form of nitric oxide (NO) rather than NO_2. Appendix W notes that the impact of an individual source on ambient NO_2 depends, in part, "on the chemical environment into which the source's plume is to be emitted" (see Section 5.1.j). Given the role of NOx chemistry in determining ambient impact levels of NO_2 based on modeled NOx emissions, Section 5.2.4 of Appendix W recommends the following three-tiered screening approach for NO_2 modeling for annual averages:

- Tier 1 - assume full conversion of NO to NO_2 based on application of an appropriate refined modeling technique under Section 4.2.2 of Appendix W to estimate ambient NOx concentrations;
- Tier 2 - multiply Tier 1 result by empirically-derived NO_2/NOx ratio, with 0.75 as the annual national default ratio (Chu and Meyer, 1991); and

- Tier 3 - detailed screening methods may be considered on a case-by-case basis, with the Ozone Limiting Method (OLM) identified as a detailed screening technique for point sources (Cole and Summerhays, 1979).

Tier 2 is often referred to as the Ambient Ratio Method, or ARM. Site-specific ambient NO_2/NOx ratios derived from appropriate ambient monitoring data may also be considered as detailed screening methods on a case-by-case basis, with proper justification. Consistent with Section 4.2.2, AERMOD is the current preferred model for "a wide range of regulatory applications in all types of terrain" for purposes of estimating ambient concentrations of NO_2, based on NOx emissions, under Tiers 1 and 2 above. We discuss the role of AERMOD for Tier 3 applications in more detail below.

APPLICABILITY OF CURRENT GUIDANCE TO 1-HOUR NO_2 NAAQS

In general, the Appendix W recommendations regarding the annual NO_2 standard are also applicable to the new 1-hour NO_2 standard, but additional issues may need to be considered in the context of a 1-hour standard, depending on the characteristics of the emission sources, and depending on which tier is used, as summarized below:

- Tier 1 applies to the 1-hour NO_2 standard without any additional justification;
- Tier 2 may also apply to the 1-hour NO_2 standard in many cases, but some additional consideration will be needed in relation to an appropriate ambient ratio for peak hourly impacts since the current default ambient ratio is considered to be representative of "area wide quasi-equilibrium conditions"; and
- Tier 3 "detailed screening methods" will continue to be considered on a case-by-case basis for the 1-hour NO_2 standard. However, certain input data requirements and assumptions for Tier 3 applications may be of greater importance for the 1-hour standard than for the annual standard given the more localized nature of peak hourly vs. annual impacts. In addition, use of site-specific ambient NO_2/NOx ratios based on ambient monitoring data will generally be more difficult to justify for the 1-hour NO_2 standard than for the annual standard.

While Appendix W specifically mentions OLM as a detailed screening method under Tier 3, we also consider the Plume Volume Molar Ratio Method (PVMRM) (Hanrahan, 1999a) discussed under Section 5.1.j of Appendix W to be in this category at this time. Both of these options account for ambient conversion of NO to NO_2 in the presence of ozone, based on the following basic chemical mechanism, known as titration, although there are important differences between these methods:

$$NO + O_3 \rightarrow NO_2 + O_2 \qquad \text{(Eq. 1)}$$

As noted in Section 5.1.j, EPA is currently testing the PVMRM option to determine its suitability as a refined method. Limited evaluations of PVMRM have been completed, which show encouraging results, but the amount of data currently available is too limited to justify a designation of PVMRM as a refined method for NO_2 (Hanrahan, 1999b; MACTEC, 2005). EPA is currently updating and extending these evaluations to examine model performance for predicting hourly NO_2 concentrations, including both the OLM and PVMRM options, and results of these additional evaluations will be provided at a later date. A sensitivity analysis of the OLM and PVMRM options in AERMOD has been conducted that compares modeled concentrations based on OLM and PVMRM with Tiers 1 and 2 for a range of source characteristics (MACTEC, 2004). This analysis serves as a useful reference to understand how ambient NO_2 concentrations may be impacted by application of this three-tiered screening approach, and includes comparisons for both annual average and maximum 1-hour NO_2 concentrations.

Key model inputs for both the OLM and PVMRM options are the in-stack ratios of NO_2/NOx emissions and background ozone concentrations. While the representativeness of these key inputs is important in the context of the annual NO_2 standard, they will generally take on even greater importance for the new 1-hour NO_2 standard, as explained in more detail below. Recognizing the potential importance of the in-stack NO_2/NOx ratio for hourly NO_2 compliance demonstrations, we recommend that in-stack ratios used with either the OLM or PVMRM options be justified based on the specific application, i.e., there is no "default" in-stack NO_2/NOx ratio for either OLM or PVMRM.

The OLM and PVMRM methods are both available as non-regulatory-default options within the EPA-preferred AERMOD dispersion model (Cimorelli, *et al.*, 2004; EPA, 2004; EPA, 2009). As a result of their non-regulatory-default status, pursuant to Sections 3.1.2.c, 3.2.2.a, and A.1.a(2) of Appendix W, application of AERMOD with the OLM or PVMRM option is no longer considered a "preferred model" and, therefore, requires justification and approval by the Regional Office on a case-by-case basis. While EPA is continuing to evaluate the PVMRM and OLM options within AERMOD for use in compliance demonstrations for the 1-hour NO_2 standard, as long as they are considered to be non-regulatory-default options, their use as alternative modeling techniques under Appendix W should be justified in accordance with Section 3.2.2, paragraph (e), as follows:

"e. Finally, for condition (3) in paragraph (b) of this subsection [preferred model is less appropriate for the specific application, or there is no preferred model], an alternative refined model may be used provided that:

i. The model has received a scientific peer review;
ii. The model can be demonstrated to be applicable to the problem on a theoretical basis;
iii. The data bases which are necessary to perform the analysis are available and adequate;
iv. Appropriate performance evaluations of the model have shown that the model is not biased toward underestimates; and
v. A protocol on methods and procedures to be followed has been established."

Since AERMOD is the preferred model for dispersion for a wide range of application, the focus of the alternative model demonstration for use of the OLM and PVMRM options within AERMOD is on the treatment of NOx chemistry within the model, and does not need to address basic dispersion algorithms within AERMOD. Furthermore, items i and iv of the alternative model demonstration for these options can be fulfilled in part based on existing documentation (Cole and Summerhays, 1979; Hanrahan, 1999a; Hanrahan, 1999b; MACTEC, 2005), and the remaining items should be routinely addressed as part of the modeling protocol, irrespective of the regulatory status of these options. The issue of applicability to the problem on a theoretical basis (item ii) is a case-by-case determination based on an assessment of the adequacy of the ozone titration mechanism utilized by these options to account for NOx chemistry within the AERMOD model based on "the chemical environment into which the source's plume is to be emitted" (Appendix W, Section 5.1.j). The adequacy of available data bases needed for application of OLM and PVMRM (item iii), including in-stack NO_2/NOx ratios and background ozone concentrations, is a critical aspect of the demonstration which we discuss in more detail below. It should also be noted that application of the OLM or PVMRM methods with other Appendix W models or alternative models, whether as a separate post-processor or integrated within the model, would require additional documentation and demonstration that the methods have been implemented and applied appropriately within that context, including model-specific performance evaluations which satisfy item iv under Section 3.2.2.e.

Given the form of the new 1-hour NO_2 standard, some clarification is needed regarding the appropriate data periods for modeling demonstrations of compliance with the NAAQS vs. demonstrations of attainment of the NAAQS through ambient monitoring. While monitored design values for the 1-hour NO_2 standard are based on a 3-year average (in accordance with Section 1(c)(2) of Appendix S to 40 CFR Part 50), Section 8.3.1.2 of Appendix W addresses the length of the meteorological data record for dispersion modeling, stating that "[T]he use of 5 years of NWS [National Weather Service] meteorological data or at least 1 year of site specific data is required." Section 8.3.1.2.b further states that "one year or more (including partial years), up to five years, of site specific data . . . are preferred for use in air quality analyses." Although the monitored design value for the 1-hour NO_2 standard is defined in terms of the 3-year average, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data. The 5-year average based on use of NWS data, or an average across one or more years of available site specific data, serves as an unbiased estimate of the 3-year average for purposes of modeling demonstrations of compliance with the NAAQS. Modeling of "rolling 3-year averages," using years 1 through 3, years 2 through 4, and years 3 through 5, is not required. Furthermore, since modeled results for NO_2 are averaged across the number of years modeled for comparison to the new 1-hour NO_2 standard, the meteorological data period should include complete years of data to avoid introducing a seasonal bias to the averaged impacts. In order to comply with Appendix W recommendations in cases where partial years of site specific meteorological data are available, while avoiding any seasonal bias in the averaged impacts, an approach that utilizes the most conservative modeling result based on the first complete-year period of the available data record vs. results based on the last complete-year period of available data may be appropriate, subject to approval by the appropriate reviewing authority. Such an approach would ensure that all available site specific data are accounted for in the modeling analysis without imposing an undue burden on the applicant and avoiding arbitrary choices in the selection of a single complete-year data period.

The form of the new 1-hour NO_2 standard also has implications regarding appropriate methods for combining modeled ambient concentrations with monitored background concentrations for comparison to the NAAQS in a cumulative modeling analysis. As noted in the March 23, 2010 memorandum regarding "Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS" (EPA, 2010b), combining the 98th percentile monitored value with the 98th percentile modeled concentrations for a cumulative impact assessment could result in a value that is below the 98th percentile of the combined cumulative distribution and would, therefore, not be protective of the NAAQS. However, unlike the recommendations presented for $PM_{2.5}$, the modeled contribution to the cumulative ambient impact assessment for the 1-hour NO_2 standard should follow the form of the standard based on the 98th percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled. A "first tier" assumption that may be applied without further justification is to add the overall highest hourly background NO_2 concentration from a representative monitor to the modeled design value, based on the form of the standard, for comparison to the NAAQS. Additional refinements to this "first tier" approach based on some level of temporal pairing of modeled and monitored values may be considered on a case-by-case basis, with adequate justification and documentation.

DISCUSSION OF TECHNICAL ISSUES

While many of the same technical issues related to application of Appendix W guidance for an annual NO_2 standard would also apply in the context of the new 1-hour NO_2 standard, there are some important differences that may also need to be considered depending on the specific application. This section discusses several aspects of these technical issues related to the new 1-hour NO_2 NAAQS, including a discussion of source emission inventories required for modeling demonstrations of compliance with the NAAQS and other issues specific to each of the three tiers identified in Section 5.2.4 of Appendix W for NO_2 modeling.

Emission Inventories

The source emissions data are a key input for all modeling analyses and one that may require additional considerations under the new 1-hour NO_2 standard is the source emissions data. Section 8.1 of Appendix W provides guidance regarding source emission input data for dispersion modeling and Table 8-2 summarizes the recommendations for emission input data that should be followed for NAAQS compliance demonstrations. Although existing NOx emission inventories used to support modeling for compliance with the annual NO_2 standard should serve as a useful starting point, such inventories may not always be adequate for use in assessing compliance with the new 1-hour NO_2 standard since some aspects of the guidance in Section 8.1 differs for long-term (annual and quarterly) standards vs. short-term ($\leq$ 24 hours) standards. In particular, since maximum ground-level concentrations may be more sensitive to operating levels and startup/shutdown conditions for an hourly standard than for an annual standard, emission rates and stack parameters associated with the maximum ground-level concentrations for the annual standard may underestimate maximum concentrations for the new 1-hour NO_2 standard. Due to the importance of in-stack NO_2/NOx ratios required for application of the OLM and PVMRM options within AERMOD discussed above, consideration should also be given to the potential variability of in-stack NO_2/NOx ratios under different operating conditions when those non-regulatory-default options are applied. We also note that source emission input data recommendations in Table 8-2 of Appendix W for "nearby sources" and "other sources" that may be needed to conduct a cumulative impact assessment include further differences between emission data for long-term vs. short-term standards which could also affect the adequacy of existing annual NOx emission inventories for the new 1-hour NO_2 standard. The terms "nearby sources" and "other sources" used in this context are defined in Section 8.2.3 of Appendix W. Attachment A provides a more detailed discussion on determining NOx emissions for permit modeling.

While Section 8.2.3 of Appendix W emphasizes the importance of professional judgment by the reviewing authority in the identification of nearby and other sources to be included in the modeled emission inventory, Appendix W establishes "a significant concentration gradient in the vicinity of the source" under consideration as the main criterion for this selection. Appendix W also indicates that "the number of such [nearby] sources is expected to be small except in unusual situations." See Section 8.2.3.b. Since concentration gradients will vary somewhat depending on the averaging period being modeled, especially for an annual vs. 1-hour standard, the criteria for selection of "nearby" and "other" sources for inclusion in the modeled inventory may need to be reassessed for the 1-hour NO_2 standard.

The representativeness of available ambient air quality data also plays an important role in determining which nearby sources should be included in the modeled emission inventory. Key issues to consider in this regard are the extent to which ambient air impacts of emissions from nearby sources are reflected in the available ambient measurements, and the degree to which emissions from those background sources during the monitoring period are representative of allowable emission levels under the existing permits. The professional judgments that are required in developing an appropriate inventory of background sources should strive toward the proper balance between adequately characterizing the potential for cumulative impacts of emission sources within the study area to cause or contribute to violations of the NAAQS, while minimizing the potential to overestimate impacts by double-counting of modeled source impacts that are also reflected in the ambient monitoring data. We would also caution against the literal and uncritical application of very prescriptive procedures for identifying which background sources should be included in the modeled emission inventory for NAAQS compliance demonstrations, such as those described in Chapter C, Section IV.C.1 of the draft *New Source Review Workshop Manual* (EPA, 1990), noting again that Appendix W emphasizes the importance of professional judgment in this process. While the draft workshop manual serves as a useful general reference regarding New Source Review (NSR) and PSD programs, and such procedures may play a useful role in defining the spatial extent of sources whose emissions may need to be considered, it should be recognized that "[i]t is not intended to be an official statement of policy and standards and does not establish binding regulatory requirements." See, Preface.

Given the range of issues involved in the determination of an appropriate inventory of emissions to include in a cumulative impact assessment, the appropriate reviewing authority should be consulted early in the process regarding the selection and proper application of appropriate monitored background concentrations and the selection and appropriate characterization of modeled background source emission inventories for use in demonstrating compliance with the new 1-hour NO_2 standard.

Tier-specific Technical Issues

This section discusses technical issues related to application of each tier in the three-tiered screening approach for NO_2 modeling recommended in Section 5.2.4 Appendix W. A basic understanding of NOx chemistry and "of the chemical environment into which the source's plume is to be emitted" (Appendix W, Section 5.1.j) will be helpful for addressing these issues based on the specific application.

Tier 1:

Since the assumption of full conversion of NO to NO_2 will provide the most conservative treatment of NOx chemistry in assessing ambient impacts, there are no technical issues associated with treatment of NOx chemistry for this tier. However, the general issues related to emission inventories for the 1-hour NO_2 standard discussed above and in Attachment A apply to Tier 1.

Tier 2:

As noted above, the 0.75 national default ratio for ARM is considered to be representative of "area wide quasi-equilibrium conditions" and, therefore, may not be as appropriate for use with the 1-hour NO_2 standard. The appropriateness of this default ambient ratio will depend somewhat on the characteristics of the sources, and as such application of Tier 2 for 1-hour NO_2 compliance demonstrations may need to be considered on a source-by-source basis in some cases. The key technical issue to address in relation to this tier requires an understanding of the meteorological conditions that are likely to be associated with peak hourly impacts from the source(s) being modeled. In general, for low-level releases with limited plume rise, peak hourly NOx impacts are likely to be associated with nighttime stable/light wind conditions. Since ambient ozone concentrations are likely to be relatively low for these conditions, and since low wind speeds and stable atmospheric conditions will further limit the conversion of NO to NO_2 by limiting the rate of entrainment of ozone into the plume, the 0.75 national default ratio will likely be conservative for these cases. A similar rationale may apply for elevated sources where plume impaction on nearby complex terrain under stable atmospheric conditions is expected to determine the peak hourly NOx concentrations. By contrast, for elevated sources in relatively flat terrain, the peak hourly NOx concentrations are likely to occur during daytime convective conditions, when ambient ozone concentrations are likely to be relatively high and entrainment of ozone within the plume is more rapid due to the vigorous vertical mixing during such conditions. For these sources, the 0.75 default ratio may not be conservative, and some caution may be needed in applying Tier 2 for such sources. We also note that the default equilibrium ratio employed within the PVMRM algorithm as an upper bound on an hourly basis is 0.9.

Tier 3:

This tier represents a general category of "detailed screening methods" which may be considered on a case-by-case basis. Section 5.2.4(b) of Appendix W cites two specific examples of Tier 3 methods, namely OLM and the use of site-specific ambient NO_2/NOx ratios supported by ambient measurements. As noted above, we also believe it is appropriate to consider the

PVMRM option as a Tier 3 detailed screening method at this time. The discussion here focuses primarily on the OLM and PVMRM methods, but we also note that the use of site-specific ambient NO_2/NOx ratios will be subject to the same issues discussed above in relation to the Tier 2 default ARM, and as a result it will generally be much more difficult to determine an appropriate ambient NO_2/NOx ratio based on monitoring data for the new 1-hour NO_2 standard than for the annual standard.

While OLM and PVMRM are both based on the same simple chemical mechanism of titration to account for the conversion of NO emissions to NO_2 (see Eq. 1) and therefore entail similar technical issues and considerations, there are some important differences that also need to be considered when assessing the appropriateness of these methods for specific applications. While the titration mechanism may capture the most important aspects of NO-to-NO_2 conversion in many applications, both methods will suffer from the same limitations for applications in which other mechanisms, such as photosynthesis, contribute significantly to the overall process of chemical transformation.· Sources located in areas with high levels of VOC emissions may be subject to these limitations of OLM and PVMRM. Titration is generally a much faster mechanism for converting NO to NO_2 than photosynthesis, and as such is likely to be appropriate for characterizing peak 1-hour NO_2 impacts in many cases.

Both OLM and PVMRM rely on the same key inputs of in-stack NO_2/NOx ratios and hourly ambient ozone concentrations. Although both methods can be applied within the AERMOD model using a single "representative" background ozone concentration, it is likely that use of a single value would result in very conservative estimates of peak hourly ambient concentrations since its use for the 1-hour NO_2 standard would be contingent on a demonstration of conservatism for all hours modeled. Furthermore, hourly monitored ozone concentrations used with the OLM and PVMRM options must be concurrent with the meteorological data period used in the modeling analysis, and thus the temporal representativeness of the ozone data for estimating ambient NO_2 concentrations could be a factor in determining the appropriateness of the meteorological data period for a particular application. As noted above, the representativeness of these key inputs takes on somewhat greater importance in the context of a 1-hour NO_2 standard than for an annual standard, for obvious reasons. In the case of hourly background ozone concentrations, methods used to substitute for periods of missing data may play a more significant role in determining the 1-hour NO_2 modeled design value, and should therefore be given greater scrutiny, especially for data periods that are likely to be associated with peak hourly concentrations based on meteorological conditions and source characteristics. In other words, ozone data substitution methods that may have been deemed appropriate in prior applications for the annual standard may not be appropriate to use for the new 1-hour standard.

While these technical issues and considerations generally apply to both OLM and PVMRM, the importance of the in-stack NO_2/NOx ratios may be more important for PVMRM than for OLM in some cases, due to differences between the two methods. The key difference between the two methods is that the amount of ozone available for conversion of NO to NO_2 is based simply on the ambient ozone concentration and is independent of source characteristics for OLM, whereas the amount of ozone available for conversion in PVMRM is based on the amount of ozone within the volume of the plume for an individual source or group of sources. The plume volume used in PVMRM is calculated on an hourly basis for each source/receptor combination, taking into account the dispersive properties of the atmosphere for that hour. For a low-level release where peak hourly NOx impacts occur close to the source under stable/light wind conditions, the plume volume will be relatively small and the ambient NO_2 impact for such cases will be largely determined by the in-stack NO_2/NOx ratio, especially for sources with relatively close fenceline or ambient air boundaries. This example also highlights the fact that the relative importance of the in-stack NO_2/NOx ratios may be greater for some applications than others, depending on the source characteristics and other factors. Assumptions regarding in-stack NO_2/NOx ratios that may have been deemed appropriate in the context of the annual standard may not be appropriate to use for the new 1-hour standard. In particular, it is worth reiterating that the 0.1 in-stack ratio often cited as the "default" ratio for OLM should not be treated as a default value for hourly NO_2 compliance demonstrations.

Another difference between OLM and PVMRM that is worth noting here is the treatment of the titration mechanism for multiple sources of NOx. There are two possible modes that can be used for applying OLM to multiple source scenarios within AERMOD: (1) apply OLM to each source separately and assume that each source has all of the ambient ozone available for conversion of NO to NO_2; and (2) assume that sources whose plumes overlap compete for the available ozone and apply OLM on a combined plume basis. The latter option can be applied selectively to subsets of sources within the modeled inventory or to all modeled sources using the OLMGROUP keyword within AERMOD, and is likely to result in lower ambient NO_2 concentrations in most cases since the ambient NO_2 levels will be more ozone-limited. One of the potential refinements in application of the titration method incorporated in PVMRM is a technique for dynamically determining which sources should compete for the available ozone based on the relative locations of the plumes from individual sources, both laterally and vertically, on an hourly basis, taking into account wind direction and plume rise. While this approach addresses one of the implementation issues associated with OLM by making the decision of which sources should compete for ozone, there is only very limited field study data available to evaluate the methodology.

Given the importance of the issue of whether to combine plumes for the OLM option, EPA has addressed the issue in the past through the Model Clearinghouse process. The general guidance that has emerged in those cases is that the OLM option should be applied on a source-by-source basis in most cases and that combining plumes for application of OLM would require a clear demonstration that the plumes will overlap to such a degree that they can be considered as "merged" plumes. However, much of that guidance was provided in the context of applying the OLM method outside the dispersion model in a post-processing mode on an annual basis. The past guidance on this issue is still appropriate in that context since there is no realistic method to account for the degree of plume merging on an hourly basis throughout the modeling analysis when applied as a post-processor. However, the implementation of the OLM option within the AERMOD model applies the method on a source-by-source, receptor-by-receptor, and hour-by-hour basis. As a result, the application of the OLMGROUP option within AERMOD is such that the sources only compete for the available ozone to the extent that each source contributes to the cumulative NOx concentration at each receptor for that hour. Sources which contribute significantly to the ambient NOx concentration at the receptor will compete for available ozone in proportion to their contribution, while sources that do not contribute significantly to the ambient NOx concentration will not compete for the ozone. Thus, the OLMGROUP option implemented in AERMOD will tend to be "self-correcting" with respect to concerns that combining plumes for OLM will overestimate the degree of ozone limiting potential (and therefore underestimate ambient NO_2 concentrations). As a result of these considerations, we recommend that use of the "OLMGROUP ALL" option, which specifies that all sources will potentially compete for the available ozone, be routinely applied and accepted for all approved applications of the OLM option in AERMOD. This recommendation is supported by model-to-monitor comparisons of hourly NO_2 concentrations from the application of AERMOD for the Atlanta NO_2 risk and exposure assessment (EPA, 2008), and recent re-evaluations of hourly NO_2 impacts from the two field studies (New Mexico and Palaau) that were used in the evaluation of PVMRM (MACTEC, 2005). These model-to-monitor comparisons of hourly NO_2 concentrations show reasonably good performance using the "OLMGROUP ALL" option within AERMOD, with no indication of any bias to underestimate hourly NO_2 concentrations with OLMGROUP ALL. Furthermore, model-to-monitor comparisons based on OLM without the OLMGROUP option do exhibit a bias to overestimate hourly NO_2 concentrations. We will provide further details regarding these recent hourly NO_2 model-to-monitor comparisons at a later date.

SUMMARY

To summarize, we emphasize the following points:

1. The 3-tiered screening approach recommended in Section 5.2.4 of Appendix W for annual NO_2 assessments generally applies to the new 1-hour NO_2 standard.
2. While generally applicable, application of the 3-tiered screening approach for assessments of the new 1-hour NO_2 standard may entail additional considerations, such as the importance of key input data, including appropriate emission rates for the 1-hour standard vs. the annual standard for all tiers, and the representativeness of in-stack NO_2/NOx ratios and hourly background ozone concentrations for Tier 3 detailed screening methods.
3. Since the OLM and PVMRM methods in AERMOD are currently considered non-regulatory-default options, application of these options requires justification and approval by the Regional Office on a case-by-case basis as alternative modeling techniques, in accordance with Section 3.2.2, paragraph (e), of Appendix W.
4. Applications of the OLM option in AERMOD, subject to approval under Section 3.2.2.e of Appendix W, should routinely utilize the "OLMGROUP ALL" option for combining plumes.
5. While the 1-hour NAAQS for NO_2 is defined in terms of the 3-year average for monitored design values to determine attainment of the NAAQS, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data.

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ATTACHMENT A

Background on Hourly NOx Emissions for Permit Modeling for the 1-hour NO_2 NAAQS

Introduction

The purpose of this attachment is to address questions about availability of hourly NOx emissions for permit modeling under the new NO_2 NAAQS. It summarizes existing guidance regarding emission input data requirements for NAAQS compliance modeling, and provides background on the historical approach to development of inventories for NO_2 permit modeling and computation of hourly emissions appropriate for assessing the new 1-hour NO_2 standard. Although the NAAQS is defined in terms of ambient NO_2 concentrations, source emission estimates for modeling are based on NOx.

Under the PSD program, the owner or operator of the source is required to demonstrate that the source does not cause or contribute to a violation of a NAAQS (40 CFR 51.166 (k)(1) and 40 CFR 52.21 (k)(1)) and/or PSD increments (40 CFR 51.166 (k)(2) and 52.21 (k)(2)). However, estimation of the necessary emission input data for NAAQS compliance modeling entails consideration of numerous factors, and the appropriate reviewing authority should be consulted early in the process to determine the appropriate emissions data for use in specific modeling applications (see 40 CFR 51, Appendix W, 8.1.1.b and 8.2.3.b)

Summary of Current Guidance

Section 8.1 of the *Guideline on Air Quality Models*, Appendix W to 40 CFR Part 51, provides recommendations regarding source emission input data needed to support dispersion modeling for NAAQS compliance demonstrations. Table 8-2 of Appendix W provides detailed guidance regarding the specific components of the emission input data, including the appropriate emission limits (pounds/MMBtu), operating level (MMBtu/hr), and operating factor (e.g., hr/yr or hr/day), depending on the averaging time of the standard. Table 8-2 also distinguishes between the emission input data needed for the new or modified sources being assessed, and "nearby" and "other" background sources included in the modeled emission inventory.

Based on Table 8-2, emission input data for new or modified sources for annual and quarterly standards are essentially the same as for short-term standards ($\leq$ 24 hours), based on maximum allowable or federally enforceable emission limits, design capacity or federally enforceable permit conditions, and the assumption of continuous operation. However, there are a few additional considerations cited in Appendix W that could result in different emission input data for the 1-hour vs. annual NO_2 NAAQS. For example, while design capacity is listed as the recommended operating level for the emission calculation, peak hourly ground-level concentrations may be more sensitive than annual average concentrations to changes in stack parameters (effluent exit temperature and exit velocity) under different operating capacities. Table 8-2 specifically recommends modeling other operating levels, such as 50 percent or 75 percent of capacity, for short-term standards (see footnote 3). Another factor that may affect maximum ground-level concentrations differently between the 1-hour vs. annual standard is restrictions on operating factors based on federally enforceable permit conditions. While federally enforceable operating factors other than continuous operation may be accounted for in the emission input data (e.g., if operation is limited to 8 am to 4 pm each day), Appendix W also states that modeled emissions should not be averaged across non-operating time periods (see footnote 2 of Table 8-2).

While emission input data recommendations for "nearby" and "other" background sources included in the modeled emission inventory are similar to the new or modified source emission inputs in many respects, there is an important difference in the operating factor between annual and short-term standards. Emission input data for nearby and other sources may reflect actual operating factors (averaged over the most recent 2 years) for the annual standard, while continuous operation should be assumed for short-term standards. This could result in important differences in emission input data for modeled background sources for the 1-hour NO_2 NAAQS relative to emissions used for the annual standard.

Model Emission Inventory for NO_2 Modeling

For the existing annual NO_2 NAAQS, the permit modeling inventory has generally been compiled from the annual state emission inventory questionnaire (EIQ) or Title V permit applications on file with the relevant permitting authority (state or local air program). Since a state uses the annual EIQ for Title V fee assessment, the state EIQ typically requires reporting of unit capacity, total fuel combusted, and/or hours of operation to help verify annual emissions calculations for fee accuracy purposes. Likewise, Title V operating permit applications contain all of the same relevant information for calculating emissions. While these emission inventories are important resources for gathering emission input data on background sources for NAAQS compliance modeling, inventories which are based on actual operations may not be sufficient for short-term standards, such as the new 1-hour NO_2 NAAQS. However, appropriate estimates of emissions from background sources for the 1-hour NO_2 standard may be derived in many cases from information in these inventories regarding permitted emission limits and operating capacity.

Historically, it has not been a typical practice for an applicant to use the EPA's national emission inventory (NEI) as the primary source for compiling the permit modeling inventory. Since the emission data submitted to the NEI represents annual emission totals, it may not be suitable for use in NAAQS compliance modeling for short-term standards since modeling should be based on continuous operation, even for modeled background sources. Although the NEI may provide emission data for background sources that are more appropriate for the annual NO_2 standard, the utility of the NEI for purposes of NAAQS compliance modeling is further limited due to the fact that additional information regarding stack parameters and operating rates required for modeling may not be available from the NEI. While records exist in the NEI for reporting stack data necessary for point source modeling (i.e., stack coordinates, stack heights, exit temperatures, exit velocities), some states do not report such information to the NEI, or there are may be errors in the location data submitted to the NEI. Under such conditions, default stack information based upon SIC is substituted and use of such data could invalidate modeling results. Building locations and dimensions, which may be required to account for building downwash influences in the modeling analysis, may also be missing or incomplete in many cases.

A common and relatively straightforward approach for compiling the necessary information to develop an inventory of emissions from background sources for a permit modeling demonstration is as follows, patterned after the draft *New Source Review Workshop Manual* (EPA, 1990). The applicant completes initial modeling of allowable emission increases associated with the proposed project and determines the radii of impact (ROI) for each pollutant and averaging period, based on the maximum distance at which the modeled ambient concentration exceeds the Significant Impact Level (SIL) for each pollutant and averaging period. Typically, the largest ROI is selected and then a list of potential background sources within the ROI plus a screening distance beyond the ROI is compiled by the permitting authority and supplied to the applicant. The applicant typically requests permit applications or EIQ submittals from the records department of the permitting authority to gather stack data and source operating data necessary to compute emissions for the modeled inventory. Once the applicant has gathered the relevant data from the permitting authorities, model emission rates are calculated. While this approach is fairly common, it should be noted that the draft workshop manual "is not intended to be an official statement of policy and standards and does not establish binding regulatory requirements" (see, Preface), and the appropriate reviewing authority should be consulted early in the process regarding the selection of appropriate background source emission inventories for the 1-hour NO_2 standard. We also note that Appendix W establishes "a significant concentration gradient in the vicinity of the source" under consideration as the main criterion for selection of nearby sources for inclusion in the modeled inventory, and further indicates that "the number of such [nearby] sources is expected to be small except in unusual situations." See Section 8.2.3.b.

As mentioned previously, modeled emission rates for short-term NAAQS are computed consistent with the recommendations of Section 8.1 of Appendix W, summarized in Table 8-2. The maximum allowable (SIP-approved process weight rate limits) or federally enforceable permit limit emission rates assuming design capacity or federally enforceable capacity limitation are used to compute hourly emissions for dispersion modeling against short-term NAAQS such as the new 1-hour NO_2 NAAQS. If a source assumes an enforceable limit on the hourly firing capacity of a boiler, this is reflected in the calculations. Otherwise, the design capacity of the source is used to compute the model emission rate. A load analysis is typically necessary to determine the load or operating condition that causes the maximum ground-level concentrations. In addition to 100 percent load, loads such as 50 percent and 75 percent are commonly assessed. As noted above, the load analysis is generally more important for short-term standards than for annual standards. For an hourly standard, other operating scenarios of relatively short duration such as "startup" and "shutdown" should be assessed since these conditions may result in maximum hourly ground-level concentrations, and the control efficiency of emission control devices during these operating conditions may also need to be considered in the emission estimation.

Emission Calculation Example

The hourly emissions are most commonly computed from AP-42 emission factors based on unit design capacity. For a combustion unit, the source typically reports both the unit capacity and the actual total amount of fuel combusted annually (gallons, millions of cubic feet of gas, etc.) to the permitting authority for the EIQ. Likewise, Title V operating permit applications will contain similar information that can be used to compute hourly emissions.

For example, assume you are modeling an uncontrolled natural gas package boiler with a design firing rate of 30 MMBtu/hr. The AP-42 emission factor for an uncontrolled natural gas external combustion source (AP-42, Section 1.4) for firing rates less than 100 MMBtu/hr is 100 lbs. NOx/10^6 SCF natural gas combusted. The hourly emission rate is derived by converting the emission factor expressed in terms of lbs. NOx/10^6 SCF to lbs. NOx/MMBtu. The conversion is done by dividing the 100 lbs. NOx/10^6 SCF by 1,020 to convert the AP-42 factor to lbs. NOx/MMBtu. The new emission factor is now 0.098 lbs. NOx/MMBtu.

For this example, the source has no limit on the hourly firing rate of the boiler; therefore, the maximum hourly emissions are computed by multiplying the design firing rate of the boiler by the new emission factor.

E_{hourly} = 0.098 lbs/MMBtu x 30MMBtu/hr = 2.94 lbs/hr

Thus 2.94 lbs/hr represents the emission rate that would be input into the dispersion model for modeling against the 1-hour NO_2 NAAQS to comport with emission rate recommendations of Section 8.1 of Appendix W.

It is important to note that data derived for the annual state emission inventory (EI) is based on actual levels of fuel combusted for the year, and is therefore different than how allowable emissions are computed for near-field dispersion modeling. For the annual EI report, a source computes their annual emissions based upon the AP-42 emission factor multiplied by the actual total annual throughput or total fuel combusted.

In the 30 MMBtu/hr boiler example, the annual NOx emissions reported to the NEI is computed by:

E_{annual} = (AP-42 emission factor) x (total annual fuel combusted)

E_{annual} = (100 lbs/10^6 SCF) x (100 10^6 SCF/yr) = 10,000 lbs. NOx/yr or 5 tons NOx/yr

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

AUG 23 2010

MEMORANDUM

SUBJECT: Guidance Concerning the Implementation of the 1-hour SO_2 NAAQS for the Prevention of Significant Deterioration Program

FROM: Stephen D. Page, Director
Office of Air Quality Planning and Standards

TO: Regional Air Division Directors

On June 2, 2010, the U.S. Environmental Protection Agency (EPA) announced a new 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour SO_2 NAAQS or 1-hour SO_2 standard) of 75 ppb, which is attained when the 3-year average of the annual 99th-percentile of 1-hour daily maximum concentrations does not exceed 75 ppb at each monitor within an area. EPA revised the primary SO_2 NAAQS to provide the requisite protection of public health. The final rule for the new 1-hour SO_2 NAAQS was published in the Federal Register on June 22, 2010 (75 FR 35520), and the standard becomes effective on August 23, 2010. In the same notice, we also announced that we are revoking both the existing 24-hour and annual primary SO_2 standards. However, as explained in this guidance, those SO_2 standards, as well as the 24-hour and annual increments for SO_2, remain in effect for a while further and must continue to be protected.

EPA interprets the Prevention of Significant Deterioration (PSD) provisions of the Clean Air Act and EPA regulations to require that any federal permit issued under 40 CFR 52.21 on or after that effective date must contain a demonstration of source compliance with the new 1-hour SO_2 NAAQS. We anticipate that some new major stationary sources or major modifications, especially those involving relatively short stacks, may experience difficulty demonstrating that emissions from proposed projects will not cause or contribute to a modeled violation of the new 1-hour SO_2 NAAQS. We also anticipate problems that sources may have interpreting the modeled 1-hour SO_2 impacts if the form of the hourly standard is not properly addressed. To respond to these and other related issues, we are providing the attached guidance, in the form of two memoranda, for implementing the new 1-hour SO_2 NAAQS under the PSD permit program.

The first memorandum, titled "General Guidance for Implementing the 1-hour SO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour SO_2 Significant Impact Level," includes guidance for the preparation and review of PSD permits with respect to the new 1-hour SO_2 standard. That guidance memorandum sets forth a recommended interim 1-hour SO_2 significant impact level (SIL) that states may consider for carrying out the required PSD air quality analysis for SO_2, until EPA promulgates a 1-hour SO_2 SIL via rulemaking, and addresses the continued use of the existing SO_2 Significant Emissions Rate (SER) and Significant Monitoring Concentration (SMC) to implement the new 1-hour SO_2 standard.. The second memorandum, titled "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard," includes specific modeling guidance for estimating ambient SO_2 concentrations and determining compliance with the new 1-hour SO_2 standard.

This guidance does not bind state and local governments and permit applicants as a matter of law. Nevertheless, we believe that state and local air agencies and industry will find this guidance useful for carrying out the PSD permit process and it will provide a consistent approach for estimating SO_2 air quality impacts from proposed construction or modification of SO_2 emissions sources. For the most part, the attached guidance focuses on how existing policy and guidance is relevant to and should be used for implementing the new 1-hour SO_2 NAAQS.

Please review the guidance included in the two attached memoranda. In the event of questions regarding the general implementation guidance contained in the first memorandum, please contact Raj Rao (rao.raj@epa.gov). For questions pertaining to the modeling guidance in the second memorandum, please contact Tyler Fox (fox.tyler@epa.gov). We are continuing our efforts to address permitting issues related to the implementation of new and revised NAAQS, and will issue additional guidance to address the NAAQS as appropriate.

Attachments:

1. Memorandum from Anna Marie Wood, Air Quality Policy Division, to EPA Regional Air Division Directors, "General Guidance for Implementing the 1-hour SO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour SO_2 Significant Impact Level" (August 23, 2010).
2. Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard" (August 23, 2010).

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

August 23, 2010

MEMORANDUM

SUBJECT: General Guidance for Implementing the 1-hour SO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour SO_2 Significant Impact Level

FROM: Anna Marie Wood, Acting Director /s/
Air Quality Policy Division

TO: Regional Air Division Directors

INTRODUCTION

We are issuing the following guidance to explain and clarify the procedures that may be followed by applicants for Prevention of Significant Deterioration (PSD) permits, and permitting authorities reviewing such applications, to properly demonstrate that proposed projects to construct and operate will not cause or contribute to a modeled violation of the new 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour SO_2 NAAQS or 1-hour SO_2 standard) that becomes effective on August 23, 2010. The EPA revised the primary SO_2 NAAQS by promulgating a 1-hour SO_2 NAAQS to provide the requisite protection of public health. Under section 165(a)(3) of the Clean Air Act (the Act) and sections 52.21(k) and 51.166(k) of EPA's PSD regulations, to obtain a permit, a source must demonstrate that its proposed emissions increase will not cause or contribute to a violation of "any NAAQS."

This guidance is intended to (1) highlight the importance of a 1-hour averaging period for setting an emissions limitation for SO_2 in the PSD permit (2) reduce the modeling burden to implement the 1-hour SO_2 standard where it can be properly demonstrated that a source will not have a significant impact on ambient 1-hour SO_2 concentrations, and (3) identify approaches that allow sources and permitting authorities to mitigate, in a manner consistent with existing regulatory requirements, potential modeled violations of the 1-hour SO_2 NAAQS, where appropriate. Accordingly, the techniques described in this memorandum may be used by permit applicants and permitting authorities to perform an acceptable 1-hour SO_2 NAAQS compliance modeling assessment and/or properly configure projects and permit conditions in order that a proposed source's emissions do not cause or contribute to modeled 1-hour SO_2 NAAQS violations, so that permits can be issued in accordance with the applicable PSD program requirements.

This guidance discusses existing provisions in EPA regulations and guidance, and focuses on the relevancy of this information for implementing the new NAAQS for SO_2. Importantly, however, this guidance also sets forth a recommended interim 1-hour SO_2 significant impact level (SIL) that EPA will use when it evaluates applications and issues permits under the federal PSD program, and that states may choose to rely upon to implement their PSD programs for SO_2 if they agree that the value represents a reasonable threshold for determining a significant ambient impact, and they incorporate into each permit record a rationale supporting this conclusion. This interim SIL is a useful screening tool that can be used to determine whether or not the predicted ambient impacts caused by a proposed source's emissions increase will be significant and, if so whether the source's emissions should be considered to "cause or contribute to" modeled violations of the new 1-hour SO_2 NAAQS.

BACKGROUND

On August 23, 2010, the new 1-hour SO_2 NAAQS will become effective. Regulations at 40 CFR 52.21 (the federal PSD program) require permit applicants to demonstrate compliance with "any" NAAQS that is in effect on the date a PSD permit is issued. (See, e.g., EPA memo dated April 1, 2010, titled "Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards.") Due to the promulgation of this short-term averaging period (1-hour) for the SO_2 NAAQS, we anticipate that some new major stationary sources or major modifications, especially those involving relatively short stacks may experience increased difficulty demonstrating that emissions from proposed project will not cause or contribute to a modeled violation.

We believe that, in some instances, preliminary predictions of violations could result from the use of maximum modeled concentrations that do not adequately take into account the form of the 1-hour standard. To the extent that is the case, ambient SO_2 concentrations in the form of the new 1-hour NAAQS should be estimated by applying the recommended procedures that account for the statistical form of the standard. See EPA Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard" (August 23, 2010) for specific modeling guidance for estimating ambient SO_2 concentrations consistent with the new 1-hour SO_2 NAAQS.

It is EPA's expectation that currently available SO_2 guidance, including the guidance presented in this memorandum, will assist in resolving some of the issues arising from preliminary analyses that show potential exceedances of the new 1-hour SO_2 NAAQS that would not be present under more refined modeling applications. In addition, the techniques described in this memorandum may also help avoid violations of the standard through design of the proposed source or permit conditions, consistent with existing regulatory requirements. Moreover, the interim 1-hour SO_2 SIL that is included in this guidance will provide a reasonable screening tool for effectively implementing the PSD requirements for an air quality impact analysis.

The following discussion provides guidance for establishing a 1-hour emissions limitation to demonstrate compliance with the new NAAQS, and for possibly mitigating modeled violations using any of the following: air quality-based permit limits more stringent than what the Best Available Control Technology provisions may otherwise require, air quality offsets, "good engineering practice" (GEP) stack heights, and an interim 1-hour SO_2 SIL. The continued use of the existing SO_2 Significant Emissions Rate (SER) and Significant Monitoring Concentration (SMC) to implement the new 1-hour SO_2 standard is also discussed.

SCREENING VALUES

In the final rule establishing the 1-hour SO_2 standard, EPA discussed various implementation considerations for the PSD permitting program. 75 FR.35520 (June 22, 2010). That discussion included the following statements regarding particular screening values that have historically been used on a widespread basis to facilitate implementation of the PSD permitting program:

> We agree with the commenters that there may be a need for EPA to provide additional screening tools or to revise existing screening tools that are frequently used under the NSR/PSD program for reducing the burden of completing SO_2 ambient air impact analyses. These screening tools include the SILs, as mentioned by the commenter, but also include the SER for emissions of SO_2 and the SMC for SO_2. The existing screening tools apply to the periods used to define the existing NAAQS for SO_2, including the annual, 24-hour, and 3-hour averaging periods. EPA intends to evaluate the need for possible changes or additions to each of these useful screening tools for SO_2 due to the revision of the SO_2 NAAQS to provide for a 1-hour standard. We believe it is highly likely that in order to be most effective for implementing the new 1-hour averaging period for NSR purposes, new 1-hour screening values will be appropriate.

75 FR 35579. EPA intends to conduct an evaluation of these issues and submit our findings in the form of revised significance levels under notice and comment rulemaking if any revisions are deemed appropriate. In the interim, for the reasons provided below, we recommend the continued use of the existing SER for SO_2 emissions as well as an interim 1-hour SO_2 SIL that we are setting forth today for conducting air quality impact analyses for the 1-hour SO_2 NAAQS. As described in the section titled Introduction, EPA intends to implement the interim 1-hour SO_2 SIL contained herein under the federal PSD program and offers states the opportunity to use it in their PSD programs if they choose to do so. EPA is not addressing the significant monitoring concentration (SMC) for SO_2 in this memorandum; the existing SMC for SO_2, at 40 CFR 52.21(i)(5)(i) should continue to be used.

SIGNIFICANT EMISSIONS RATE

The PSD regulations define SER for various regulated NSR pollutants. When a proposed new source's potential to emit a pollutant, or a modified source's net emissions increase of a pollutant, would be less than the SER, the source is not required to undergo the requisite PSD analyses (BACT and air quality) for that particular emissions increase. Under the terms of existing EPA regulations, the applicable SER for SO_2 is 40 tons per year (tpy). 40 CFR 52.21(b)(23); 40 CFR 51.166(b)(23). Each of the significant emissions rates defined in those regulations is specific to an individual pollutant with no differentiation by averaging time with regard to NAAQS. The NAAQS for SO_2 have included standards with 3-hour and 24-hour and annual averaging times for many years. The EPA has applied the 40 tpy SER for SO_2 across all of these averaging times, and we are aware of no reason why it should not be used for the 1-hour averaging period for the present time. Therefore, until the evaluation described above and any associated rulemaking are completed, we will use 40 tpy as the SER for the 1-hour standard.

Under existing regulations, an ambient air quality impact analysis is required for "each pollutant that [a source] would have the potential to emit in significant amounts." [40 CFR 52.21(m)(1)(i)(a); 40 CFR. 51.166(m)(1)(i)(a)]. For modifications, these regulations require this analysis for "each pollutant for which [the modification] would result in a significant net emissions increase." 40 CFR.52.21(m)(1)(i)(b); 40 CFR.51.166(m)(1)(i)(b). EPA construes this regulation to mean that an ambient impact analysis is not necessary for pollutants with emissions rates below the significant emissions rates in paragraph (b)(23) of the regulations. No additional action by EPA or permitting authorities is necessary at this time to apply the 40 tpy significant emissions rate in existing regulations to the hourly SO_2 standard.

INTERIM 1-HOUR SO_2 SIGNIFICANT IMPACT LEVEL

Under the PSD program, a proposed new major stationary source or major modification must, among other things, complete an air quality impact analysis that involves performing an analysis of air quality modeling and ambient monitoring data, where appropriate, to demonstrate compliance with applicable NAAQS. In order to implement this requirement, EPA traditionally has provided a screening tool known as the Significant Impact Level (SIL) to help applicants and permitting authorities determine whether a source's modeled ambient impact is significant so as to warrant a comprehensive, cumulative air quality analysis to demonstrate compliance with the NAAQS. Accordingly, where a proposed source's modeled impact is deemed insignificant, or *de minimis*, using the SIL as a threshold for significance, the applicant is not required to model anything besides its own proposed emissions increase to show that the proposed source or modification will not cause or contribute to a violation of the NAAQS.[1]

If, on the other hand, the source's modeled impact is found to be significant, based on the SIL, the applicant will need to complete a comprehensive, cumulative air quality impact analysis to demonstrate that the source's emissions will not cause or contribute to a modeled violation of any NAAQS. To make this demonstration, EPA has recommended that a cumulative analysis cover a circular area measuring out from the source to the maximum distance where the source's impact is equal to the SIL. Within this modeling area, the source should also model the impacts of other sources (existing and newly permitted), including applicable SO_2 sources located outside the circular area described above, to account for the cumulative hourly SO_2 air quality impacts

[1] When a proposed source's impact by itself is not considered to be "significant," EPA has long maintained that any further effort on the part of the applicant to complete a cumulative source impact analysis involving other source impacts would only yield information of trivial or no value with respect to the required evaluation of the proposed source or modification. The concept of a SIL is grounded on the *de minimis* principles described by the court in *Alabama Power Co. v. Costle*, 636 F.2d 323, 360 (D.C. Cir. 1980); See also *Sur Contra La Contaminacion v. EPA*, 202 F.3d 443, 448-49 (1st Cir. 2000) (upholding EPA's use of SIL to allow permit applicant to avoid full impact analysis); *In re: Prairie State Gen. Co.*, PSD Appeal No. 05-05, Slip. Op. at 139 (EAB 2006).

that are predicted to occur. The applicant may also have to gather ambient monitoring data as part of the total air quality analysis that is required for demonstrating compliance with the NAAQS.[2] Accordingly, the source will evaluate its contribution to any modeled violation of the 1-hour SO_2 NAAQS to determine whether the source's emissions contribution will cause or contribute to the modeled violation at any receptor. Note that in the accompanying modeling guidance memorandum we are providing recommended procedures and guidance for completing the modeling analysis to demonstrate compliance with the new 1-hour SO_2 NAAQS.

We plan to undertake rulemaking to adopt a 1-hour SO_2 SIL value. However, until such time as a 1-hour SO_2 SIL is defined in the PSD regulations, we are providing an interim SIL of 3 ppb, which we intend to use as a screening tool for completing the required air quality analyses for the new 1-hour SO_2 NAAQS under the federal PSD program at 40 CFR 52.21. We are also making the interim SIL available to States with EPA-approved implementation plans containing a PSD program to use at their discretion. To support the application of this interim 1-hour SO_2 SIL in each instance, a permitting authority that utilizes it as part of an ambient air quality analysis should include in the permit record the analysis reflected in this memorandum and the referenced documents to demonstrate that a modeled air quality impact is *de minimis,* and thereby would not be considered to cause or contribute to a modeled violation of the NAAQS.[3]

States may also elect to choose another value that they believe represents a significant air quality impact relative to the 1-hour SO_2 NAAQS. The EPA-recommended interim 1-hour SO_2 SIL is not intended to supersede any interim SIL that any state chooses to rely upon to implement a state PSD program that is part of an approved SIP, or to impose the use of the SIL concept on any state that chooses to implement the PSD program—in particular the ambient air quality analysis—without using a SIL as a screening tool. Accordingly, states that implement the PSD program under an EPA-approved SIP may choose to use this interim SIL, another value that may be deemed more appropriate for PSD permitting purposes in the state of concern, or no SIL at all. The application of any SIL that is not reflected in a promulgated regulation should be supported by a record in each instance that shows the value represents a *de minimis* impact on the 1-hour SO_2 standard, as described above.

As indicated above, using the interim 1-hour SO_2 SIL, the permit applicant and permitting authority can determine: (1) whether, based on the proposed increase in SO_2 emissions, a cumulative air quality analysis is required; (2) the area of impact within which a cumulative air quality analysis should focus; and (3) whether, as part of a cumulative air quality analysis, the proposed source's SO_2 emissions will cause or contribute to any modeled violation of the 1-hour SO_2 NAAQS.

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[2] A screening tool known as the Significant Monitoring Concentration (SMC) for SO_2 already exists in the PSD regulations. EPA plans to evaluate the existing SMC in light of the new 1-hour SO_2 NAAQS; however, the existing value of 13 $\mu g/m^3$, 24-hour average, should continue to be used until and unless a revised value is issued through rulemaking.

[3] Where the cumulative air quality analysis identifies a modeled violation of the NAAQS or increments, and the proposed source is issued its permit by virtue of the fact that its proposed emissions increase is not considered to cause or contribute to the modeled violation, it is still the permitting authority's responsibility to address such modeled violations independently from the PSD permitting process to determine the nature of the problem and to mitigate it accordingly,

As mentioned above, we are providing an interim 1-hour SO_2 SIL value of 3 ppb to implement the federal PSD program. To determine initially whether a proposed project's emissions increase will have a significant impact (resulting in the need for a cumulative air quality analysis), this interim SIL should be compared to either of the following:

- The highest of the 5-year averages of the maximum modeled 1-hour SO_2 concentrations predicted each year at each receptor, based on 5 years of National Weather Service data; or
- The highest modeled 1-hour SO_2 concentration predicted across all receptors based on 1 year of site-specific meteorological data, or the highest of the multi-year averages of the maximum modeled 1-hour SO_2 concentrations predicted each year at each receptor, based on 2 or more, up to 5 complete years of available site-specific meteorological data.

Additional guidance will be forthcoming for the purpose of comparing a proposed source's modeled impacts to the interim 1-hour SO_2 SIL in order to make a determination about whether that source's contribution is significant when a cumulative air quality analysis identifies violations of the 1-hour SO_2 NAAQS (i.e., "causes or contributes to" a modeled violation).

We derived this interim 1-hour SO_2 SIL by using an impact equal to 4% of the 1-hour SO_2 NAAQS (which is 75 ppb). On June 29, 2010, we issued an interim 1-hour NO_2 SIL that used an impact equal to 4% of the 1-hour NO_2 standard. As explained in the June memorandum, we have chosen this approach because we believe it is reasonable to base the interim 1-hour SIL directly on consideration of impacts relative to the corresponding 1-hour NAAQS. In 1980, we defined SER for each pollutant subject to PSD. 45 FR 52676 (August 7, 1980) at 52705-52710. For PM and SO_2, we defined the SER as the emissions rate that resulted in an ambient impact equal to 4% of the applicable short-term NAAQS. The 1980 analysis focused on levels no higher than 5% of the primary standard because of concerns that higher levels were found to result in unreasonably large amounts of increment being consumed by a single source. Within the range of impacts analyzed, we considered two factors that had an important influence on the choice of the significant impact levels: (1) cumulative effect on increment consumption of multiple sources in an area, each making the maximum *de minimis* emissions increase; and (2) the projected consequence of a given significant impact level on administrative burden. As explained in the preamble to the 1980 rulemaking and the supporting documentation,[4] EPA decided to use 4% of the 24-hour primary NAAQS for PM and SO_2 to define the significant emissions rates (SERs) for those pollutants. See 45 FR 52708. Looking now at a 1-hour NAAQS for SO_2, we believe that it is reasonable as an interim approach to use a SIL value that represents 4% of the 1-hour SO_2 NAAQS. EPA will consider other possible alternatives for developing a 1-hour SO_2 SIL in a future rulemaking that will provide an opportunity for public participation in the development of a SIL as part of the PSD regulations.

AIR-QUALITY BASED EMISSIONS LIMITATIONS

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[4] EPA evaluated *de minimis* levels for pollutants for which NAAQS had been established in a document titled "Impact of Proposed and Alternative De Minimis Levels for Criteria Pollutants"; EPA-450/2-80-072, June 1980.

Once a level of control is determined by the PSD applicant via the Best Available Control Technology (BACT) top-down process, the applicant must model the proposed source's emissions at the BACT emissions rate(s) to demonstrate that those emissions will not cause or contribute to a violation of any NAAQS or PSD increment. However, the EPA 1990 Workshop Manual (page B.54) describes circumstances where a proposed source's emissions based on levels determined via the top-down process may not be sufficiently controlled to prevent modeled violations of an increment or NAAQS. In such cases, it may be appropriate for PSD applicants to propose a more stringent control option (that is, beyond the level identified via the top-down process) as a result of an adverse impact on the NAAQS or PSD increments. In addition, the use of certain dispersion techniques is permissible for certain proposed projects for SO_2 that may need to be considered where emissions limitations alone may not enable the source to demonstrate compliance with the new 1-hour SO_2 NAAQS. This is discussed in greater detail below in the section addressing GEP stack height requirements.

Because compliance with the new SO_2 NAAQS must be demonstrated on the basis of a 1-hour averaging period, the reviewing authority should ensure that the source's PSD permit defines a maximum allowable hourly emissions limitation for SO_2, regardless of whether it is derived from the BACT top-down approach or it is the result of an air-quality based emissions rate. Hourly limits are important because they are the foundation of the air quality modeling demonstration relative to the 1-hour SO_2 NAAQS. For estimating the impacts of existing sources, if necessary, existing SO_2 emission inventories used to support modeling for compliance with the 3-hour and 24-hour SO_2 standards should serve as a useful starting point, and may be adequate in many cases for use in assessing compliance with the new 1-hour SO_2 standard. The PSD applicant's coordination with the reviewing authority is important in this matter to obtain the most appropriate estimates of maximum allowable hourly SO_2 emissions.

DEMONSTRATING COMPLIANCE WITH THE NAAQS AND INCREMENTS & MITIGATING MODELED VIOLATIONS WITH AIR QUALITY OFFSETS

A 1988 EPA memorandum provides procedures to follow when a modeled violation is identified during the PSD permitting process. [See Memorandum from Gerald A. Emison , EPA OAQPS, to Thomas J. Maslany, EPA Air Management Division, "Air Quality Analysis for Prevention of Significant Deterioration (PSD)." (July 5, 1988.)] In cases where the air quality analysis predicts violations of the 1-hour SO_2 NAAQS, but the permit applicant can show that the SO_2 emissions increase from the proposed source will not have a significant impact *at the point and time of any modeled violation*, the permitting authority has discretion to conclude that the source's emissions will not contribute to the modeled violation. As provided in the July 5, 1988 guidance memo, because the proposed source only has a *de minimis* contribution to the modeled violation, the source's impact will not be considered to cause or contribute to such modeled violations, and the permit could be issued. This concept continues to apply, and the significant impact level (described further below) may be used as part of this analysis. A 2006 decision by the EPA Environmental Appeals Board (EAB) provides detailed reasoning that demonstrates the permissibility of a finding that a PSD source would not be considered to cause or contribute to a modeled NAAQS violation because its estimated air quality impact was insignificant at the time and place of the modeled violations.[5] [See In re *Prairie State Gen. Co.*, 13 E.A.D. ___, ___, PSD Appeal No. 05-05, Slip. Op. at 137-144 (EAB 2006)]

However, where it is determined that a source's impact does cause or contribute to a modeled violation, a permit cannot be issued without some action to mitigate the source's impact. In accordance with 40 CFR 51.165(b)[6], a major stationary source or major modification (as defined at §51.165(a)(1)(iv) and (v)) that locates in a SO_2 attainment area for the 1-hour SO_2 NAAQS and would cause or contribute to a violation of the 1-hour SO_2 NAAQS may "reduce the impact of its emissions upon air quality by obtaining sufficient emission reductions to, at a minimum, compensate for its adverse ambient [SO_2] impact where the major source or major modification would otherwise cause or contribute to a violation ...." An applicant can meet this requirement for obtaining additional emissions reductions either by reducing its emissions at the source (e.g., promoting more efficient production methodologies and energy efficiency) or by obtaining air quality offsets (see below). [See, e.g., In re *Interpower of New York, Inc.*, 5 E.A.D. 130, 141 (EAB 1994)].[7] A State may also provide the necessary emissions reductions by imposing emissions limitations on other sources through an approved SIP revision. These approaches may also be combined as necessary to demonstrate that a source will not cause or contribute to a violation of the NAAQS.

Unlike emissions offset requirements in areas designated as nonattainment, in addressing the air quality offset concept, it may not be necessary for a permit applicant to fully offset the proposed emissions increase if an emissions reduction of lesser quantity will mitigate the adverse air quality impact where the modeled violation was originally identified. ("Although full emission offsets are not required, such a source must obtain emission offsets sufficient to compensate for its air quality impact where the violation occurs." 44 FR 3274, January 16, 1979, at 3278.) To clarify this, the 1988 guidance memo referred to above states that:

> offsets sufficient to compensate for the source's significant impact must be obtained pursuant to an approved State offset program consistent with State Implementation Plan (SIP) requirements under 40 CFR 51.165(b). Where the source is contributing to an existing violation, the required offset may not correct the violation. Such existing violations must be addressed [through the SIP].

Note that additional guidance for this and other aspects of the modeling analysis for the impacts of SO_2 emissions on ambient concentrations of SO_2 are addressed in EPA modeling guidance, including the attached August 23, 2010 Memorandum titled "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard."

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[5] While there is no 1-hour SO_2 significant impact level (SIL) currently defined in the PSD regulations, we believe that states may adopt interim values, with the appropriate justification for such values, to use for permitting purposes. In addition, we are recommending an interim SIL as part of this guidance for implementing the SO_2 requirements in the federal PSD program, and in state programs where states choose to use it.

[6] The same provision is contained in EPA's Interpretative Ruling at 40 CFR part 51 Appendix S, section III.

[7] In contrast to Nonattainment New Source Review permits, offsets are not mandatory requirements in PSD permits if it can otherwise be demonstrated that a source will not cause or contribute to a violation of the NAAQS. See, In re *Knauf Fiber Glass, GMBH*, 8 E.A.D. 121, 168 (EAB 1999).

Although EPA announced that it is revoking the annual and 24-hour SO_2 NAAQS, the June 22, 2010 preamble to the final rule announcing the new 1-hour SO_2 NAAQS explained that those standards will remain in effect for a limited period of time as follows: for current SO_2 nonattainment areas and SIP call areas, until attainment and maintenance SIPs are approved by EPA for the new 1-hour SO_2 NAAQS; for all other areas, for one year following the effective date of the initial designations under section 107(d)(1) for the new 1-hour SO_2 NAAQS. Accordingly, the annual and 24-hour SO_2 NAAQS must continue to be protected under the PSD program for as long as they remain in effect for a PSD area. There is a more detailed discussion of the transition from the existing SO_2 NAAQS to a revised SO_2 NAAQS in that preamble. Also, the same preamble includes a footnote listing the current nonattainment areas and SIP call areas. 75 FR 35520, at 35580-2.

In addition, the existing SO_2 increments (class I, II and III) for the annual and 24-hour averaging periods will not be revoked in conjunction with our decision to revoke the corresponding SO_2 NAAQS. Instead, the annual and 24-hour SO_2 increments (Class I, II and III increments) will remain in effect because they are defined in the Clean Air Act at title I, part C, section 163. The annual and 24-hour SO_2 increments in section 163 are considered part of the suite of statutory increments applicable to sulfur dioxide that Congress expressly included in the statutory provisions for PSD. As such, those increments cannot be revoked simply because we have decided to revoke the annual and 24-hour SO_2 NAAQS, upon which the SO_2 increments are based. Consequently, sources must continue to demonstrate that their proposed emissions increases of SO_2 emissions will not cause or contribute to any modeled violation of the existing annual and 24-hour SO_2 increments for as long as those statutory increments remain in effect. Increments for the 1-hour averaging period do not yet exist; the Act provides a specific schedule for the promulgation of additional regulations, which may include new increments, following the promulgation of new or revised NAAQS. EPA plans to begin that rulemaking process in the near future to consider the need for such increments.

"GOOD ENGINEERING PRACTICE" STACK HEIGHT AND DISPERSION TECHNIQUES

If a permit applicant is unable to show that the source's proposed emissions increase will not cause or contribute to a modeled violation of the new 1-hour SO_2 NAAQS, the problem could be the result of plume downwash effects causing high ambient concentrations near the source. In such cases, a source may be able to raise the height of its existing stacks (or designed stacks if not yet constructed) to a "good engineering practice" (GEP) stack height, or at least 65 meters, measured from the ground-level elevation at the base of the stack.

While not necessarily eliminating the full effect of downwash in all cases, raising stacks to GEP height may provide substantial air quality benefits in a manner consistent with statutory provisions (section 123 of the Act) governing acceptable stack heights to minimize excessive concentrations due to atmospheric downwash, eddies or wakes. Permit applicants should also be aware of the regulatory restrictions on stack heights for the purpose of modeling for compliance with NAAQS and increments. Section 52.21(h) of the PSD regulations currently prohibits the use of dispersion techniques, such as stack heights above GEP, merged gas streams, or intermittent controls for setting SO_2 emissions limits to meet the NAAQS and PSD increments.

However, stack heights in existence before December 31, 1970, and dispersion techniques implemented before then, are not affected by these limitations. EPA's general stack height regulations are promulgated at 40 CFR 51.100(ff), (gg), (hh), (ii), (jj), (kk) and (nn), and 40 CFR 51.118.

a. *Stack heights*: A source can include only the actual stack height up to GEP height when modeling to develop the SO_2 emissions limitations or to determine source compliance with the SO_2 NAAQS and increments. This is not a limit on the actual height of any stack constructed by a new source or modification, however, and there may be circumstances where a source owner elects to build a stack higher than GEP height. However, such additional height may not be considered when determining an emissions limitation or demonstrating compliance with an applicable NAAQS or PSD increment. Thus, when modeling, the following limitations apply in accordance with §52.21(h):

- For a stack height less than GEP, the actual stack height must be used in the source impact analysis for emissions;
- For a stack height equal to or greater than 65 meters the impact may be modeled using the greater of:
  - A *de minimis* stack height equal to 65 meters, as measured from the ground-level elevation at the base of the stack, without demonstration or calculation (40 CFR 51.100(ii)(1));
  - The refined formula height calculated using the dimensions of nearby structures in accordance with the following equation:

  GEP = H + 1.5L, where H is the height of the nearby structure and L is the lesser dimension of the height or projected width of the nearby structure (40 CFR 51.100(ii)(2)(ii)).[8]

- A GEP stack height exceeding the refined formula height may be approved when it can be demonstrated to be necessary to avoid "excessive concentrations" of SO_2 caused by atmospheric downwash, wakes, or eddy effects by the source, nearby structures, or nearby terrain features. (40 CFR 51.100(ii)(3), (jj), (kk));

- For purposes of PSD, "excessive concentrations" means a maximum ground-level concentration from a stack due in whole or in part to downwash, wakes, and eddy effects produced by nearby structures or nearby terrain features which individually is at least 40 percent in excess of the maximum concentration experienced in the absence of such effects and (a) which contributes to a total concentration due to emissions from all sources that is greater than the applicable NAAQS or (b) greater than the applicable PSD increments. (40 CFR 51.100(kk)(1)).

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[8] For stacks in existence on January 12, 1979, the GEP equation is GEP = 2.5 H (provided the owner or operator produces evidence that this equation was actually relied on in establishing an emission limitation for SO_2 (40 CFR 51.100(ii)(2)(i)

Reportedly, for economic and other reasons, many existing source stacks have been constructed at heights less than 65 meters, and source impact analyses may show that the source's emissions will cause or contribute to a modeled violation of the 1-hour SO_2 NAAQS. Where this is the case, sources should be aware that it is permissible for them to increase their stack heights up to 65 meters without a GEP demonstration.

b. *Other dispersion techniques*: The term "dispersion technique" includes any practice carried out to increase final plume rise, subject to certain exceptions (40 CFR 51.100(hh)(1), (2)(i) – (v)). Beyond the noted exceptions, such techniques are not allowed for getting credit for modeling source compliance with the NAAQS and PSD increments. One such exception is for sources of SO_2. Section 51.100(hh)(2)(v) provides that identified techniques that increase final exhaust gas plume rise are not considered prohibited dispersion techniques pursuant to section 51.100(hh)(1)(iii) "where the resulting allowable emissions of sulfur dioxide from the facility do not exceed 5,000 tons per year." Thus, proposed modifications that experience difficulty modeling compliance with the new 1-hour SO_2 NAAQS when relying on BACT or an air quality-based emissions limit alone may permissibly consider techniques to increase their final exhaust gas plume rise consistent with these provisions.

The definition of "dispersion technique" at 40 CFR 51.100(hh)(1)(iii) describes techniques that are generally prohibited, but which do not apply with respect to the exemption for SO_2. Accordingly, it is permissible for eligible SO_2 sources to make adjustments to source process parameters, exhaust gas parameters, stack parameters, or to combine exhaust gases from several existing stacks into one stack, so as to increase the exhaust gas plume rise. It is important to remember that the exemption applies to sources that have facility-wide allowable SO_2 emissions of less than 5,000 tpy resulting from the increase in final exhaust gas plume rise. Thus, proposed modifications should not base their eligibility to use dispersion on the amount of the proposed net emissions increase, but on the total source emissions of SO_2.

The EPA does not recommend or encourage sources to rely on dispersion to demonstrate compliance with the NAAQS; however, we acknowledge the fact that certain SO_2 sources may legally do so. For example, while increasing stack height is a method of dispersion, EPA's rules allow use of that approach to the extent the resulting height meets EPA's requirements defining "good engineering practice (GEP)" stack height. See 40 CFR 50.100(hh)(1)(i), 50.100(ii)(1)-(3). Nevertheless, EPA encourages PSD applicants to seek other remedies, including the use of the most stringent controls (beyond top-down BACT) feasible or the acquisition of emissions reductions (offsets) from other existing sources, to address situations where proposed emissions increases would result in modeled violations of the SO_2 NAAQS.

GENERAL START-UP CONDITIONS

We do not anticipate widespread problems associated with high short-term SO_2 emissions resulting from start-up/shutdown conditions. Many sources are capable of starting a unit with natural gas or low-sulfur fuel to avoid significant start-up emissions problems. However, some sources could experience short-term peaks of SO_2 during start-up or shutdown that could adversely affect the new 1-hour SO_2 NAAQS. The EPA currently has no provisions for exempting emissions occurring during equipment start-up/shutdown from the BACT requirements or for air quality analyses to demonstrate compliance with the SO_2 NAAQS and increments. Therefore, such emissions should be addressed in the required BACT and air quality analyses.

There are approaches to addressing issues related to start-up/shutdown emissions. For example, sources may be willing to accept enforceable permit conditions limiting equipment start-up/shutdown to certain hours of the day when impacts are expected to be lower than normal. Such permit limitations can be accounted for in the modeling of such emissions. Applicants should direct other questions arising concerning procedures for modeling start-up/shutdown emissions to the applicable permitting authority to determine the most current modeling guidance.

In the event of questions regarding the general implementation guidance contained in this memorandum, please contact Raj Rao (rao.raj@epa.gov).

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
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August 23, 2010

MEMORANDUM

SUBJECT: Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard

FROM: Tyler Fox, Leader /s/
Air Quality Modeling Group, C439-01

TO: Regional Air Division Directors

INTRODUCTION

On June 2, 2010, EPA announced a new 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (1-hour SO_2 NAAQS or 1-hour SO_2 standard) which is attained when the 3-year average of the 99th-percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 75 ppb at each monitor within an area. The final rule for the new 1-hour SO_2 NAAQS was published in the Federal Register on June 22, 2010 (75 FR 35520-35603), and the standard becomes effective on August 23, 2010 (EPA, 2010a). This memorandum clarifies the applicability of current guidance in the *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W) for modeling SO_2 impacts in accordance with the Prevention of Significant Deterioration (PSD) permit requirements to demonstrate compliance with the new 1-hour SO_2 standard.

SUMMARY OF CURRENT GUIDANCE

Current modeling guidance for estimating ambient impacts of SO_2 for comparison with applicable NAAQS is presented in Section 4 of Appendix W under the general heading of "Traditional Stationary Source Models." This guidance acknowledges the fact that ambient SO_2 impacts are largely a result of emissions from stationary sources. Section 4.2.2 provides specific recommendations regarding "Refined Analytical Techniques," stating that "For a wide range of regulatory applications in all types of terrain, the recommended model is AERMOD" (see Section 4.2.2.b). As described in Section 4.1.d, the AERMOD dispersion model "employs best state-of-practice parameterizations for characterizing the meteorological influences and dispersion" (Cimorelli, *et al.*, 2004; EPA, 2004; EPA, 2009).

Section 7.2.6 of Appendix W addresses the issue of chemical transformation for modeling SO_2 emissions, stating that:

> The chemical transformation of SO_2 emitted from point sources or single industrial plants in rural areas is generally assumed to be relatively unimportant to the estimation of maximum concentrations when travel time is limited to a few hours. However, in urban areas, where synergistic effects among pollutants are of considerable consequence, chemical transformation rates may be of concern. In urban area applications, a half-life of 4 hours may be applied to the analysis of SO_2 emissions. Calculations of transformation coefficients from site specific studies can be used to define a ''half-life'' to be used in a steady-state Gaussian plume model with any travel time, or in any application, if appropriate documentation is provided. Such conversion factors for pollutant half-life should not be used with screening analyses.

The AERMOD model incorporates the 4 hour half-life for modeling ambient SO_2 concentrations in urban areas under the regulatory default option.

General guidance regarding source emission input data requirements for modeling ambient SO_2 impacts is provided in Section 8.1 of Appendix W and guidance regarding determination of background concentrations for purposes of a cumulative ambient air quality impact analysis is provided in Section 8.2.

APPLICABILITY OF CURRENT GUIDANCE TO 1-HOUR SO_2 NAAQS

The current guidance in Appendix W regarding SO_2 modeling in the context of the previous 24-hour and annual primary SO_2 NAAQS and the 3-hour secondary SO_2 NAAQS is generally applicable to the new 1-hour SO_2 standard. Since short-term SO_2 standards ($\leq$ 24 hours) have been in existence for decades, existing SO_2 emission inventories used to support modeling for compliance with the 3-hour and 24-hour SO_2 standards should serve as a useful starting point, and may be adequate in many cases for use in assessing compliance with the new 1-hour SO_2 standard, since issues identified in Table 8-2 of Appendix W related to short-term vs. long-term emission estimates may have already been addressed. However, the PSD applicant and reviewing authority may need to reassess emission estimates for very short-term emission scenarios, such as start-up and shut-down operations, for purposes of estimating source impacts on the 1-hour SO_2 standard. This is especially true if existing emission estimates for 3-hour or 24-hour periods are based on averages that include zero (0) or reduced emissions for some of the hours.

Given the form of the new 1-hour SO_2 standard, we are providing clarification regarding the appropriate data periods for modeling demonstrations of compliance with the NAAQS vs. demonstrations of attainment of the NAAQS through ambient monitoring. While monitored design values for the 1-hour SO_2 standard are based on a 3-year average (in accordance with Section 1(c) of Appendix T to 40 CFR Part 50), Section 8.3.1.2 of Appendix W addresses the length of the meteorological data record for dispersion modeling, stating that "[T]he use of 5 years of NWS [National Weather Service] meteorological data or at least 1 year of site specific data is required." Section 8.3.1.2.b further states that "one year or more (including partial years), up to five years, of site specific data . . . are preferred for use in air quality analyses." Although the monitored design value for the 1-hour SO_2 standard is defined in terms of the 3-year average, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data. The 5-year average based on use of NWS data, or an average across one or more years of available site specific data, serves as an unbiased estimate of the 3-year average for purposes of modeling demonstrations of compliance with the NAAQS. Modeling of "rolling 3-year averages," using years 1 through 3, years 2 through 4, and years 3 through 5, is not required. Furthermore, since modeled results for SO_2 are averaged across the number of years modeled for comparison to the new 1-hour SO_2 standard, the meteorological data period should include complete years of data to avoid introducing a seasonal bias to the averaged impacts. In order to comply with Appendix W recommendations in cases where partial years of site specific meteorological data are available, while avoiding any seasonal bias in the averaged impacts, an approach that utilizes the most conservative modeling result based on the first complete-year period of the available data record vs. results based on the last complete-year period of available data may be appropriate, subject to approval by the appropriate reviewing authority. Such an approach would ensure that all available site specific data are accounted for in the modeling analysis without imposing an undue burden on the applicant and avoiding arbitrary choices in the selection of a single complete-year data period.

The form of the new 1-hour SO_2 standard also has implications regarding appropriate methods for combining modeled ambient concentrations with monitored background concentrations for comparison to the NAAQS in a cumulative modeling analysis. As noted in the March 23, 2010 memorandum regarding "Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS" (EPA, 2010b), combining the 98^{th} percentile monitored value with the 98^{th} percentile modeled concentrations for a cumulative impact assessment could result in a value that is below the 98^{th} percentile of the combined cumulative distribution and would, therefore, not be protective of the NAAQS. However, unlike the recommendations presented for $PM_{2.5}$, the modeled contribution to the cumulative ambient impact assessment for the 1-hour SO_2 standard should follow the form of the standard based on the 99^{th} percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled. A "first tier" assumption that may be applied without further justification is to add the overall highest hourly background SO_2 concentration from a representative monitor to the modeled design value, based on the form of the standard, for comparison to the NAAQS. Additional refinements to this "first tier" approach based on some level of temporal pairing of modeled and monitored values may be considered on a case-by-case basis, subject to approval by the reviewing authority, with adequate justification and documentation.

Section 8.2.3 of Appendix W provides recommendations regarding the determination of background concentrations for multi-source areas. That section emphasizes the importance of professional judgment by the reviewing authority in the identification of nearby and other sources to be included in the modeled emission inventory, and establishes "a significant concentration gradient in the vicinity of the source" under consideration as the main criterion for this selection. Appendix W also indicates that "the number of such [nearby] sources is expected to be small except in unusual situations." See Section 8.2.3.b.

The representativeness of available ambient air quality data also plays an important role in determining which nearby sources should be included in the modeled emission inventory. Key issues to consider in this regard are the extent to which ambient air impacts of emissions from nearby sources are reflected in the available ambient measurements, and the degree to which emissions from those background sources during the monitoring period are representative of allowable emission levels under the existing permits. The professional judgments that are required in developing an appropriate inventory of background sources should strive toward the proper balance between adequately characterizing the potential for cumulative impacts of emission sources within the study area to cause or contribute to violations of the NAAQS, while minimizing the potential to overestimate impacts by double counting modeled source impacts that are also reflected in the ambient monitoring data.

We would also caution against the literal and uncritical application of very prescriptive procedures for identifying which background sources should be included in the modeled emission inventory for NAAQS compliance demonstrations, including those described in Chapter C, Section IV.C.1 of the draft *New Source Review Workshop Manual* (EPA, 1990), noting again that Appendix W emphasizes the importance of professional judgment in this process. While the draft workshop manual serves as a useful general reference that provides potential approaches for meeting the requirements of New Source Review (NSR) and PSD programs, it is not the only source of EPA modeling guidance. The procedures described in the manual may be appropriate in some circumstances for defining the spatial extent of sources whose emissions may need to be considered, but not in others. While the procedures described in the NSR Workshop Manual may appear very prescriptive, it should be recognized that "[i]t is not intended to be an official statement of policy and standards and does not establish binding regulatory requirements." See, Preface.

Given the range of issues involved in the determination of an appropriate inventory of emissions to include in a cumulative impact assessment, the PSD applicant should consult with the appropriate reviewing authority early in the process regarding the selection and proper application of appropriate monitored background concentrations and the selection and appropriate characterization of modeled background source emission inventories for use in demonstrating compliance with the new 1-hour SO_2 standard.

SUMMARY

To summarize, we emphasize the following points:

1. Current guidance in Appendix W for modeling to demonstrate compliance with the previous 24-hour and annual primary SO_2 standards, and 3-hour secondary SO_2 standard, is generally applicable for the new 1-hour SO_2 NAAQS.
2. While the 1-hour NAAQS for SO_2 is defined in terms of the 3-year average for monitored design values to determine attainment of the NAAQS, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data.

REFERENCES

Cimorelli, A. J., S. G. Perry, A. Venkatram, J. C. Weil, R. J. Paine, R. B. Wilson, R. F. Lee, W. D. Peters, R. W. Brode, and J. O. Paumier, 2004. AERMOD: Description of Model Formulation with Addendum, EPA-454/R-03-004. U.S. Environmental Protection Agency, Research

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EPA, 2010b. Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS. Stephen D. Page Memorandum, dated March 23, 2010. U.S. Environmental Protection Agency, Research Triangle Park, NC.

cc: Richard Wayland, C304-02
Anna Marie Wood, C504-01
Lydia Wegman, C504-02
Raj Rao, C504-01
Roger Brode, C439-01
James Thurman, C439-01
Dan deRoeck, C504-03
Elliott Zenick, OGC
Brian Doster, OGC
EPA Regional Modeling Contacts

Attachment B: Non-Criteria Regulated Pollutant Information

Nucor Corporation: West Virginia Steel Mill

Permit Number R14-0039: Facility ID 053-00085

Pollutant	CAS #	PTE (tons/yr)	Source	Known/Suspected Carcinogen	Classification	MACT[1]
Acetaldehyde	75-07-0	0.035	RICE	Yes	B2 - Probable Human Carcinogen[2]	ZZZZ
Acrolein	107-02-8	0.033	RICE	No	Inadequate Data[3]	ZZZZ
Benzene	71-43-2	0.013	RICE PNG Combustion	Yes	A - Known Human Carcinogen[4]	ZZZZ
Formaldehyde	50-00-0	0.416	RICE PNG Combustion	Yes	B1 - Probable Human Carcinogen[5]	ZZZZ
n-Hexane	110-54-3	4.427	RICE PNG Combustion	No	Inadequate Data[6]	ZZZZ
Hydrochloric Acid	7647-01-0	1.159	Pickling T10-T23	No	Not Assessed[7]	None
Methanol	67-56-1	0.013	RICE	No	Not Assessed[8]	ZZZZ
Tetrachloroethylene	127-18-4	0.010	T25-T29	Yes	Likely to be Carcinogen[9]	None
Toluene	108-88-3	0.012	RICE PNG Combustion	No	Inadequate Data[10]	ZZZZ
Lead	7439-92-1	0.675	EAFs	No	Not Assessed[11]	YYYYY
Manganese	7439-96-5	0.450	EAFs	No	D - Not Classifiable[12]	YYYYY
Mercury	7439-97-6	0.165	EAFs	No	D - Not Classifiable[13]	YYYYY

(1) Does a MACT apply to one of the emission units contributing emissions of this specific HAP? See "Regulatory Applicability" section for discussion.

(2) [**Acetaldehyde**] From IRIS: "*Based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.*"

(3) [**Acrolein**] From IRIS: "*Under the Draft Revised Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), the potential carcinogenicity of acrolein cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure. There are no adequate human studies of the carcinogenic potential of acrolein. Collectively, experimental studies provide inadequate evidence that acrolein causes cancer in laboratory animals.*"

(4) [**Benzene**] From IRIS: "*Benzene is classified as a "known" human carcinogen (Category A) under the Risk Assessment Guidelines of 1986. Under the proposed revised Carcinogen Risk Assessment Guidelines (U.S. EPA, 1996), benzene is characterized as a known human carcinogen for all routes of exposure based upon convincing human evidence as well as supporting evidence from animal studies. (U.S. EPA, 1979, 1985, 1998; ATSDR, 1997)..*"

(5) [**Formaldehyde**] From IRIS: "*Based on limited evidence in humans, and sufficient evidence in animals. Human data include nine studies that show statistically significant associations between site-specific respiratory neoplasms and exposure to formaldehyde or formaldehyde-containing products. An increased incidence of nasal squamous cell carcinomas was observed in long-term inhalation studies in rats and in mice. The classification is supported by in vitro genotoxicity data and formaldehyde's structural relationships to other carcinogenic aldehydes such as acetaldehyde.*"

(6) [**n-Hexane**] From IRIS: *"Under the Guidelines for Carcinogen Risk Assessment, there is inadequate information to assess the carcinogenic potential of n-hexane.*"

(7) [**Hydrochloric Acid**] No entry in the IRIS Database. Information on HCl toxicity at: https://www.ncbi.nlm.nih.gov/books/NBK230426/.

(8) [**Methanol**] From IRIS: "*Not assessed under the IRIS Program.*"

(9) [**Tetrachloroethylene**] From IRIS: "*Following EPA (2005a) Guidelines for Carcinogen Risk Assessment, tetrachloroethylene is "likely to be carcinogenic in humans by all routes of exposure.*"

(10) [**Toluene**] From IRIS: *"Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005), there is inadequate information to assess the carcinogenic potential of toluene because studies of humans chronically exposed to toluene are inconclusive, toluene was not carcinogenic in adequate inhalation cancer bioassays of rats and mice exposed for life (CIIT, 1980 NTP, 1990 Huff, 2003), and increased incidences of mammary cancer and leukemia were reported in a lifetime rat oral bioassay at a dose level of 500 mg/kg-day but not at 800 mg/kg-day (Maltoni et al., 1997).*"

(11) [**Lead**] No entry in the IRIS Database. Information on Lead toxicity at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4961898/.

(12) [**Manganese**] From IRIS: *"Existing studies are inadequate to assess the carcinogenicity of manganese.*"

(13) [**Mercury**] From IRIS: "*Based on inadequate human and animal data. Epidemiologic studies failed to show a correlation between exposure to elemental mercury vapor and carcinogenicity; the findings in these studies were confounded by possible or known concurrent exposures to other chemicals, including human carcinogens, as well as lifestyle factors (e.g., smoking). Findings from genotoxicity tests are severely limited and provide equivocal evidence that mercury adversely affects the number or structure of chromosomes in human somatic cells.*"

AIR QUALITY PERMIT NOTICE

Notice of Intent to Approve

On January 21, 2022, Nucor Steel West Virginia LLC (Nucor) applied to the WV Department of Environmental Protection (DEP), Division of Air Quality (DAQ) for a permit to construct a steel mill located near Apple Grove, Mason County, WV at latitude 38.65536 and longitude -82.16853. A preliminary evaluation has determined that all State and Federal air quality requirements will be met by the proposed facility. The DAQ is providing notice to the public of its preliminary determination to issue the permit as R14-0039.

The following potential emissions will be authorized by this permit action: Particulate Matter less than 2.5 microns, 570.10 tons per year (TPY); Particulate Matter less than 10 microns, 617.54 TPY; (total) Particulate Matter, 690.89 TPY; Sulfur Dioxide, 361.48 TPY; Oxides of Nitrogen, 701.59 TPY; Carbon Monoxide, 3,263 TPY; Volatile Organic Compounds, 178.36 TPY; Total Hazardous Air Pollutants, 7.48 TPY, Greenhouse Gases (CO_2e), 673,848 TPY.

The purpose of the DAQ's permitting process is to make a preliminary determination if the proposed facility, which is defined as a major stationary source under 45CSR14, meets all state and federal air quality requirements. DEP rules and U.S. EPA regulations require that all pollutants at a major stationary source that will be emitted in "significant" amounts (as defined within 45CSR14) shall: (1) be controlled by application of "best available control technology" (as defined within 45CSR14); (2) not cause or contribute to violations of either the primary or secondary national ambient air quality standards (NAAQS) nor any Class 1 or Class 2 air quality increments applicable in the area where the source is located or elsewhere; and, (3) not adversely impact upon soils, vegetation, and visibility in the vicinity of the plant site. A preliminary evaluation by the DAQ of the information submitted by Nucor indicates that the proposed facility will meet the emission limitations and conditions set forth in the draft permit and will comply with all currently applicable state and federal air quality rules and regulations (including 45CSR14, the WV Legislative Rule implementing the Prevention of Significant Deterioration program that includes the requirements listed above). Nucor has anticipated a facility start-up date in January 2024.

The following are the results of the Class1 and Class 2 ambient air quality increment analysis:

Class 1 Increment Analysis: The Class 1 increment analysis produced the following results: screening and modeling analysis showed that potential impacts in the following Class 1 areas were "insignificant" as defined by 45CSR14: Otter Creek Wilderness Area and the Dolly Sods Wilderness Area in West Virginia and the Shenandoah National Park and the James River Face Wilderness Area in Virginia. This finding of "insignificant impacts" precluded a required full multi-source Class I increment analysis.

Class 2 Increment Analysis: The Class 2 increment analysis produced the following results (location of maximum impact): 93% at 8.34 $\mu g/m^3$ of $PM_{2.5}$ on a 24-hour basis; 73% at 2.90 $\mu g/m^3$ of $PM_{2.5}$ on an annual basis; 93% at 28.0 $\mu g/m^3$ of PM_{10} on a 24-hour basis; 33% at 5.59 $\mu g/m^3$ of PM_{10} on an annual basis; 22% at 5.45 $\mu g/m^3$ of NO_2 on an annual basis, and 4.4% at 3.96 $\mu g/m^3$ of SO_2 on an annual basis.

The DAQ has scheduled a public meeting for 6:00 p.m. on Thursday, April 7, 2022. The public meeting will be held virtually to prevent the spread of COVID-19. Instructions for providing written comments and for providing oral comments at the virtual public meeting are provided below.

The purpose of the public review process is to accept public comments on air quality issues relevant to this determination. Only written comments or comments presented orally at the scheduled public meeting will be considered prior to final action on the permit. All such comments will become part of the public record.

Written comments must be received by 5:00 p.m. on Friday, April 29, 2022:

- Email written comments to Joseph.R.Kessler@wv.gov with "Nucor Steel West Virginia Comments" in the subject line, or
- Mail hard copy comments to Mr. Joseph Kessler, WV Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304.

Public meeting participation:

- To participate online or by telephone, registration is required by 5:00 p.m. on Thursday, April 7, 2022. To register, please complete the registration form at: https://forms.gle/kfQMFrrhfRXDMWQw7.

To provide oral comments, please check "yes" in the appropriate box on the registration form. Oral comments shall be limited to 5 minutes. After registration, a confirmation e-mail will be sent with information on how to join the public meeting. Registration for the online meeting is required to fulfill the state's obligation under federal air quality regulations to include a list of participants. If you do not have internet access and want to register to participate via telephone, please contact Stephanie Hammonds at (304) 926-0499 x41263. If participating virtually, video demonstrations and screen sharing by commenters is not permitted.

Additional information, including copies of the draft permit, application, and all other supporting materials relevant to the permit decision may be obtained by contacting the engineer listed below or downloaded at:

https://dep.wv.gov/daq/permitting/Pages/NSR-Permit-Applications.aspx.

Joe Kessler, PE
Engineer
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 41271
Email: joseph.r.kessler@wv.gov

Kessler, Joseph R <joseph.r.kessler@wv.gov>

Nucor WV - Follow-up Items

1 message

Bill Bruscino <BBruscino@trinityconsultants.com> Tue, Mar 29, 2022 at 12:36 PM
To: "Kessler, Joseph R" <joseph.r.kessler@wv.gov>
Cc: "Alteri, Sean [Corp]" <sean.alteri@nucor.com>

Joe:

Following up on three items we discussed for the Nucor West Virginia Mill:

1. We do not expect any H2S or SO2 emissions from the VTG process outside of the standard AP-42 natural gas combustion factors. As a result, I have updated the two locations in the application that referenced desulfurization. I will resubmit that application with this change later today.
2. For the EAF electrical demand, please note the following information:
    a. There are two DC EAFs each with an average active power input rating of 132 MW.
    b. The expected average power consumption per EAF is approximately 99.3MWH per furnace (198.5 MWH for 2 EAFs)
    c. Peak Demand for one EAF can be approximately 125MW (250MW for 2 EAFs).
3. Regarding the NPS comment on SO2 BACT, please note the following:
    a. Nucor WV operations already include the injection of lime to precipitate and remove sulfur in the form of slag at the EAFs and LMFs.
    b. Lime coated baghouse filters for the EAF/LMF/CAST baghouses would result in increased filter plugging and differential pressure across the baghouse thereby reducing the efficiency of the baghouses. Nucor would expect to see higher electric use, increased cleaning frequency, and potentially higher natural gas combustion emissions as a result of this efficiency reduction.
    c. Nucor has proposed lower BACT emission limits than the most recent Gerdau Macsteel permit found in the RBLC database (2018) that proposed the use of lime coated baghouse filters.
        i. Gerdau Macsteel established BACT emission limits of 0.25 lb SO2/ton steel for the EAF and 0.10 lb SO2/ton steel for the LMF (combined limit of 0.35 lb SO2/ton steel).
        ii. Nucor WV has proposed BACT emission limits of 0.20 lb SO2/ton steel for the EAF and 0.04 lb SO2/ton steel for the LMF (combined limit of 0.24 lb SO2/ton steel).

Thanks,

Bill

William Bruscino, P.E.

Manager of Consulting Services – Columbus, OH

P 614.433.0733 M 225.274.5147

Email: bbruscino@trinityconsultants.com

110 Polaris Pkwy, Suite 200 Westerville, OH 43082

Trinity Consultants

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Comments and Response.pdf
128K

Kessler, Joseph R <joseph.r.kessler@wv.gov>

RE: Nucor WV Application Cover Letter

1 message

Bill Bruscino <BBruscino@trinityconsultants.com> Mon, Mar 28, 2022 at 3:39 PM
To: "Kessler, Joseph R" <joseph.r.kessler@wv.gov>

Joe:

Our Texas offices were able to provide a copy of the original TCEQ document for rock crushing plants. See attached for reference.

Thanks,

Bill

From: Bill Bruscino
Sent: Thursday, March 24, 2022 11:06 AM
To: Kessler, Joseph R <joseph.r.kessler@wv.gov>
Subject: RE: Nucor WV Application Cover Letter

Joe:

Here is the TCEQ document with their table of emission factors and control efficiencies. The link below should take you directly to their spreadsheet.

https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/bact/bact-mac.xlsx

Thanks,

Bill

From: Kessler, Joseph R <joseph.r.kessler@wv.gov>
Sent: Wednesday, March 23, 2022 10:56 AM
To: Bill Bruscino <BBruscino@trinityconsultants.com>
Subject: Re: Nucor WV Application Cover Letter

Thanks. Jon said that ftp only is fine for the modeling files, a physical drive is not necessary. Please send me a TEAMS meeting notice when you have a time as well.

Thanks

Joe

On Wed, Mar 23, 2022 at 9:30 AM Bill Bruscino <BBruscino@trinityconsultants.com> wrote:

> Thanks,
>
> Bill
>
> **William Bruscino, P.E.**
>
> Manager of Consulting Services – Columbus, OH
>
> P 614.433.0733 M 225.274.5147
>
> Email: bbruscino@trinityconsultants.com
>
> 110 Polaris Pkwy, Suite 200 Westerville, OH 43082
>
>

TCEQ Air Permits Division, Rock Crushing Plants, Draft RG 058.pdf
293K

TCEQ

February 2002
Draft RG 058

Rock Crushing Plants

Air Permits Division

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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Technical Guidance for
Rock Crushing Plants

This Package Is Intended For Instructional Use Only

The intent of this guidance document is to provide the applicant information on how to calculate emission rates for rock crushing plants. Emission rate calculations are required to be submitted during the permit application process. It is the goal of the Air Permits Division to provide the most current emission rate factors and calculation methods in this document; however, the applicant should contact the Mechanical Team of the Air Permits Division to ensure these methods have not been superceded. Alternate calculation methods may be equally acceptable if they are based on, and adequately demonstrate, sound engineering assumptions or data.

Table of Contents

Section I

A. Introduction

This document provides guidance specifically for **rock crushing plant permit applications**. Use of this document helps streamline the Texas Commission on Environmental Quality (TCEQ) permitting process and decreases the time required for a permit review. This document may also be used for any nonmetallic mineral crushing/screening facility. It is important to remember that all application representations, such as production rates, crushing rates, number of screens, become conditions upon which a permit is issued or renewed.

B. Best Available Control Technology Analysis

Texas Commission on Environmental Quality, 30 Texas Administrative Code Chapter116 § 116.111(3) requires that to be granted a permit or a permit amendment to construct or modify a facility that the applicant must use Best Available Control Technology (BACT). Best Available Control Technology is the emission reduction method which provides the most effective reduction of emissions yet is technically feasible and economically reasonable. The control technology determinations are always subject to adjustment in consideration of specific process requirements and recent developments in abatement technology and can be modified on a case-by-case basis. Additionally, specific health effects concerns may require stricter control methods than imposed by the BACT determination. The applicant is required to discuss the BACT proposals in the permit application. The TCEQ offers a BACT guidance document entitled, to aid the applicant in this process. Any questions concerning the BACT review process may be directed to a TCEQ Air Permit Division Permit Reviewer. Current practices to meet BACT expected performance levels include:

1. A minimum of 70% reduction of fugitive dust emissions from the crushing, conveying, and stockpiling of aggregate material (sufficient application of water by sprays or fog rings).

2. A minimum of 70% reduction of fugitive dust emissions from all vibrating screens.

3. The implementation of best management practices to reduce fugitive dust emissions from roads and traffic areas (watering, application of environmentally safe chemicals, wet or dry sweeping, in certain locations paving may be required) as stated in the Special Conditions of the permit.

These are guidelines to help the applicant get an idea of what the TCEQ is currently considering as BACT; however these control levels are subject to change. Any BACT proposal that is different from the current guidelines stated above must be explained in detail. Any control system alternative is expected to be well designed, engineered for its application, and detailed in the permit application.

C. Rock Crushers

Rock and crushed stone products are generally loosened at the quarry site by drilling and/or blasting. At the quarry, the materials are loaded by power shovel or front end loader and transported by heavy earth moving equipment to the location of the processing equipment. Further processing may include crushing, screening, other size classification, material handling and storage operations. All of these processes can be significant sources of dust emissions if uncontrolled. Emissions rates must be determined for each point, beginning with the initial loading of rock and fractured stone products into the processing area and every point through the storage and loading of the final product. Emission points at these facilities occur at all feed hoppers, crushers, screens, transfer and drop points, conveyors, and material stockpiles. The quarry, mine, or blasting event is not a required emission point and not included in the calculations.

D. Control Factors

The applicant must be cautious in the use of control factors. Control factors are parameters used to give credit for certain emission reduction techniques. A control factor may be applied to each applicable emission point when calculating the emission rates. The emission factor table (Table 6) supplied with this document lists both uncontrolled and controlled emission factors. The use of the appropriate controlled emission factor from this table implies the material has a minimum of 1.5% moisture content. When the controlled factor is used then no further control is allowed for the addition of water from sprays (sprays will be required to be installed on certain emission points) or for the fact the material is wet. Any additional control must come from a different mechanism, such as enclosure, saturation, foam surfactant. When the applicant is using the controlled emission factor only, the proper numerical entry into the calculation table for the control factor (CF) parameter is one.

E. Engines And Generator Sets

Occasionally, a rock crushing plant requires the use of diesel fueled engines to operate plant equipment (not including trucks or front-end loaders) and/or a diesel fueled generator set for electrical power. These engines are a source of air contaminants and must be permitted. The appropriate table (Table 29) must be submitted with the application, as well as, emission calculations for each engine. When a permit for a portable rock crushing plant is being applied for and the expected stay at any one location is less than 12 consecutive months, then the portable generator set may not require permitting. However, if a diesel engine is attached to a crusher (or other equipment) as its sole source of power then an authorization for this engine is required regardless of the length of stay at a site. An alternative method of getting an authorization for an engine is through Chapter 106, Exemptions from Permitting, under Permit by Rule 106.512. The application requirements for Permit by Rule 106.512 are stated in the rule and must be submitted in a separate application package.

Section III

Emission Calculation Instructions

A. Introduction

The following is a list of required TCEQ Tables. The tables are available through the TCEQ web site or in hard copy form from the Air Permits Division. Include the completed tables with the permit application.

Table	*Title*
1(a)	Emission Sources
2	Material Balance
17	Rock Crushers

B. Crusher Emissions

The data required in the upper portion of Table 1- Crusher Emissions on the next page, is used to calculate the hourly and annual emissions at each crusher. Use equations E_1-E_4 that follow the table to perform crusher emission calculations and record the results in the lower portion of the table. Use Table 6 to select an appropriate emission factor for each crusher type at the site.

Table 1 - Crusher Emissions

	Crusher*	**Crusher**	**Crusher**
HP = maximum hourly production rate (tons/hr)			
AP = maximum annual production rate (tons/yr)			
EF (PM) = emission factor (lb PM/ton) - ***see Table 6***			
EF (PM_{10}) = emission factor (lb PM_{10}/ton)- ***see Table 6***			
CF = control factor - ***see Table 7***			
E_1 = hourly PM emissions (lbs/hr)			
E_2 = hourly PM_{10} emissions (lbs/hr)			
E_3 = annual PM emissions (tons/yr)			
E_4 = annual PM_{10} emissions (tons/yr)			

Table 1 Equations:

***Note:** There are often differences in industry regarding the identification of crushers. Typically, the first crusher in a series is the "Primary" crusher. However, the applicant shall use the Primary Crushing (Jaw) emission factor for <u>jaw</u> crushers only. All other types of crushers are considered either "Secondary" or "Tertiary." The corresponding emission factors are selec

ted.

$$E_1 = HP \times EF(PM) \times CF$$

$$E_2 = HP \times EF(PM_{10}) \times CF$$

$$E_3 = AP \times EF(PM) \times CF \times \left(\frac{1\ ton}{2000\ lbs} \right)$$

$$E_4 = AP \times EF(PM_{10}) \times CF \times \left(\frac{1\ ton}{2000\ lbs} \right)$$

C. Screen Emissions

Repeat the maximum hourly and annual throughput information to calculate the hourly and annual emissions for each vibrating and/or stationary screen. Use the factors from Tables 7 and 8 and the equations following Table 2. Record the results in the lower portion.

NOTE: if the material being crushed is considered to be "fines," the "fines" emission factors on Table 6 need to be used.

Table 2 - Screen Emissions

	Screen #1	**Screen #2**	**Screen #3**
HP = maximum hourly throughput rate (tons/hr)			
AP = maximum annual throughput rate (tons/yr)			
EF(PM) = emission factor (lb PM/ton) - ***see Table 6***			
EF(PM_{10}) = emission factor (lb PM_{10}/ton) - ***see Table 6***			
CF = control factor - ***see Table 7***			
E_5 = hourly PM emissions (lbs/hr)			
E_6 = hourly PM_{10} emissions (lbs/hr)			
E_7 = annual PM emissions (tons/yr)			
E_8 = annual PM_{10} emissions (tons/yr)			

$$E_5 = HP \times EF(PM) \times CF$$

$$E_7 = AP \times EF(PM) \times CF \times \left(\frac{1\ ton}{2000\ lbs} \right)$$

$$E_8 = AP \times EF(PM_{10}) \times CF \times \left(\frac{1\ ton}{2000\ lbs} \right)$$

$$E_6 = HP \times EF(PM_{10}) \times CF$$

D. Loading and Unloading Emissions

Repeat the maximum hourly and annual throughput information to calculate the hourly and annual emissions for each loading point (truck and/or rail car). Use the factors from Tables 7 and 8 and the equations following Table 3. Record the results in the lower portion.

Table 3 - Loading and Unloading Emissions

	Unloading (Fragmented Stone)	**Loading (Crushed Stone)**	**Front-End Loaders**
HP = maximum hourly throughput rate (tons/hr)			
AP = maximum annual throughput rate (tons/yr)			
EF(PM) = emission factor (lb PM/ton) - ***see Table 6***			
EF(PM_{10})= emission factor (lb PM_{10}/ton) - ***see Table 6***			
CF = control factor - ***see Table 7***			
E_9 = hourly PM emissions (lbs/hr)			
E_{10} = hourly PM_{10} emissions (lbs/hr)			
E_{11} = annual PM emissions (tons/yr)			
E_{12} = annual PM_{10} emissions (tons/yr)			

$$E_9 = HP \times EF(PM) \times CF$$

$$E_{12} = AP \ x \ EF(PM_{10}) \ x \ CF \ x \ \left(\frac{1 \ ton}{2000 \ lbs} \right)$$

$$E_{10} = HP \times EF(PM_{10}) \times CF$$

$$E_{11} = AP \ x \ EF(PM) \ x \ CF \ x \ \left(\frac{1 \ ton}{2000 \ lbs} \right)$$

E. Transfer Point Emissions

Batch and continuous transfer points occur at various locations in the process. Use the maximum hourly and annual throughput through each transfer point to calculate the hourly and annual emissions. If several points have the same characteristics (controls, through puts) enter the number ("N") of like points to decrease the number of calculations required. A second table is provided for additional transfer point calculations, as necessary.

Use the appropriate emission factors for conveyor transfer from Table 6. If a single conveyor belt length exceeds 300 feet in length, use an additional calculation labeled "Conveying." Use the equations that follow Table 4. Record the results in the lower portion.

Note: The applicant may use the drop point equation from AP-42 (Chapter 13) to evaluate drop/transfer points (continuous or batch) if so desired

The material transfer point onto a stockpile either from a conveyor or a radial stacker is not considered in these calculations. Emissions generated due to a transfer (either continuous or batch) onto a stockpile are considered in the stockpile emissions calculations. The emission factor identified for stockpiles includes emissions from the transfer onto the stockpile. Further discussion of this concept is found in the stockpile calculation instructions.

Table 4 - Transfer Point Emissions

	#1	#2	#3	#4	#5	#6
Transfer Point Identification						
HP = max. hourly throughput rate for the transfer point (tons material / hour)						
AP = max. annual throughput rate for the transfer point (tons material / year)						
N = number of like transfer points						
Percentage of total throughput thru like transer points	100%					
EF(PM) = emission factor (lb PM/ton) - ***see Table 6***						
EF(PM_{10})=emission factor (lb PM_{10}/ton) **-*see Table 6***						
CF = control factor - ***see Table 7***						
E_{13} = hourly PM emissions (lbs/hr)						
E_{14} = hourly PM_{10} emissions (lbs/hr)						
E_{15} = annual PM emissions (tons/yr)						
E_{16} = annual PM_{10} emissions (tons/yr)						

Table 4 Continued - Transfer Point Emissions

	#7	#8	#9	#10	#11	#12
Transfer Point Identification						
HP = max. hourly throughput rate for the transfer point (tons material / hour)						
AP = max. annual throughput rate for the transfer point (tons material / year)						
N = number of like transfer points						
Percentage of total throughput thru like transfer points						
EF(PM) = emission factor (lb PM/ton) - ***see Table 6***						
EF(PM_{10})=emission factor (lb PM_{10}/ton) -***see Table 6***						
CF = control factor - ***see Table 7***						
E_{13} = hourly PM emissions (lbs/hr)						
E_{14} = hourly PM_{10} emissions (lbs/hr)						
E_{15} = annual PM emissions (tons/yr)						
E_{16} = annual PM_{10} emissions (tons/yr)						

$$E_{13} = HP \times EF(PM) \times CF \times N$$

$$E_{15} = AP \ x \ EF(PM) \ x \ CF \ x \ \left(\frac{1 \ ton}{2000 \ lbs} \right) \times N$$

$$E_{14} = HP \times EF(PM_{10}) \times CF \times N$$

$$E_{16} = AP \ x \ EF(PM_{10}) \ x \ CF \ x \ \left(\frac{1 \ ton}{2000 \ lbs} \right) \times N$$

F. Stockpile Emissions

Material stockpiles are a potential source of fugitive emissions due to maintenance of the stockpile and wind erosion. Inactive stockpiles are those affected by wind erosion only. Active stockpiles are those piles that have 8 to 12 hours of activity per 24 hours. Active stockpiles include the following distinct source operations in the storage cycle: loading of rock onto storage piles (batch or continuous drop), equipment traffic in storage areas, and wind erosion of the pile. The active stockpile emission factor includes all three operations above. Calculate stockpile emissions on an hourly and annual basis. Please note, only the annual emission rate will be annotated in the permit.

Record the maximum acreage expected to be covered by stockpiles and the maximum expected active days to calculate the hourly and annual emissions for the stockpile. Use the equations following Table 5. Record the results in the lower portion.

Table 5 - Stockpile Emissions

A = Stockpile Area (acres) *	
CF = Control Factor - ***see Table 7***	
D = number of active days per year	
E_{17H} = PM emission for inactive stockpiles (lbs/hr)	
E_{17} = PM emissions for inactive stockpiles (tons/yr)	
E_{18H} = PM_{10} emissions for inactive stockpiles (lbs/hr)	
E_{18} = PM_{10} emissions for inactive stockpiles (tons/yr)	
E_{19H} = PM emissions for active stockpiles (lbs/hr)	
E_{19} = PM emissions for active stockpiles (tons/yr)	
E_{20H} = PM_{10} emissions for active stockpiles (lbs/hr)	
E_{20} = PM_{10} emissions for active stockpiles (tons/yr)	

* Acreage may be estimated by dividing the stockpile square footage by 43,560.

$$E_{17_H} = (\frac{3.5\ lb\ PM}{acre\ day}) \times (\frac{day}{24\ hours}) \times A \times CF$$

$$E_{17} = (\frac{3.5\ lb\ PM}{acre\ day}) \times (\frac{365\ days\ -\ D}{year}) \times A \times (\frac{1\ ton}{2000\ lbs}) \times CF$$

$$E_{18_H} = 0.5 \times E_{17_H}$$

$$E_{18} = 0.5 \times E_{17}$$

$$E_{19_H} = (\frac{13.2\ lb\ PM}{acre\ day}) \times (\frac{day}{24\ hours}) \times A \times CF$$

$$E_{19_H} = (\frac{13.2\ lb\ PM}{acre\ day}) \times (\frac{day}{24\ hours}) \times A \times CF$$

$$E_{19_H} = (\frac{13.2\ lb\ PM}{acre\ day}) \times (\frac{day}{24\ hours}) \times A \times CF$$

$$E_{19_H} = (\frac{13.2\ lb\ PM}{acre\ day}) \times (\frac{day}{24\ hours}) \times A \times CF$$

$$E_{20_H} = 0.5 \times E_{19_H}$$

$$E_{20} = 0.5 \times E_{19}$$

Table 6 - Summary of Rock Crushing Plant Emission Factors

Emission Source[a]	Emission Factors	
	PM, lb/ton	PM_{10}, lb/ton
Primary Crushing(Jaw)-Dry[b]	0.0007	0.00033
Primary Crushing(Jaw)-Wet[c]	0.00021	0.0001
Secondary Crushing(All crushers)-Dry[d,e]	0.00504	0.0024
Secondary Crushing(All crushers)-Wet[d,e]	0.0012	0.00059
Tertiary Crushing(All crushers)-Dry[d]	0.00504	0.0024
Tertiary Crushing(All crushers)-Wet[d]	0.0012	0.00059
Fines Crushing-Dry[d]	0.0315	0.015
Fines Crushing-Wet[d]	0.0042	0.002
Screening(All)-Dry[d]	0.0315	0.015
Screening(All)-Wet[d]	0.001764	0.00084
Fines Screening-Dry[d]	0.149	0.071
Fines Screening-Wet[d]	0.0044	0.0021
Front-End Loader/Truck Unloading-Fragmented Stone[d]	0.000034	0.000016
Truck Loading-Crushed Stone[d]	0.00021	0.00010
Conveyor Transfer-Dry[d]	0.0029	0.0014
Conveyor Transfer - Wet[d]	0.00011	0.000048
Conveying (per 300 feet of a single conveyor)[f]	0.0029	0.0014

[a] Sources controlled with wet suppression maintain a material moisture content of $\geq$1.5 percent. Sources that process material with a moisture content of < 1.5 percent are considered dry and uncontrolled.

[b] PM from AP-42, PM_{10} = PM/2.1

[c] PM = PM(dry) x 0.3 for water spray conditions, PM_{10} = PM/2.1

[d] PM_{10} from AP-42, PM = PM_{10} x 2.1,

[e] Emission factors for tertiary crushing are used for secondary crushing per EPA guidance, see Table 11.19.2-2, note c (1/95).

[f] PM from AP-42, Table 7.19.2-2 (9/88). Conveying length based on results of CHEER Workshop 5/16/96.

Mechanical Section Notes:

g. Emission factors for crushers and screens include drops to equipment and drops off equipment.

H. Radial stacker emissions are included in the stockpile equation calculations.

9. Although total suspended particulate (TSP) is not a measurable property from a process, some states may require estimates of TSP emissions. No data are available to make these estimates. However, relative ratios in AP-42

Sections 13.2.2 and 13.2.4 indicate that TSP emission factors may be estimated by multiplying PM_{10} by 2.1. (The Air Permits Division considers PM to be the same as TSP and replaces the TSP nomenclature with PM.)Updated: 10/9/2000 J:/mech/rock/emission rates 10-9-00 Previous updates: 9/29/98, 5/29/96, 4/22/94

Note: Do Not Use a Wet Material or Water Control Factor If the Emission Factor Selected from Table 6 Is a Controlled Factor.

Table 7 - Controls[2]

	Control Efficiency	Control Factor (1 - Control Eff.)
No controls	0%	1.0
Wet Material	50%	0.50
Water	70%	0.30
Chemical Foam	80%	0.20
Partial Enclosure (screen or crusher)	85%	0.15
Full Enclosure	90%	0.10
Enclosed by building	90%	0.10
Building under negative pressure	100%	0.00

***Note**: A 99% control efficiency may be allowed when a facility (emission point) operates under saturated conditions with no visible emissions. Specific operating conditions will become part of the permit's special conditions.

Table 8 - Average Wind Speeds

City	Speed (mph)
Abilene	12.1
Amarillo	13.6
Austin	9.2
Brownsville	11.5
Corpus Christi	12.0
Dallas - Fort Worth	10.8
Del Rio	9.9
El Paso	9.0
Galveston	11.0
Houston	7.8
Lubbock	12.4
Midland	11.0
Port Arthur	9.8
San Angelo	10.4
San Antonio	9.4
Victoria	10.0
Waco	11.3
Wichita Falls	11.7

*__Note__: Choose the wind speed of the closest city to the plant's location.

References

1. *Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition*

2. AP-42, Chapter 11, 11.19.2 Crushed Stone Processing (last modified 1/95)

3. Mechanical Team Meeting, Dtd 10/09/2000

4. CHEER Workshop Manual, Dtd 05/16/1996

Example Calculations

The following information is provided as an example to assist facilities in estimating their maximum allowable emission rates.

Table 1 - Rock Crusher Emissions

	Crusher*	**Crusher**	**Crusher**
HP = maximum hourly production rate (tons/hr)	300	150	
AP = maximum annual production rate (tons/yr)	300000	200000	
EF (PM) = emission factor (lb PM/ton) - ***see Table 6***	0.0012	0.0012	
EF (PM_{10}) = emission factor (lb PM_{10}/ton)- ***see Table 6***	0.00059	0.00059	
CF = control factor - ***see Table 7***	1	1	
E_1 = hourly PM emissions (lbs/hr)	0.36	0.18	
E_2 = hourly PM_{10} emissions (lbs/hr)	0.177	0.089	
E_3 = annual PM emissions (tons/yr)	0.18	0.12	
E_4 = annual PM_{10} emissions (tons/yr)	0.089	0.059	

Table 1 Equations:

$$E_1 = HP \times EF(PM) \times CF$$

$$E_3 = AP \times EF(PM) \times CF \times \left(\frac{1\ ton}{2000\ lbs} \right)$$

E_1 = 300 tons/hr x 0.0012 lbs/ton x 1 = 0.36 lbs/hr   E3 = 300,000 tpy x 0.0012 lbs/ton x 1 x 1/2000 = 0.18 tpy

$$E_2 = HP \times EF(PM_{10}) \times CF$$

$$E_4 = AP \times EF(PM_{10}) \times CF \times \left(\frac{1\ ton}{2000\ lbs} \right)$$

E2 = 300 tons/hr x 0.00059 lbs/ton x 1 = 0.177 lbs/hr E4 = 300,000 tpy x 0.00059 lbs/ton x 1 x 1/2000 = 0.089 tpy

Screen Emissions

Table 2 - Screen Emissions

	Screen #1	**Screen #2**	**Screen #3**
HP = maximum hourly throughput rate (tons/hr)	300		
AP = maximum annual throughput rate (tons/yr)	300000		
EF(PM) = emission factor (lb PM/ton) - ***see Table 6***	0.001764		
$EF(PM_{10})$ = emission factor (lb PM_{10}/ton) - ***see Table 6***	0.00084		
CF = control factor - ***see Table 7***	1		
E_5 = hourly PM emissions (lbs/hr)	0.529		
E_6 = hourly PM_{10} emissions (lbs/hr)	0.252		
E_7 = annual PM emissions (tons/yr)	0.265		
E_8 = annual PM_{10} emissions (tons/yr)	0.126		

$$E_5 = HP \times EF(PM) \times CF$$

$$E_6 = HP \times EF(PM_{10}) \times CF$$

E_5 = 300 tons/hr x 0.001764 x 1 = 0.529 lbs/hr

E_6 = 300 x 0.00084 x 1 = 0.252 lbs/hr

$$E_8 = AP \times EF(PM_{10}) \times CF \times \left(\frac{1\ ton}{2000\ lbs} \right)$$

E_8 = 300,000 x 0.00084 x 1 x 1/2000 = 0.126 tpy

E_7 = 300,000 x 0.00084 x 1 x 1/2000 = 0.265 tpy

$$E_7 = AP \times EF(PM) \times CF \times \left(\frac{1 \ ton}{2000 \ lbs} \right)$$

Loading and Unloading Emissions

Table 3 - Loading and Unloading Emissions

	Unloading (Fragmented Stone)	Loading (Crushed Stone)	Front-End Loaders
HP = maximum hourly throughput rate (tons/hr)	300	300	
AP = maximum annual throughput rate (tons/yr)	300,000	300,000	
EF(PM) = emission factor (lb PM/ton) - ***see Table 6***	0.000034	0.0001	
$EF(PM_{10})$ = emission factor (lb PM_{10}/ton) - ***see Table 6***	0.000016	0.00021	
CF = control factor - ***see Table 7***	0.30	0.30	
E_9 = hourly PM emissions (lbs/hr)	0.00306	0.009	
E_{10} = hourly PM_{10} emissions (lbs/hr)	0.000146	0.0043	
E_{11} = annual PM emissions (tons/yr)	0.0015	0.0045	
E_{12} = annual PM_{10} emissions (tons/yr)	0.0007	0.00021	

$$E_9 = HP \times EF(PM) \times CF$$

$$E_{11} = AP \ x \ EF(PM) \ x \ CF \ x \ \left(\frac{1 \ ton}{2000 \ lbs} \right)$$

E_9 = 300 x 0.000034 x .3 = 0.00306 lbs/hr

E_{11} = 300,000 x 0.000034 x .3 x 1/2000 = 0.0015 tpy

$$E_{10} = HP \times EF(PM_{10}) \times CF$$

$$E_{12} = AP \ x \ EF(PM_{10}) \ x \ CF \ x \ \left(\frac{1 \ ton}{2000 \ lbs} \right)$$

E10 = 300 x 0.000016 x .3 = 0.000146 lbs/hr

E12 = 300,000 x 0.000016 x .3 x 1/2000 = 0.00021 tpy

Transfer Point Emissions

Table 4 - Transfer Point Emissions

	#1	#2	#3	#4	#5	#6
Transfer Point Identification	1 thru 4					
HP = max. hourly throughput rate for the transfer point (tons material / hour)	300					
AP = max. annual throughput rate for the transfer point (tons material / year)	300000					
N = number of like transfer points	4					
Percentage of total throughput thru like transfer points	100%					
EF(PM) = emission factor (lb PM/ton) - ***see Table 6***	0.00011					
EF(PM_{10})=emission factor (lb PM_{10}/ton) ***-see Table 6***	0.000048					
CF = control factor - ***see Table 7***	1					
E_{13} = hourly PM emissions (lbs/hr)	0.132					
E_{14} = hourly PM_{10} emissions (lbs/hr)	0.063					
E_{15} = annual PM emissions (tons/yr)	0.066					
E_{16} = annual PM_{10} emissions (tons/yr)	0.031					

$$E_{13} = HP \times EF(PM) \times CF \times N$$

$$E_{15} = AP\ x\ EF(PM)\ x\ CF\ x\ \left(\frac{1\ to}{2000\ l} \right.$$

E_{13} = 300 x 0.00011 x 1 x 4 = 0.132 lbs/hr

E_{15} = 300,000 x 0.00011 x 1 x 4 = 0.066 tpy

$$E_{14} = HP \times EF(PM_{10}) \times CF \times N$$

$$E_{16} = AP \ x \ EF(PM_{10}) \ x \ CF \ x \ (\frac{1 \ ton}{2000 \ lbs}) \times N$$

E_{14} = 300 x 0.000048 x 1 x 4 = 0.063 lbs/hr

E_{16} =300,000 x 0.000048 x 1 x 1/2000 x 4 = 0.031 tpy

Stockpiles Emissions

Table 5 - Stockpile Emissions Data

A = Stockpile Area (acres) *	2
CF = Control Factor - ***see Table 7***	.3
D = number of active days per year	200
E_{17} = PM emissions for inactive stockpiles (tons/yr)	0.173
E_{18} = PM_{10} emissions for inactive stockpiles (tons/yr)	0.087
E_{19} = PM emissions for active stockpiles (tons/yr)	0.792
E_{20} = PM_{10} emissions for active stockpiles (tons/yr)	0.396

*Acreage may be estimated by dividing the stockpile square footage by 43,560.

$$E_{17} = (\frac{3.5 \ lb \ PM}{acre \ day}) \times (\frac{365 \ days - D}{year}) \times A \times (\frac{1 \ ton}{2000 \ lbs}) \times CF$$

E_{17} = 3.5 x (365-200) x 2 x 1/2000 x .3 = 0.173 tons/yr

$$E_{18} = 0.5 \times E_{17}$$

E_{18} = 0.173 x .5 = 0.087 tpy

$$E_{19} = (\frac{13.2\ lb\ PM}{acre\ day}) \times D \times A \times (\frac{1\ ton}{2000\ lbs}) \times CF$$

E_{19} = 13.2 x 200 x 2 x 1/2000 x .3 = 0.792 tpy

$$E_{20} = 0.5 \times E_{19}$$

E_{20} = 0.5 x 0.792 = 0.396 tpy

Kessler, Joseph R <joseph.r.kessler@wv.gov>

Nucor Gallatin Response to Comments

1 message

Alteri, Sean [Corp] <sean.alteri@nucor.com> Sun, Mar 27, 2022 at 9:34 AM
To: "Kessler, Joseph R" <joseph.r.kessler@wv.gov>
Cc: Bill Bruscino <BBruscino@trinityconsultants.com>

Good morning, Joe.

Attached, please find the response to comments received by the Kentucky Division for Air Quality during the public comment period for the issuance of the Nucor Gallatin title V/PSD permit. My recollection is that Nucor Brandenburg received a similar comment from the National Park Service that Gallatin received on their PSD permit (see comments 15 and 16). The NPS provided a comparable preliminary comment on the Nucor West Virginia permit application.

If you have questions or would like to discuss, please contact Bill or me at your convenience.

Thanks,

Sean

Sean Alteri

Environmental Manager

Nucor Corporate

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Sean.Alteri@Nucor.com

Comments and Response.pdf
128K

Commonwealth of Kentucky
Division for Air Quality

COMMENTS AND RESPONSE

ON THE DRAFT PERMIT

On February 27, 2019, *The Gallatin County News* in Warsaw, Kentucky published the public notice for Nucor Steel Gallatin's (NSG) draft Title V/PSD significant revision. The public comment period expired 30 days from the date of publication on Friday, March 29, 2019.

Comments were received from Environmental Resources Management (ERM) on behalf of NSG on March 21, 2019, the United States National Park Service (NPS) on March 14, 2019, and the United States Environmental Protection Agency on March 27, 2019. ERM on behalf of NSG provided a response to the NPS comments on April 2, 2019, within the 10 day window allowed by 401 KAR 52:100, Section 2(3)(c).

All comments received during the public comment period were considered and are included in this response. This document lists the comments received, the Division's response to each comment, and a detailed explanation of the changes made to the permit. Attached to this document are the comments as received and the responses provided by NSG to the comments received.

TITLE V/PSD PERMIT:

1. ***Page 20 of 181, Group 1, Testing Requirements 3.m.:*** *[Environmental Resources Management on behalf of NSG]*
   Operating Limitation 3.m. requires NSG to conduct annual performance tests for baghouse #1 and #2 stack and baghouse #3 stack for PM, PM10, PM2.5, Pb, fluorides, and VOC. NSG requests the ability to reduce the testing frequency to "if two consecutive annual tests result in specified emissions being less than or equal to 75% of the standards for PM, PM10, PM2.5, Pb, fluorides, and VOC, then no additional annual testing shall be required for that pollutant during the term of this permit". This request mirrors current testing requirements for Baghouse #1 and Baghouse #2 stacks in Title V permit V-14-013 R4 (see Testing Requirement 3.d. on page 13 of 112). To that end, NSG requests that Testing Requirement 3.m. be revised to:

   > *"m. To demonstrate compliance with 401 KAR 51:017 and establish emission factors, the permittee shall conduct annual performance tests for baghouse #1 and #2 stack and baghouse #3 stack within 60 days after achieving the maximum production rate at which the associated EAF (EP 01-01 and EP 20-01) will be operated, but not later than 180 days after initial startup of the modifications authorized by V-14-013 R5 and every year thereafter for PM, PM10, PM2.5, Pb, Fluorides, and VOC. If two consecutive annual tests result in specified emissions being less than or equal to 75% of the standards for PM, PM10, PM2.5, Pb, Fluorides, and VOC specified herein, then no additional annual testing shall be required for that pollutant during the term of this permit."*

Division's response to Comment #1: The Division concurs and amends the permit accordingly.

2. ***Page 24 of 181, Group 1, Specific Monitoring Requirements 4.o.vii.:*** *[Environmental Resources Management on behalf of NSG]*
Specific Monitoring Requirement 4.o.vii. requires NSG to monitor natural gas combusted in ***each*** *emission point [emphasis added]. While NSG will monitor the natural gas fed to major natural gas consuming sources (e.g., tunnel furnaces and galvanizing furnaces), having natural gas meters on each emission point is a significant financial and maintenance burden.*

In addition, some of the fuel burning equipment located within the melt shops do not have fuel combustion based emission limits. Instead, their emissions are included in the combined melt shop emission limits (lb/ton steel basis), which exhaust through the melt shop baghouse stacks. NSG requests that the monitoring condition identify only those applicable emission points that have fuel combustion based emission limits (lb/MMscf). Further, NSG proposes to install, operate, and maintain natural gas meters for each emission point with heat capacities greater than 25 MMBtu/hr. For smaller, similar emission points (e.g., Melt Shop 2 horizontal ladle preheaters) or emission points with combined natural gas limits (e.g., Pickle Line No. 2 Boilers), NSG requests the option to be able to monitor the total natural gas consumed by the similar sources and calculate the natural gas consumed by each emission point based on the hours of operation and maximum heat capacity of the equipment (i.e., time-weighted heat capacity ratios). Example permit language is provided on page 118 of 181 under Specific Monitoring Requirement 4.a. for Group 15 that states:

> *"The permittee shall use a fuel metering device to continuously monitor the amount of natural gas (MMscf) fed to the emission points listed above. The permittee may use a combined meter for emissions unit, as long as 100% of the natural gas emissions are apportioned to each emission point based on usage."*

To that end, NSG requests that Specific Monitoring Requirement 4.o.vii. be revised to:

> *o. The permittee shall monitor the following: [401 KAR 52:020, Section 10]*
> *"vii. For EP20-05 A, B, & C, monthly and 12-month rolling natural gas combusted (MMscf). If the permittee elects not to install a fuel meter for each emission point, the permittee may use a combined meter for emissions unit, as long as 100% of the natural gas emissions are apportioned to each emission point based on usage."*

Division's response to Comment #2: The Division concurs and amends the permit accordingly.

3. ***Page 24 of 181, Group 1, Specific Monitoring Requirements 4.o.viii.:*** *[Environmental Resources Management on behalf of NSG]*
Specific Monitoring Requirement 4.o.viii. requires NSG to monitor the sulfur content of the charged and injected carbon. NSG will demonstrate compliance with the SO2 limitation of Melt Shop 1 and Melt Shop 2 through use of CEMs as identified in Emission Limitations 2.c.D.3). There are no limits or restrictions identified in the permit related to the sulfur content of the charge and injected carbon. As such, NSG requests removal of Specific Monitoring Requirement 4.o.viii. to monitor the sulfur content of the charge and injected carbon."

Division's response to Comment #3: The Division concurs and amends the permit accordingly. It should be noted the permittee is now required to use a continuous emission monitoring system (CEMS) to demonstrate compliance with the SO_2 limits set under 401 KAR 51:017.

4. ***Page 26 of 181, Group 1, Specific Recordkeeping Requirements 5.f.i.:*** *[Environmental Resources Management on behalf of NSG]*
Specific Recordkeeping Requirement 5.f.i. requires NSG to maintain records of the sulfur content of the charged and injected carbon. As discussed in Comment 3 above, NSG requests removal of Specific Monitoring Requirement 4.o.viii. to monitor the sulfur content of the charge and injected carbon. As such, NSG also requests revision of Specific Recordkeeping Requirement 5.f.i. to remove the requirement maintain records of the sulfur content and analyses of the charged and injected carbon as follows:

> *f. The permittee shall maintain records of the following: [401 KAR 52:020, Section 10]*
> *"i. Amounts of carbon charged and injected per heat."*

Division's response to Comment #4: The Division concurs and amends the permit accordingly. Please refer to the Division's response to Comment #3.

5. ***Page 33 of 181, Group 1, Specific Control Equipment Operating Condition 7.h.:*** *[Environmental Resources Management on behalf of NSG]*
Specific Control Equipment Operating Condition 7.h. requires NSG to continuously monitor the volumetric flow rate in the stack, and maintain it within ±10 percent of the level measured during the testing required in 3. Testing Requirements (k). Testing Requirement 3.k. requires NSG to monitor and record the information specified in 40 CFR 60.274a(h) for all heats covered by the test. Testing Requirement 3.n. requires the fan RPM/amperage and volumetric flow rate shall be monitored during the test. Testing Requirement 3.o. requires the exhaust rate of emissions from baghouse #1 and baghouse #2 to be determined…and converted to standard conditions over three 8-hour periods under conditions representative of normal EAF operations. While 40 CFR 60.274a(h) does not require the volumetric flow rate in the stack to be monitored during the test, if the Division is going to require NSG to continuously monitor the volumetric flow rate in the stack, and maintain it within ±10 percent of the level measured during the test, the monitored value must be consistent with the tested value. That is, the monitored value should be based on standard conditions and averaged over a 24-hour period for comparison with the tested value converted to standard conditions over three 8-hour periods. To that end, NSG requests that Specific Control Equipment Operating Condition 7.f. be revised to:

> *"h. For the baghouses associated with Melt Shop #1 & #2 (EU 01 & EU 20), the permittee shall continuously monitor the volumetric flow rate in the stacks, and maintain the 24-hour average volumetric flow rate (in standard conditions) to no less than 10 percent of the level measured during the testing required in 3. Testing Requirements (k). [401 KAR 51:017]."*

Division's response to Comment #5: The Division concurs and amends the permit accordingly.

6. ***Page 39 of 181, Group 2, Specific Monitoring Requirements 4.a.iii.:*** *[Environmental Resources Management on behalf of NSG]*
Specific Monitoring Requirement 4.a.iii. requires NSG to monitor natural gas combusted in each emission point [emphasis added]. Please see Comment 2 above. For the A-Line Tunnel Furnace (EP02-01), B-Line Tunnel Furnace (EP02-02), and Heated Transfer Table Furnace (EP02-03), each furnace section will have a dedicated natural gas flow meter. As such, NSG requests that Specific Monitoring Requirement 4.a.iii. be revised to:

> *a. The permittee shall monitor the following: [401 KAR 52:020, Section 10]*
> *"iii. For EP02-01, EP02-02, and EP02-03, monthly and 12-month rolling natural gas combusted (MMscf) in each emission point."*

Division's response to Comment #6: The Division concurs and amends the permit accordingly.

7. ***Page 96 of 181, Group 14, EP 15-06, PGL Storage Tanks Maximum Capacity:*** *[Environmental Resources Management on behalf of NSG]*
   The table of Group 14 emission points identifies the maximum capacity of the PGL Storage Tanks (EP15-06) as 150 tons/hr. The maximum capacity of EP15-06 should be consistent with the other EP15 PGL Pickling Line capacities of 300 tons/hr.

Division's response to Comment #7: The Division concurs and amends the permit accordingly.

8. ***Page 105 of 181, Group 14, Specific Monitoring Requirements 4.f.iii.:*** *[Environmental Resources Management on behalf of NSG]*
   Specific Monitoring Requirement 4.f.iii. requires NSG to monitor natural gas combusted in each emission point [emphasis added]. Please see Comment 2 above. NSG plans to monitor the total natural gas fed to the Cold Mill Complex and the natural gas consumed by individual and group emission units. For the group of makeup air units (EP21-19), NSG will use the total natural gas fed to the Cold Mill Complex minus the natural gas consumed by all other emission units to determine the total natural gas consumed by the makeup air units as the balance of the remaining natural gas consumed at the Cold Mill Complex. As such, NSG requests that Specific Monitoring Requirement 4.a.iii. be revised to:

   > *f. The permittee shall monitor the following: [401 KAR 52:020, Section 10]*
   > *"iii. For EP21-19, monthly and 12-month rolling natural gas combusted (MMscf). The permittee may use a combined meter for emissions unit, as long as 100% of the natural gas emissions are apportioned to each emission point based on usage."*

Division's response to Comment #8: The Division concurs and amends the permit accordingly. Please refer to the Division's response to Comment #2.

9. ***Page 119 of 181, Group 15, Specific Monitoring Requirements 4.d.ii.:*** *[Environmental Resources Management on behalf of NSG]*
   Specific Monitoring Requirement 4.d.ii. requires NSG to monitor natural gas combusted in each emission point [emphasis added]. Please see Comment 2 above. Specific Monitoring Requirement 4.a. on page 118 of 181 indicates NSG may use a combined meter for emissions unit, as long as 100% of the natural gas emissions are apportioned to each emission point based on usage.

   As such, NSG requests that Specific Monitoring Requirement 4.d.ii. be revised to:

   > *d. The permittee shall monitor the following: [401 KAR 52:020, Section 10]*
   > *"ii. The monthly and 12-month rolling natural gas combusted (MMscf). If the permittee elects not to install a fuel meter for each emission point, the permittee may use a combined meter for emissions unit, as long as 100% of the natural gas emissions are apportioned to each emission point based on usage."*

Division's response to Comment #9: The Division concurs and amends the permit accordingly. Please refer to the Division's response to Comment #2.

10. ***Page 120 of 181, Group 15, Specific Control Equipment Operating Condition 7.c.:*** *[Environmental Resources Management on behalf of NSG]*
Specific Control Equipment Operating Condition 7.c. requires NSG to continuously monitor and maintain the ammonia slip for the SCR/SNCR system below 1 ppm at all times for EP 21-08B. Ammonia slip refers to the excess reagent passing through the reactor and may place constraints on SCR/SNCR performance. Ammonia slip does not remain constant as the SCR system operates, but increases as the catalyst activity decreases. Properly designed SCR systems, which operate close to the theoretical stoichiometry and supply adequate catalyst volume, maintain low ammonia slip levels (i.e., approximately 5 ppm). U.S. EPA's Air Pollution Control Technology Fact Sheet for Selective Catalytic Reduction (https://www3.epa.gov/ttncatc1/dir1/fscr.pdf) and Selective Non-Catalytic Reduction (https://www3.epa.gov/ttncatc1/dir1/fsncr.pdf) indicates that in the United States, permitted ammonia slip levels are typically 2 to 10 ppm, and that ammonia slip at these levels do not result in human health hazards. Vendor information recently collected for SCR/SNCR systems at other Nucor facilities indicates that ammonia slip could be maintained at 5 to 10 ppm. Ammonia is not a regulated PSD pollutant, and it is extremely unlikely that Nucor will be able to find an SCR/SNCR vendor that would guarantee ammonia slip levels to 1 ppm. Because both SCR and SNCR require a nitrogen-based reducing agent, such as ammonia or urea, to provide the chemical reduction of the NOx into molecular nitrogen and water vapor, limiting the amount of ammonia slip to 1 ppm could likely reduce the NOx control efficiency of the system. As such, Nucor requests that Specific Control Equipment Operating Condition 7.c. be replaced with a condition that requires NSG to submit an operating plan for the SCR/SNCR system to the Division for approval prior to startup of EP 21-08A & B. The operating plan will define the parameters to be monitored to demonstrate proper operation of the SCR/SNCR system in order to maximize control of NOx while maintaining ammonia slip below 10 ppm.

Division's response to Comment #10: The Division concurs and amends the permit accordingly. After evaluating the comment above and data available to the Division, the requirement has been amended to require submittal of an operation and maintenance plan to the Division for the SCR/SNCR system that maximizes the control of NOx, while maintaining the ammonia slip below 10 ppm.

11. ***Page 126 of 181, Group 16, Specific Control Equipment Operating Condition 7.c.:*** *[Environmental Resources Management on behalf of NSG]*
Specific Control Equipment Operating Condition 7.c. requires NSG to continuously monitor and maintain the ammonia slip for the SCR/SNCR system below 1 ppm at all times for EP 21-08A. Please see Comment 10 above. Nucor requests that Specific Control Equipment Operating Condition 7.c. be replaced with a condition that requires NSG to submit an operating plan for the SCR/SNCR system to the Division for approval prior to startup of EP 21-08A & B. The operating plan will define the parameters to be monitored to demonstrate proper operation of the SCR/SNCR system in order to maximize control of NOx while maintaining ammonia slip below 10 ppm.

Division's response to Comment #11: The Division concurs and amends the permit accordingly. Please refer to the Division's response to Comment #10.

12. ***Page 136 of 181, Group 17, Specific Monitoring Requirements 4.c.iii.:*** *[Environmental Resources Management on behalf of NSG]*
Specific Monitoring Requirement 4.c.iii. requires NSG to monitor natural gas combusted in each emission point [emphasis added]. Please see Comment 2 above. NSG requests that Specific Monitoring Requirement 4.c.iii. be revised to:

c. The permittee shall monitor the following: [401 KAR 52:020, Section 10]
"vii. For EP 16-04 and EP 21-11, monthly and 12-month rolling natural gas combusted (MMscf). If the permittee elects not to install a fuel meter for each emission point, the permittee may use a combined meter for emissions units, as long as 100% of the natural gas emissions are apportioned to each emission point based on usage."

Division's response to Comment #12: The Division concurs and amends the permit accordingly. Please refer to the Division's response to Comment #2.

PERMIT STATEMENT OF BASIS:

13. ***Page 160 of 213:*** *[United States Environmental Protection Agency]*
*On page 160 (under section **E. BACT Analysis for Sulfur Dioxide**) of the statement of basis, it appears that the table listing the available control technologies has been erroneously labeled for "flouride" control rather than SO_2.*

Division's response to Comment #13: The Division concurs and amends the Statement of Basis to correct this typographical error.

14. ***Pages 167-171 of 213:*** *[United States Environmental Protection Agency]*
Between pages 167 and 171 of the statement of basis, it appears that the sequence of sections related to the BACT analyses for the various subject pollutants has skipped "G" (i.e., the sections go from "F" for fluoride directly to "H" for GHGs). [United States Environmental Protection Agency]

Division's response to Comment #14: The Division concurs and amends the Statement of Basis to correct this typographical error.

15. ***Pages 159-163 of 213:*** *[United States National Park Service]*
A search of the RBLC database revealed that a similar facility, the Gerdau Macsteel mill (process type number 81.210), located in St. Clair Michigan, was permitted in October of 2018 with a SO2 control technology that was not considered in Nucor's top down BACT analysis. Gerdau controls SO2 emissions with "lime coating of the baghouse bags." We note that the applicant considered two older RBLC entries for the Gerdau facility, one from 2013 and another from 2014, but did not consider this most recent permitting action at the Gerdau mill, which describes the SO2 control technology used. The September 20, 2018 Technical Fact Sheet and associated Permit to Install for the Gerdau facility are attached for your reference. We understand from the permit contact with MI DEQ that the facility has demonstrated compliance with their EAF SO2 limitation through monitoring and record keeping.

Division's response to Comment #15: The Division acknowledges the comment by the NPS. After evaluating the information provided by the National Parks Service and considering the response provided by Environmental Resources Management on behalf of NSG (Attached to this document), the Division concludes that the use of low sulfur charge materials and the addition of lime to the charge continues to constitute BACT for the NSG facility.

It is important to note that NSG is a producer of carbon steel, which is a low sulfur steel, and uses low sulfur feedstock and adds lime to remove sulfur and other impurities during melting to achieve the desired product mix. Gerdau Macsteel (Gerdau) produces high sulfur steel where the use of low sulfur feedstocks and lime addition during melting are not technically feasible while producing the product mix desired by Gerdau.

Additionally, the use of PTFE fabric filters at NSG was determined to be BACT for $PM/PM_{10}/PM_{2.5}$ at the NSG facility, because while these filters may achieve the same (or better) control efficiency as other baghouse bag materials (such as the High Temperature fabric bags identified as BACT for Gerdau), they are also more efficient, resulting in less electricity usage, less waste, and longer intervals between bag replacement. The addition of lime to the bags would also require more baghouse dust to be landfilled as waste, and increase the emissions associated with transporting that waste.

The technology proposed by Gerdau has not been tested, that the Division is aware of, to determine what degree of emission reduction can be achieved by the practice of lime coating the baghouse bags. Also, while increased SO_2 control may be provided by this technology, it would likely result in a trade-off of increased $PM/PM_{10}/PM_{2.5}$ emissions elsewhere due to the required use of less efficient bags and increased combustion emissions due to lower energy efficiency caused by increased drag.

Finally, the combined emission limits set for Gerdau (for the EAF plus the LMF) are equivalent to those set for NSG without the use of the "lime coating of the baghouse bags" and with multiple other processes at NSG ducted to the same baghouse.

Based on the information presented and research performed, the Division has determined that, after taking into account energy, environmental, and economic impacts and other costs, to be achievable by the source or modification through application of production processes or available methods, systems, and techniques, the use of low sulfur feedstock and the addition of lime to the charge constitutes BACT for NSG and the emission limit for sulfur will remain at 0.35 pounds of SO_2 per ton of steel rolled.

To ensure this BACT requirement is met, the Division is adding **1. <u>Operating Limitations</u> (v)** and **5. <u>Specific Recordkeeping Requirements</u> (f)(vii)**:

1. <u>Operating Limitations</u> (v): *The permittee shall limit the sulfur content of the EAF feedstock and shall add lime to the charge such that the emission limitations for SO_2 in **2. <u>Emission Limitations</u> (c)** is met. [401 KAR 51:017]*

5. <u>Specific Recordkeeping Requirements</u> (f)(vii): *The permittee shall maintain records of the following: [401 KAR 52:020, Section 10]* *vii. The amount of lime charged per heat;*

16. ***Pages 159-163 of 213:*** *[United States National Park Service]*
The proposed modification to the Nucor Ghent facility will significantly increase emissions such that it may need to be considered for further Reasonable Progress in the next round of regional haze planning for Kentucky. It is more effective and expeditious to consider all feasible control technologies now, while the facility is undergoing major modifications, rather than considering retrofits at a later date (if necessary).

Division's response to Comment #16: The Division acknowledges the comment by the NPS. During this permitting action, the Division evaluated the Best Available Control Technology under the New Source Review program (401 KAR 51:017). The Division will evaluate actual emissions once the source commences operation and will determine the appropriate control scenarios to meet the further Reasonable Progress goals.

Kessler, Joseph R <joseph.r.kessler@wv.gov>

R14-0039 Updated Pre-Draft Permit

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Fri, Mar 25, 2022 at 3:10 PM
To: Bill Bruscino <bbruscino@trinityconsultants.com>, "Alteri, Sean [Corp]" <sean.alteri@nucor.com>

Pursuant to our phone discussion, attached is an updated Pre-Draft version of the permit.

Thank you,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

R14-0039 Pre-Draft (w App A) 2.0.pdf
901K

West Virginia Department of Environmental Protection
Harold D. Ward
Cabinet Secretary

Construction Permit

R14-0039

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.) and 45 C.S.R. 13 — Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation. The permittee identified at the facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:

Nucor Steel West Virginia LLC
West Virginia Steel Mill
053-00085

Laura M. Crowder
Director, Division of Air Quality

Issued: DRAFT

Facility Location:	Near Apple Grove, Mason County, WV
Mailing Address:	1915 Rexford Road, Charlotte, NC 28211
Facility Description:	Sheet Steel Mill
SIC/NAICS Code:	3312/331110
UTM Coordinates:	Easting: 398.20 km • Northing: 4,278.87 km • Zone: 17
Latitude/Longitude:	38.65536/-82.16853
Permit Type:	Construction
Description:	Construction of a 3,000,000 tons per year sheet steel mill.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

The facility is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

Table of Contents

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
Raw Material Storage & Handling					
Scrap Storage & Handling					
SCRAP-RAIL	Fugitives	Railcar Scrap Unloading	New	200 TPH	n/a
SCRAP-DOCK	Fugitives	Barge Scrap Unloading	New	600 TPH	n/a
SCRAP-BULK34	Fugitives	Barge Scrap Pile Loading	New	600 TPH	n/a
SCRAP-BULK35	Fugitives	Barge Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK36	Fugitives	Rail Scrap Pile Loading	New	120 TPH	n/a
SCRAP-BULK37	Fugitives	Rail Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK38	Fugitives	Truck Scrap Pile Loading	New	200 TPH	n/a
SCRAP-BULK39	Fugitives	Truck Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK40	Fugitives	Scrap Charging	New	220 TPH	n/a
SCRPSKP1	Fugitives	Scrap Metal Stockpile 1	New	81,809 ft^2	WS
SCRPSKP2	Fugitives	Scrap Metal Stockpile 2	New	81,809 ft^2	WS
SCRPSKP3	Fugitives	Scrap Metal Stockpile 3	New	81,809 ft^2	WS
Lime, Carbon, and Alloy Storage & Handling					
LIME-DUMP	LIME-DUMP-ST	Lime Dump Station	New	8 TPH	LIME-BH
	Fugitives				PE
CARBON-DUMP	CARBON-DUMP-ST	Carbon Dump Station	New	4 TPH	CARBON-BH
	Fugitives				PE
ALLOY-HANDLE	ALLOY-HANDLE-ST	Alloy Handling System	New	20 TPH	ALLOY-BH
	Fugitives				PE
LCB	LCB-ST	Lime, Carbon, and Alloy Silos	New	Lime - XX TPH Carbon - 30 TPH Alloy - 550 TPH	LCB-BH
Direct Reduced Iron (DRI) Storage & Handling					
DRI-DOCK	Fugitives	DRI Unloading Dock	New	500 TPH	PE
	DRI-DOCK-ST				DRI-DOCK-BH
DRI1	DRIVF1	DRI Storage Silo 1	New	64 TPH	DRI1-BH
	DRIBV1				DRI1-BV

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
DRI2	DRIVF2	DRI Storage Silo 2	New	64 TPH	DRI2-BH
	DRIBV2				DRI2-BV
DRI3	DRIVF3	DRI Storage Silo 3	New	64 TPH	DRI3-BH
	DRIBV3				DRI3-BV
DRI4	DRIVF4	DRI Storage Silo 4	New	64 TPH	DRI4-BH
	DRIBV4				DRI4-BV
DRI-DB1	DRI-DB1-BH	DRI Day Bin 1	New	64 TPH	DRI-DB1-BH
DRI-DB2	DRI-DB2-BH	DRI Day Bin 2	New	64 TPH	DRI-DB2-BH
BULK-DRI	BULK-DRI-1	DRI Silo 1 Loadout	New	64 TPH	PE
	BULK-DRI-2	DRI Silo 2 Loadout		64 TPH	PE
	BULK-EMG-1	DRI Conveyer 1 Emergency Chute		125 TPH	None
	BULK-EMG-2	DRI Silos Emergency Chute		800 TPH	None
DRI-CONV	DRI-CONV-BH	DRI Transfer Conveyers	New	64 TPH	DRI-CONV-BH
<u>Haulraods</u>					
FUGD-PAVED-01P through 10P	Fugitives	Paved Haulroads 1P - 10P	New	n/a	WS
FUGD-UNPAVED-1UP through 19U	Fugitives	Unpaved Haulroads 11U - 19U	New	n/a	WS
<u>Melt Shop</u>					
EAF1	BHST-1	Electric Arc Furnace 1	New	171 TPH, 22.18 mmBtu/hr[2]	EAF1-BH
	MSFUG				n/a
LMF1	BHST-1	Ladle Metallurgy Furnace 1	New	171 TPH	EAF1-BH
CAST1	BHST-1	Caster 1	New	171 TPH	EAF1-BH
	CASTFUG				n/a
EAF2	BHST-2	Electric Arc Furnace 2	New	171 TPH, 22.18 mmBtu/hr[2]	EAF2-BH
	MSFUG				n/a
LMF2	BHST-2	Ladle Metallurgy Furnace 2	New	171 TPH	EAF2-BH
CAST2	BHST-2	Caster 2	New	171 TPH	EAF2-BH
	CASTFUG				n/a

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
LD	MSFUG	Ladle Dryer	New	15 mmBtu/hr	n/a
EAFVF1	EAFVF1	EAF Baghouse 1 Dust Silo	New	0.84 TPH	EAFVF1-BV
EAFVF2	EAFVF2	EAF Baghouse 2 Dust Silo	New	0.84 TPH	EAFVF2-BV
LPHTR1	MSFUG[3]	Horizontal Ladle Preheater 1	New	15 mmBtu/hr	n/a
LPHTR2	MSFUG[3]	Horizontal Ladle Preheater 2	New	15 mmBtu/hr	n/a
LPHTR3	MSFUG[3]	Horizontal Ladle Preheater 3	New	15 mmBtu/hr	n/a
LPHTR4	MSFUG[3]	Horizontal Ladle Preheater 4	New	15 mmBtu/hr	n/a
LPHTR5	MSFUG[3]	Horizontal Ladle Preheater 5	New	15 mmBtu/hr	n/a
LPHTR6	MSFUG[3]	Vertical Ladle Preheater 6	New	15 mmBtu/hr	n/a
LPHTR7	MSFUG[3]	Vertical Ladle Preheater 7	New	15 mmBtu/hr	n/a
TD	MSFUG[3]	Tundish Dryer 1	New	6 mmBtu/hr	n/a
TPHTR1	MSFUG[3]	Tundish Preheater 1	New	9 mmBtu/hr	n/a
TPHTR2	MSFUG[3]	Tundish Preheater 2	New	9 mmBtu/hr	n/a
SENPHTR1	MSFUG[3]	Subentry Nozzle (SEN) Preheater 1	New	1 mmBtu/hr	n/a
SENPHTR2	MSFUG[3]	Subentry Nozzle (SEN) Preheater 2	New	1 mmBtu/hr	n/a
VTD1	VTDST1	Vacuum Tank 1	New	269 lbs-CO/hr	VTG-Flare 1
VTD2	VTDST2	Vacuum Tank 2	New	269 lbs-CO/hr	VTG-Flare 2
Hot Mill					
TF1	TFST-1	Hot Mill Tunnel Furnace 1	New	150 mmBtu/hr	None
RM	RM-BH	Rolling Mill	New	342 TPH	RM-BH
Cold Mill					
PKLSB	PKLSB	Pickling Line Scale Breaker	New	342 TPH	PKLSB-BH
PKL-1	PLST-1	Pickling Line 1	New	171 TPH	PKL1-SCR
CGL1	CGL1-ST1	CGL1 - Cleaning Section	New	171 TPH	CGL-SCR1
	CGL1-ST2	CGL1 - Passivation Section		171 TPH	CGL-SCR2
CGL2	CGL2-ST1	CGL2 - Cleaning Section	New	171 TPH	CGL-SCR3
	CGL2-ST2	CGL2 - Passivation Section		171 TPH	CGL-SCR4
GALVFN1	GALVFN1-ST	Galvanizing Furnace 1	New	64 mmBtu/hr	None
GALVFN2	GALVFN2-ST	Galvanizing Furnace 2	New	64 mmBtu/hr	None

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
BOXANN1	GALVFUG(4)	Box Annealing Furnace 1	New	5 mmBtu/hr	None
BOXANN2	GALVFUG(4)	Box Annealing Furnace 2	New	5 mmBtu/hr	None
BOXANN3	GALVFUG(4)	Box Annealing Furnace 3	New	5 mmBtu/hr	None
BOXANN4	GALVFUG(4)	Box Annealing Furnace 4	New	5 mmBtu/hr	None
BOXANN5	GALVFUG(4)	Box Annealing Furnace 5	New	5 mmBtu/hr	None
BOXANN6	GALVFUG(4)	Box Annealing Furnace 6	New	5 mmBtu/hr	None
BOXANN7	GALVFUG(4)	Box Annealing Furnace 7	New	5 mmBtu/hr	None
BOXANN8	GALVFUG(4)	Box Annealing Furnace 8	New	5 mmBtu/hr	None
BOXANN9	GALVFUG(4)	Box Annealing Furnace 9	New	5 mmBtu/hr	None
BOXANN10	GALVFUG(4)	Box Annealing Furnace 10	New	5 mmBtu/hr	None
BOXANN11	GALVFUG(4)	Box Annealing Furnace 11	New	5 mmBtu/hr	None
BOXANN12	GALVFUG(4)	Box Annealing Furnace 12	New	5 mmBtu/hr	None
BOXANN13	GALVFUG(4)	Box Annealing Furnace 13	New	5 mmBtu/hr	None
BOXANN14	GALVFUG(4)	Box Annealing Furnace 14	New	5 mmBtu/hr	None
BOXANN15	GALVFUG(4)	Box Annealing Furnace 15	New	5 mmBtu/hr	None
BOXANN16	GALVFUG(4)	Box Annealing Furnace 16	New	5 mmBtu/hr	None
BOXANN17	GALVFUG(4)	Box Annealing Furnace 17	New	5 mmBtu/hr	None
BOXANN18	GALVFUG(4)	Box Annealing Furnace 18	New	5 mmBtu/hr	None
BOXANN19	GALVFUG(4)	Box Annealing Furnace 19	New	5 mmBtu/hr	None
BOXANN20	GALVFUG(4)	Box Annealing Furnace 20	New	5 mmBtu/hr	None
BOXANN21	GALVFUG(4)	Box Annealing Furnace 21	New	5 mmBtu/hr	None
BOXANN22	GALVFUG(4)	Box Annealing Furnace 22	New	5 mmBtu/hr	None
TCM	TCMST	Tandem Cold Mill	New	342 TPH	TCM-ME
STM	STM-BH	Standalone Temper Mill	New	342 TPH	STM-ME
SPM1	SPMST1	Skin Pass Mill 1	New	114 TPH	SPM1-BH
SPM2	SPMST2	Skin Pass Mill 2	New	114 TPH	SPM3-BH
Slag Processing					
SLGSKP1	Fugitives	Slag Storage Stockpile 1	New	32,541 ft^2	WS
SLGSKP2	Fugitives	Slag Storage Stockpile 2	New	32,541 ft^2	WS
SLGSKP3	Fugitives	Slag Storage Stockpile 3	New	32,541 ft^2	WS
SLGSKP4	Fugitives	Slag Storage Stockpile 4	New	32,541 ft^2	WS

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
SLAG-CUT	SLAG-CUT-NG	Slag Cutting Combustion	New	2.4 mmBtu/hr	None
	SLAG-CUT-BH	Slag Cutting		171 TPH	SLAG-CUT-BH
SCRAP-BULK1	SCRAP-BULK1	Dig Slag Inside Pot Barn	New	73 TPH	PE, WS
SCRAP-BULK2	SCRAP-BULK2	Loader Transport & Dump Slag Into Trench	New	73 TPH	PE, WS
SCRAP-BULK3	SCRAP-BULK3	Loader Transport & Dump Slag Into F1 Feed Hopper/Grizzly	New	73 TPH	PE, WS
SCRAP-BULK4	SCRAP-BULK4	TP: F1 Feed Hopper/Grizzly to P1 Oversize Storage(5)	New	73 TPH	PE, WS
SCRAP-BULK5	SCRAP-BULK5	TP: F1 Feed Hopper/Grizzly to C7 Crusher Conveyer	New	1.5 TPH	PE, WS
SCRAP-BULK6	SCRAP-BULK6	TP: F1 Feed Hopper/Grizzly to C1A Main Conveyer	New	22 TPH	PE, WS
SCRAP-BULK7	SCRAP-BULK7	TP: C7 to CR1 Crusher	New	50 TPH	PE, WS
SCRAP-BULK8	SCRAP-BULK8	TP: CR1 Crusher to C8 Conveyer	New	22 TPH	PE, WS
SCRAP-BULK9	SCRAP-BULK9	TP: CR1 Crusher to P2 Off-spec Storage(5)	New	19 TPH	PE, WS
SCRAP-BULK10	SCRAP-BULK10	TP: C8 Conveyer to C9 Conveyer	New	3.3 TPH	PE, WS
SCRAP-BULK11	SCRAP-BULK11	TP: C9 Conveyer to C1A Conveyer	New	19 TPH	PE, WS
SCRAP-BULK12	SCRAP-BULK12	TP: C1A Conveyer to B1 Surge Bin	New	19 TPH	PE, WS
SCRAP-BULK13	SCRAP-BULK13	TP: B1 Surge Bin to C1 Conveyer	New	68 TPH	PE, WS
SCRAP-BULK14	SCRAP-BULK14	TP: C1 Conveyor through M1 Mag Splitter to S1 Slag Screen	New	68 TPH	PE, WS
SCRAP-BULK15	SCRAP-BULK15	TP: C1 Conveyor through M1 Mag Splitter to S2 Slag Screen	New	66 TPH	PE, WS
SCRAP-BULK16	SCRAP-BULK16	TP: S2 Slag Screen to C6 Conveyor	New	2.4 TPH	PE, WS
SCRAP-BULK17	SCRAP-BULK17	TP: S2 Slag Screen to P3 Off-spec Storage(5)	New	2 TPH	PE, WS
SCRAP-BULK18	SCRAP-BULK18	TP: C6 Conveyor to P4 Off-spec Storage(5)	New	0.4 TPH	PE, WS

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
SCRAP-BULK19	SCRAP-BULK19	TP: S1 Slag Screen to C2 Conveyer	New	2 TPH	PE, WS
SCRAP-BULK20	SCRAP-BULK20	TP: C2 Conveyer to C5 Conveyer	New	26 TPH	PE, WS
SCRAP-BULK21	SCRAP-BULK21	TP: C5 Conveyer to SLGSKP1	New	26 TPH	PE, WS
SCRAP-BULK22	SCRAP-BULK22	TP: S1 Slag Screen to C4 Conveyer	New	26 TPH	PE, WS
SCRAP-BULK23	SCRAP-BULK23	TP: C4 Conveyer to SLGSKP3	New	20 TPH	PE, WS
SCRAP-BULK24	SCRAP-BULK24	TP: S1 Slag Screen to C3 Conveyer	New	20 TPH	PE, WS
SCRAP-BULK25	SCRAP-BULK25	TP: C3 Conveyer to SLGSKP2	New	13 TPH	PE, WS
SCRAP-BULK26	SCRAP-BULK26	TP: S1 Slag Screen to SLGSKP4	New	13 TPH	PE, WS
SCRAP-BULK27	SCRAP-BULK27	Loader transports & loads products into trucks to Product Stockpiles	New	6.6 TPH	PE, WS
SCRAP-BULK28	SCRAP-BULK28	Truck Dumps Products into Product Stockpiles	New	73 TPH	PE, WS
SCRAP-BULK29	SCRAP-BULK29	Loader Into trucks, Oversize to Drop Ball Crusher	New	73 TPH	PE, WS
SCRAP-BULK30	SCRAP-BULK30	Truck Dumps Oversize into Drop Ball Area	New	1.5 TPH	PE, WS
SCRAP-BULK31	SCRAP-BULK30	Truck Transports Ladle Lip/Meltshop Cleanup Materials & Dumps at Drop Ball Site	New	4.7 TPH	PE, WS
SCRAP-BULK32	SCRAP-BULK32	Truck Transports & Dumps Tundish at Lancing Station	New	2.6 TPH	PE, WS
SCRAP-BULK33	SCRAP-BULK33	Ball Drop Crusher	New	2.3 TPH	PE, WS
Auxiliary Operations/Equipment					
ASP	ASP-1	Water Bath Vaporizer	New	11 mmBtu/hr	None
Emergency Generators					
EMGEN1	EMGEN1	Emergency Generator 1	New	2,000 hp	TBD[6]
EMGEN2	EMGEN2	Emergency Generator 2	New	2,000 hp	TBD[6]
EMGEN3	EMGEN3	Emergency Generator 3	New	2,000 hp	TBD[6]

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
EMGEN4	EMGEN4	Emergency Generator 4	New	2,000 hp	TBD(6)
EMGEN5	EMGEN5	Emergency Generator 5	New	2,000 hp	TBD(6)
EMGEN6	EMGEN6	Emergency Generator 6	New	2,000 hp	TBD(6)
Cooling Towers					
CT1	CT1	Melt Shop ICW Cooling Tower	New	52,000 gpm	DE
CT2	CT2	Melt Shop DCW Cooling Tower	New	5,900 gpm	DE
CT3	CT3	Rolling Mill ICW Cooling Tower	New	8,500 gpm	DE
CT4	CT4	Rolling Mill DCW Cooling Tower	New	22,750 gpm	DE
CT5	CT5	Rolling Mill Quench/ACC Cooling Tower	New	90,000 gpm	DE
CT6	CT6	Light Plate DCW System	New	8,000 gpm	DE
CT7	CT7	Heavy Plate DCW System	New	3,000 gpm	DE
CT8	CT8	Air Separation Plant Cooling Tower	New	14,000 gpm	DE
Fixed Roof Storage Tanks					
T1	T1	Diesel Tank	New	5,000 gallon	None
T2	T2	Diesel Tank	New	1,000 gallon	None
T3	T3	Diesel Tank	New	1,000 gallon	None
T4	T4	Diesel Tank	New	1,000 gallon	None
T5	T5	Diesel Tank	New	2,000 gallon	None
T6	T6	Diesel Tank	New	2,000 gallon	None
T7	T7	Gasoline Tank	New	1,000 gallon	None
T8	T8	Caster Hydraulic Oil Tank	New	5,000 gallon	None
T9	T9	Hot Mill Hydraulic Oil Tank	New	5,000 gallon	None
T10	T10	HCL Tank 1	New	26,400 gallon	None
T11	T11	HCL Tank 2	New	26,400 gallon	None
T12	T12	HCL Tank 3	New	26,400 gallon	None
T13	T13	HCL Tank 4	New	26,400 gallon	None
T14	T14	HCL Tank 5	New	26,400 gallon	None
T15	T15	HCL Tank 6	New	26,400 gallon	None

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
T16	T16	SPL Tank 1	New	26,400 gallon	None
T17	T17	SPL Tank 2	New	26,400 gallon	None
T18	T18	SPL Tank 3	New	26,400 gallon	None
T19	T19	SPL Tank 4	New	26,400 gallon	None
T20	T20	SPL Tank 5	New	26,400 gallon	None
T21	T21	SPL Tank 6	New	26,400 gallon	None
T22	T22	SPL Tank 7	New	26,400 gallon	None
T23	T23	SPL Tank 8	New	26,400 gallon	None
T24	T24	Used Oil Tank	New	5,000 gallon	None
Other Tanks					
T25	T25	Cold Degreaser Tank[7]	New	80 gallon	None
T26	T26	Cold Degreaser Tank[7]	New	80 gallon	None
T27	T27	Cold Degreaser Tank[7]	New	80 gallon	None
T28	T28	Cold Degreaser Tank[7]	New	80 gallon	None
T29	T29	Cold Degreaser Tank[7]	New	80 gallon	None

(1) This column does note include pollution prevention technologies/procedures such as Low-NO_x Burners or Good Combustion Practices. BH - Baghouse; BV - Bin Vent; DE - Drift Eliminator; ME - Mist Eliminator; SCR - Scrubber; TBD - To Be Determined; WS - Water Sprays/Wet Suppression
(2) This heat input reflects the size of the natural gas-fired oxyfuel burners.
(3) Natural gas combustion exhaust emissions that vent inside the Melt Shop building and are assumed all emitted from building openings.
(4) Natural gas combustion exhaust emissions that vent inside the Cold Mill building and are assumed all emitted from building openings.
(5) P1, P2, P3, and P4 Storage are small temporary indoor areas of screen/crusher reject.
(6) These engines are required to be in compliance with 40 CFR 60, Subpart JJJJ. Oxidation catalysts may be necessary on some engines to meet the applicable standards.
(7) These tanks are open during use (see Section 4.1.7(f)).

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR § 30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments	**NSPS**	New Source Performance Standards
CBI	Confidential Business Information	**PM**	Particulate Matter
CEM	Continuous Emission Monitor	**$PM_{2.5}$**	Particulate Matter less than 2.5µm in diameter
CES	Certified Emission Statement	**PM_{10}**	Particulate Matter less than 10µm in diameter
C.F.R. ***or*** **CFR**	Code of Federal Regulations	**Ppb**	Pounds per Batch
CO	Carbon Monoxide	**pph**	Pounds per Hour
C.S.R. ***or*** **CSR**	Codes of State Rules	**ppm**	Parts per Million
DAQ	Division of Air Quality	**Ppmv or ppmv**	Parts per million by volume
DEP	Department of Environmental Protection	**PSD**	Prevention of Significant Deterioration
dscm	Dry Standard Cubic Meter	**psi**	Pounds per Square Inch
FOIA	Freedom of Information Act	**SIC**	Standard Industrial Classification
HAP	Hazardous Air Pollutant	**SIP**	State Implementation Plan
HON	Hazardous Organic NESHAP	**SO_2**	Sulfur Dioxide
HP	Horsepower	**TAP**	Toxic Air Pollutant
lbs/hr	Pounds per Hour	**TPY**	Tons per Year
LDAR	Leak Detection and Repair	**TRS**	Total Reduced Sulfur
M	Thousand	**TSP**	Total Suspended Particulate
MACT	Maximum Achievable Control Technology	**USEPA**	United States Environmental Protection Agency
MDHI	Maximum Design Heat Input	**UTM**	Universal Transverse Mercator
MM	Million	**VEE**	Visual Emissions Evaluation
MMBtu/hr ***or*** **mmbtu/hr**	Million British Thermal Units per Hour	**VOC**	Volatile Organic Compounds
MMCF/hr ***or*** **mmcf/hr**	Million Cubic Feet per Hour	**VOL**	Volatile Organic Liquids
NA	Not Applicable		
NAAQS	National Ambient Air Quality Standards		
NESHAPS	National Emissions Standards for Hazardous Air Pollutants		
NO_x	Nitrogen Oxides		

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Law W.Va. Code §§22-5-1 et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation.*

2.4. Term and Renewal

2.4.1. This permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any applicable legislative rule.

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Application R14-0039 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.10 and 13-10.3]

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses and/or approvals from other agencies; i.e., local, state and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10. Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is 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 (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.

2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

b. The permitted facility was at the time being properly operated;

c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and,

d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emission, and corrective actions taken.

2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13.
[45CSR§13-10.1]

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§34]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1 State-Enforceable only.]

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45 C.S.R. 11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

3.2.1. **Emission Limit Averaging Time.** Unless otherwise specified, compliance with all annual limits shall be based on a rolling twelve (12) month total. A rolling twelve month total shall be the sum of the measured parameter of the previous twelve (12) calendar months. Compliance with all hourly emission limits shall be based, unless otherwise specified, on the applicable NAAQS averaging times or, where applicable, as given in any approved performance test method.

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

1. The permit or rule evaluated, with the citation number and language;
2. The result of the test for each permit or rule condition; and,
3. A statement of compliance or noncompliance with each permit or rule condition.

[WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State-Enforceable only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class or by private carrier with postage prepaid to the address(es), or submitted in electronic format by email as set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

If to the DAQ:

Director
WVDEP
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304-2345

DAQ Compliance and Enforcement[1]:
DEPAirQualityReports@wv.gov

If to the US EPA:

Section Chief
U.S. Environmental Protection Agency, Region III
Enforcement and Compliance Assurance Division
Air Section (3ED21)
1650 Arch Street
Philadelphia, PA 19103-2029

[1] For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, notice of Compliance Status Reports, Initial Notifications, etc.

3.5.4. **Operating Fee.**

3.5.4.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a Certified Emissions Statement (CES) and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.4.2. In accordance with 45CSR30 – Operating Permit Program, enclosed with this permit is a Certified Emissions Statement (CES) Invoice, from the date of initial startup through the following June 30. Said invoice and the appropriate fee shall be submitted to this office no later than 30 days prior to the date of initial startup. For any startup date other than July 1, the permittee shall pay a fee or prorated fee in accordance with the Section 4.5 of 45CSR22. A copy of this schedule may be found attached to the Certified Emissions Statement (CES) Invoice.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements

4.1. Limitations and Standards

4.1.1. Only those emission units/sources as identified in Table 1.0, with the exception of any *de minimis* sources as identified under Table 45-13B of 45CSR13, are authorized at the permitted facility by this permit. In accordance with the information filed in Permit Application R14-0039, the emission units/sources identified under Table 1.0 of this permit shall be installed, maintained, and operated so as to minimize any fugitive escape of pollutants, shall not exceed the listed maximum design capacities, shall use the specified control devices, and comply with any other information provided under Table 1.0.

4.1.2. The aggregate production of sheet steel in the EAFs (EAF-1 and EAF-2) shall not, on a rolling 12-month basis, exceed 3,000,000 tons per year as measured as the total tons of molten metal sent to the casters (CAST1 and CAST2).

4.1.3. **Material Handling & Storage Operations**
The handling of: (1) slag, (2) raw materials used in the production of steel: scrap steel, direct reduced iron (DRI) and other scrap substitutes, carbons, alloys, and lime, and (3) EAF Baghouse Dust shall be in accordance with the following requirements:

a. The permittee shall not exceed the specified maximum annual throughputs of the following materials:

Table 4.1.3(a): Maximum Annual Throughputs

Material	Limit	Units
Scrap Steel	1,925,000	TPY(1)
DRI(2)	557,500	TPY(1)
Alloys	62,000	TPY(1)
Carbon	35,000	TPY(1)
Lime	70,000	TPY(1)
Slag	262,500	TPY(3)

(1) As measured prior to charging in the EAF/LMF.
(2) DRI may include the following scrap substitutes: pig iron and hot briquetted Iron (HBI).
(3) As measured processed through the F1 Slag Feed Hopper.

b. The permittee shall not exceed the specified maximum design capacities of the following equipment:

Table 4.1.3(b): Maximum Design Capacity

Emission Unit ID	Description	Limit	Units
CR1	Slag Crusher	50	TPH
S1	Slag Screen 1	68	TPH
S2	Slag Screen 2	66	TPH

c. The permittee shall not exceed the maximum emission limits for the material handling stack/vent emission points as given under Appendix A: Table A-1 and the material handling non-stack/vent emission points (including open stockpiles) as given under Appendix A: Table A-2;

d. The permittee shall perform all slag handling operations (including conveying, crushing, screening, and storing) only on slag that is wetted sufficiently (BACT) to mitigate the emissions of particulate matter;

e. A visible and/or audible warning device shall be installed on each of the EAF Baghouse Storage Silos to warn operators when the silos are full so that silos are not overloaded. The silos shall not be overloaded at any time. All particulate material retrieved from any of the EAF Baghouses shall be handled in a manner that will prevent excess material from becoming airborne into the atmosphere;

f. **Outdoor Open Storage Piles**
All outdoor open feedstock material storage shall be in accordance with the following:

(1) The permittee is authorized to operate three (3) open scrap steel stockpiles (SCRPSKP1 through SCRPSKP3) that shall each not exceed a base of 81,809 ft^2 and four (4) open slag stockpiles (SLGSKP1 through SLGSKP4) that shall each not exceed a base of 32,541 ft^2. The permittee shall manage on-pile activity so as to minimize the release of emissions from all open stockpiles;

(2) The permittee shall utilize water sprays as necessary on all open storage piles to keep the to mitigate any significant release of fugitive dust emissions from the piles both during periods of activity on the pile and from wind erosion;

(3) The permittee shall properly install, operate and maintain winterization systems for all water sprays in a manner that the water sprays will remain effective and functional, to the maximum extent practicable, during winter months and cold weather. At all times, including periods of cold weather, the permittee shall comply with the water spray requirements of this section; and

(4) All other feedstock material (DRI and other scrap substitutes, carbon, alloys, and lime) shall be stored in silos or enclosed bins.

g. **Haulroads and Mobile Work Areas**
Fugitive particulate emissions resulting from use of haulroads and mobile work areas shall be minimized by the following:

(1) The permittee shall perform all necessary tasks to adequately maintain paved haulroads and paved mobile work areas (including a reasonable shoulder area) within the plant boundary;

(2) All unpaved roads and mobile work areas shall be graded with gravel, slag, or a mixture of the two so as to provide a suitable surface for the use of trucks and other heavy equipment. Unpaved roads and mobile work areas shall be provided with additional slag or gravel as needed to maintain the road surface;

(3) The permittee shall, in a timely fashion, collect material spilled on paved haulroads that could become airborne if it dried or were subject to vehicle traffic and shall maintain access to a vacuum sweeper truck in good operating condition, and shall utilize same as needed to remove excess dirt and dust from all paved haulroads and mobile work areas. If needed, the

haulroads and mobile work areas shall be flushed with water prior to vacuum sweeping to remove larger pieces of debris;

(4) The permittee shall maintain a water truck on site and in good operating condition, and shall utilize same to apply a mixture of water and an environmentally acceptable dust control additive, hereinafter referred to as solution, as often as is necessary in order to minimize the atmospheric entrainment of fugitive particulate emissions that may be generated from haulroads and other work areas where mobile equipment is used. The spraybar shall be equipped with commercially available spray nozzles, of sufficient size and number, so as to provide adequate coverage to the area being treated.

The pump delivering the water/solution shall be of sufficient size and capacity so as to be capable of delivering to the spray nozzle(s) an adequate quantity of solution, and at a sufficient pressure, so as to assure that the treatment process will minimize the atmospheric entrainment of fugitive particulate emissions generated from the haulroads and work areas where mobile equipment is used.

The permittee shall properly install, operate and maintain winterization systems for all water trucks in a manner that the water truck will remain effective and functional, to the maximum extent practicable, during winter months and cold weather. At all times, including periods of cold weather, the permittee shall comply with the water truck requirements of this permit; and

(5) A maximum speed limit of 15 miles per hour shall be maintained on all unpaved haulroads. Clear and visible signs shall be posted displaying this speed limit wherever necessary to ensure compliance with this requirement.

h. **45CSR7**
The material handling sources identified under 4.1.3(c) shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate

matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

4.1.4. **Melt Shop**

The emission units/sources in the Melt Shop shall meet the following requirements:

a. **EAFs/LMFs**

The EAFs (identified as EAF-1 and EAF-2) and LMFs (identified as LMF1 and LMF2) shall each not exceed the aggregate emission limits in the following table, as emitted from the associated baghouse (EAF1-BH and EAF2-BH), and shall utilize the specified BACT Technology, as given in the following table (the emission limits are in effect during all periods of operation):

Table 4.1.4(a): EAF/LMF Emission Limits

<table>
<tr><th>Pollutant</th><th>BACT Limit</th><th colspan="2">BACT Technology[1]</th><th>PPH</th><th>TPY</th></tr>
<tr><td>CO</td><td>2.02 lb/ton-steel[2]</td><td colspan="2">GCP[3]</td><td>328.15</td><td>1,439.00</td></tr>
<tr><td rowspan="2">NO_x</td><td rowspan="2">0.35 lb/ton-steel[4]</td><td>EAFs</td><td>Oxyfuel Burners</td><td rowspan="2">56.86</td><td rowspan="2">249.38</td></tr>
<tr><td>LMFs</td><td>GCP</td></tr>
<tr><td>$PM_{2.5}/PM_{10}$[5]</td><td>0.0052 gr/dscf</td><td colspan="2">Baghouse</td><td>49.19</td><td>215.45</td></tr>
<tr><td>PM[6]</td><td>0.0018 gr/dscf</td><td colspan="2">Baghouse</td><td>17.03</td><td>74.58</td></tr>
<tr><td>SO_2</td><td>0.24 lb/ton-steel[7]</td><td colspan="2">Scrap Management Plan[8]</td><td>38.99</td><td>171.00</td></tr>
<tr><td rowspan="3">VOCs</td><td rowspan="3">0.098 lb/ton-steel[9]</td><td rowspan="2">EAFs</td><td>GCP</td><td rowspan="3">15.92</td><td rowspan="3">69.83</td></tr>
<tr><td rowspan="2">Scrap Management Plan[8]</td></tr>
<tr><td>LMFs</td></tr>
<tr><td>Lead</td><td>0.00045 lb/ton-steel</td><td colspan="2">Baghouse</td><td>0.07</td><td>0.32</td></tr>
<tr><td>Fluoride</td><td>0.00350 lb/ton-steel</td><td colspan="2">Baghouse</td><td>0.57</td><td>2.49</td></tr>
<tr><td>Total HAPs</td><td>n/a</td><td colspan="2">n/a</td><td>0.25</td><td>1.06</td></tr>
<tr><td>CO_2e</td><td>TPY Limit</td><td colspan="2">OxyFuel Burners,
See 4.1.4(c)(5)</td><td>47,813</td><td>179,357</td></tr>
</table>

(1) LNB = Low NO_x Burner; GCP = Good Combustion Practices
(2) Aggregated limit based on an EAF emission rate of 2.00 lb/ton-steel and LMF emission rate of 0.02 lb/ton-steel. Compliance based on a 30-day rolling average.
(3) For the purposes of this permit, "Good Combustion Practices (GCP)" are defined to include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control emissions through proper combustion tuning, temperature, and air/fuel mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(4) Aggregated limit based on an EAF emission rate of 0.30 lb/ton-steel and LMF emission rate of 0.05 lb/ton-steel. Compliance based on a 30-day rolling average.
(5) Includes condensables.
(6) Filterable only.
(7) Aggregated limit based on an EAF emission rate of 0.20 lb/ton-steel and LMF emission rate of 0.04 lb/ton-steel. Compliance based on a 30-day rolling average.

(8) For the purposes of this permit, "Scrap Management Plan" is defined as being in compliance with the Scrap Management Requirements under 40 CFR 63, Subpart YYYYY and the use of commercially available low residue, pre-processed, and inspected scrap.
(9) Aggregated limit based on an EAF emission rate of 0.45 lb/ton-steel and LMF emission rate of 0.05 lb/ton-steel. Compliance based on a 30-day rolling average.

b. **Melt Shop Fugitive Emissions**
The aggregate uncaptured fugitive emissions from the both EAFs/LMFs (identified as EAF-1 and EAF-2) and both the Casters (identified as CAST-1 and CAST-2) shall not exceed the limits given in the following table (these limits do not include the natural gas combustion exhaust emissions from various sources listed under Table 4.1.5(a)):

Table 4.1.4(b): EAFs/LMFs/Casters Fugitive Emission Limits(1)(2)(3)(4)

Pollutant	Source	PPH	TPY
CO	EAF-1/EAF-2	34.54	151.50
NO_x	EAF-1/EAF-2	5.99	26.25
$PM_{2.5}/PM_{10}$(5)	EAF-1/EAF-2	0.94	4.12
	CAST-1/CAST-2	0.21	0.90
PM(6)	EAF-1/EAF-2	1.62	7.10
	CAST-1/CAST-2	0.21	0.90
SO_2	EAF-1/EAF-2	4.10	18.00
VOCs	EAF-1/EAF-2	1.68	7.35
Lead	EAF-1/EAF-2	0.0077	0.0338
Fluoride	EAF-1/EAF-2	0.060	0.263
Total HAPs	EAF-1/EAF-2	0.040	0.066
CO_2e	EAF-1/EAF-2	5,033	18,880

(1) With the exception of CO_2e, the PPH limits in this table represent the BACT emission limits and the particulate matter capture methods and control efficiencies given under 4.1.3(c) below represent the associated control method/technology. The BACT limit for CO_2e is the TPY limit.
(2) EAF/LMF fugitive non-particulate matter emissions based on 5% of total uncontrolled emissions (not captured by the DEC). Particulate Matter emissions based on 0.025% of uncontrolled emissions when the furnace hood is closed (96% of the time) - using capture efficiency of DEC (95%), Canopy Hood (95%), and Melt Shop building (90%) - and based on 0.5% of uncontrolled emissions when the furnace hood is open (4% of the time) - using capture efficiency of Canopy Hood (95%) and Melt Shop building (90%).
(3) Casters fugitives are only particulate matter emissions and based on 0.50% of total uncontrolled emissions - using capture efficiency of Canopy Hood (95%) and Melt Shop building (90%).
(4) All other natural gas combustion sources that exhaust in the Melt Shop building are considered fugitive and emitted from building openings. These limits are given under Table 4.1.5(a).
(5) Includes condensables.
(6) Filterable only.

c. **EAF/LMF/Casting Operating Requirements**
The EAFs/LMFs shall be operated according to the following requirements:

(1) Each EAF will not exceed an aggregate oxyfuel burner heat input of 22.18 mmBtu/hr and the burners shall be fired only by pipeline quality natural gas (PNG);

(2) During melting operations, when the roof is closed, the permittee shall utilize a direct-shell evacuation control (DEC) system designed and operated to achieve a minimum capture efficiency of 95% of all potential particulate matter emissions from the EAFs and LMFs and evacuate the exhaust to each associated EAF baghouse. Pursuant to 40 CFR 60, Subpart AAa, a DEC system means a system that maintains a negative pressure within the EAF above the slag or metal and ducts emissions to the EAF baghouse;

(3) The permittee shall utilize a roof canopy hood designed and operated to achieve a minimum capture efficiency of 95% of all potential fugitive particulate matter emissions from the EAFs/LMFs and Casters (CAST-1 and CAST-2);

(4) The permittee shall operate control equipment and/or implement work practice standards as reasonable precautions to prevent particulate matter from becoming airborne and exiting any opening from the Melt Shop building into the open air so as to achieve a minimum capture efficiency of 90% of all potential fugitive particulate matter emissions from the EAFs/LMFs and Casters (CAST-1 and CAST-2). Reasonable precautions include, but are not limited to the following:

(i) Downdraft and/or plastic strip air curtains at Melt Shop openings with the potential for fugitive particulate emissions;

(ii) Keeping other doors closed except for pass-through traffic;

(iii) The scrap charge bay door shall be maintained at all times with a plastic strip air curtain covering the top 15 feet of the opening; and

(iv) After removal from the EAFs, all molten slag shall be deposited into slag carrying pots and transported to the designated slag processing area.

(5) To comply with GHG BACT on the EAFs, the permittee shall meet the following design and operational requirements:

(i) Install and maintain seals and modern insulation media to minimize heat losses from EAF doors, roof, and any openings around the burners or other equipment traversing through the furnace shell;

(ii) Install, operate, and maintain oxyfuel burners in accordance with manufacturer's specifications to maximize heat transfer, reduce heat losses, and reduce electrode consumption resulting in high thermal efficiency and reduced electrical energy consumption;

(iii) Employ foamy slag practices to reduce radiation heat losses and increases the electric power efficiency of the EAFs;

(iv) Optimize process control operations to reduce electricity consumption through monitoring integration of real-time monitoring of process variables along with realtime control systems for carbon injection and lance oxygen practices; and

(v) Implement a preventative maintenance program that is consistent with the manufacturer's instructions for routine and long-term maintenance of equipment important to the operation, including EAF doors, burners, etc.

d. **Vacuum Tank Degassers Requirements**
The Vacuum Tank Degassers (VTGs), identified as VTD1 and VTD2, shall be operated according to the following requirements:

(1) Once the ladle is enclosed in the VTGs and a vacuum is drawn, all gas from the units shall be pulled through a particulate filter and combusted in the associated VTG Flare. The flare shall be designed and operated according to the requirements given under 4.1.10(e);

(2) The VTGs shall not be operated simultaneously;

(3) The emissions from each VTG, as controlled by the VTG Flare, shall not exceed the limits given in the following table (Emission Points VTGST-1 and VTGST-2):

Table 4.1.4(d)(3): VTG/Flaring Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	PPH Limit	Flaring	5.38	14.93
NO_x	PPH Limit	§60.18 Flare Design	0.84	3.69
$PM_{2.5}/PM_{10}$(1)	0.0083 gr/scf (pre flare)	Particulate Filter(2) §60.18 Flare Design	0.08	0.33
PM(3)	0.0083 gr/scf (pre flare)	Particulate Filter §60.18 Flare Design	0.08	0.33
SO_2(4)	PPH Limit	§60.18 Flare Design	0.01	0.03
VOCs	PPH Limit	§60.18 Flare Design	1.73	7.60
Total HAPs	n/a	n/a	0.02	0.10
CO_2e	TPY Limit	§60.18 Flare Design	1,863	7,504

(1) Includes condensables.
(2) The Particulate Filter is located prior to the flare and captures emissions generated by the VTG. It does not control the trace amount of particulate matter generated by the flare's combustion exhaust.
(3) Filterable only.
(4) SO_2 emissions are based on the natural gas combustion emission factor as a conservative estimate of possible emissions from the flare, No substantive amount of sulfur compounds are expected in the waste gas.

(4) The particulate matter filter controlling the offgases from each VTG (prior to combustion in the flare) shall not exceed an exit loading rate of 0.0083 gr/dscf (defined as BACT); and

e. **45CSR7**
The EAFs, LMFs, Casters, and VTGs shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

f. **45CSR10**
The Emission Points BHST-1 and BHST-2 are subject to the applicable limitations and standards under 45CSR10, including the requirements given below:

(1) No person shall cause, suffer, allow or permit the emission into the open air from any source operation an in-stack sulfur dioxide concentration exceeding 2,000 parts per million by volume from existing source operations, except as provided in subdivisions 4.1.a through 4.1.e.
[45CSR§10-4.1]

(2) Compliance with the allowable sulfur dioxide concentration limitations from manufacturing process source operation(s) set forth in this rule shall be based on a block three (3) hour averaging time.
[45CSR§10-4.2]

g. **40 CFR 60, Subpart AAa**
The EAFs shall comply with all applicable requirements of 40 CFR 60, Subpart AAa including, but not limited to, the following standards:

(1) **§ 60.272a Standard for particulate matter.**

(i) On and after the date of which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from an EAF or an AOD vessel any gases which:
[40 CFR§60.272a(a)]

(A) Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf);
[40 CFR§60.272a(a)(1)]

(B) Exit from a control device and exhibit 3 percent opacity or greater; and
[40 CFR§60.272a(a)(2)]

(C) Exit from a shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.
[40 CFR§60.272a(a)(3)]

(ii) On and after the date on which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from the dust-handling system any gases that exhibit 10 percent opacity or greater.
[40 CFR§60.272a(b)]

h. **40 CFR 63, Subpart YYYYY**
The EAFs shall comply with all applicable requirements of 40 CFR 63, Subpart YYYYY including, but not limited to, the following standards:

(1) **§63.10685 What are the requirements for the control of contaminants from scrap?**

(i) **Chlorinated plastics, lead, and free organic liquids.** For metallic scrap utilized in the EAF at your facility, you must comply with the requirements in either paragraph (a)(1) or (2) of this section. You may have certain scrap at your facility subject to paragraph (a)(1) of this section and other scrap subject to paragraph (a)(2) of this section provided the scrap remains segregated until charge make-up.
[40 CFR§63.10685(a)]

(A) **Pollution prevention plan**. For the production of steel other than leaded steel, you must prepare and implement a pollution prevention plan for metallic scrap selection and inspection to minimize the amount of chlorinated plastics, lead, and free organic liquids that is charged to the furnace. For the production of leaded steel, you must prepare and implement a pollution prevention plan for scrap selection and inspection to minimize the amount of chlorinated plastics and free organic liquids in the scrap that is charged to the furnace. You must submit the scrap pollution prevention plan to the permitting authority for approval. You must operate according to the plan as submitted during the review and approval process, operate according to the approved plan at all times after approval, and address any deficiency identified by the permitting authority within 60 days following disapproval of a plan. You may request approval to revise the plan and may operate according to the revised plan unless and until the revision is disapproved by the permitting authority. You must keep a copy of the plan onsite, and you must provide training on the plan's requirements to all plant personnel with materials acquisition or inspection duties. Each plan must include the information in paragraphs (a)(1)(i) through (iii) of this section:
[40 CFR§63.10685(a)(1)]

(1) Specifications that scrap materials must be depleted (to the extent practicable) of undrained used oil filters, chlorinated plastics, and free organic liquids at the time of charging to the furnace.
[40 CFR§63.10685(a)(1)(i)]

(2) A requirement in your scrap specifications for removal (to the extent practicable) of lead-containing components (such as batteries, battery cables, and wheel weights) from the scrap, except for scrap used to produce leaded steel.
[40 CFR§63.10685(a)(1)(ii)]

(3) Procedures for determining if the requirements and specifications in paragraph (a)(1) of this section are met (such as visual inspection or periodic audits of scrap providers) and procedures for taking corrective actions with vendors whose shipments are not within specifications.
[40 CFR§63.10685(a)(1)(iii)]

(4) The requirements of paragraph (a)(1) of this section do not apply to the routine recycling of baghouse bags or other internal process or maintenance materials in the furnace. These exempted materials must be identified in the pollution prevention plan.
[40 CFR§63.10685(a)(1)(iv)]

(B) **Restricted metallic scrap.** For the production of steel other than leaded steel, you must not charge to a furnace metallic scrap that contains scrap from motor vehicle bodies, engine blocks, oil filters, oily turnings, machine shop borings, transformers or capacitors containing polychlorinated biphenyls, lead-containing components, chlorinated plastics, or free organic liquids. For the production of leaded steel, you must not charge to the furnace metallic scrap that contains scrap from motor vehicle bodies, engine blocks, oil filters, oily turnings, machine shop borings, transformers or capacitors containing polychlorinated biphenyls, chlorinated plastics, or free organic liquids. This restriction does not apply to any post-consumer engine blocks, post-consumer oil filters, or oily turnings that are processed or cleaned to the extent practicable such that the materials do not include lead components, chlorinated plastics, or free organic liquids. This restriction does not apply to motor vehicle scrap that is charged to recover the chromium or nickel content if you meet the requirements in paragraph (b)(3) of this section.
[40 CFR§63.10685(a)(2)]

(ii) **Mercury requirements.** For scrap containing motor vehicle scrap, you must procure the scrap pursuant to one of the compliance options in paragraphs (b)(1), (2), or (3) of this section for each scrap provider, contract, or shipment. For scrap that does not contain motor vehicle scrap, you must procure the scrap pursuant to the requirements in paragraph (b)(4) of this section for each scrap provider, contract, or shipment. You may have one scrap provider, contract, or shipment subject to one compliance provision and others subject to another compliance provision.
[40 CFR§63.10685(b)]

(A) **Site-specific plan for mercury switches**. You must comply with the requirements in paragraphs (b)(1)(i) through (v) of this section.
[40 CFR§63.10685(b)(1)]

(1) You must include a requirement in your scrap specifications for removal of mercury switches from vehicle bodies used to make the scrap.
[40 CFR§63.10685(b)(1)(i)]

(2) You must prepare and operate according to a plan demonstrating how your facility will implement the scrap specification in paragraph (b)(1)(i) of this section for removal of mercury switches. You must submit the plan to the permitting authority for approval. You must operate according to this plan as submitted during the review and approval process, operate according to the

approved plan at all times after approval, and address any deficiency identified by the permitting authority within 60 days following disapproval of a plan. You may request approval to revise the plan and may operate according to the revised plan unless and until the revision is disapproved by the permitting authority. The permitting authority may change the approval status of the plan upon 90-days written notice based upon the semiannual compliance report or other information. The plan must include:
[40 CFR§63.10685(b)(1)(ii)]

(A) A means of communicating to scrap purchasers and scrap providers the need to obtain or provide motor vehicle scrap from which mercury switches have been removed and the need to ensure the proper management of the mercury switches removed from that scrap as required under the rules implementing subtitle C of the Resource Conservation and Recovery Act (RCRA) (40 CFR parts 261 through 265 and 268). The plan must include documentation of direction to appropriate staff to communicate to suppliers throughout the scrap supply chain the need to promote the removal of mercury switches from end-of-life vehicles. Upon the request of the permitting authority, you must provide examples of materials that are used for outreach to suppliers, such as letters, contract language, policies for purchasing agents, and scrap inspection protocols;
[40 CFR§63.10685(b)(1)(ii)(A)]

(B) Provisions for obtaining assurance from scrap providers that motor vehicle scrap provided to the facility meet the scrap specification;
[40 CFR§63.10685(b)(1)(ii)(B)]

(C) Provisions for periodic inspections or other means of corroboration to ensure that scrap providers and dismantlers are implementing appropriate steps to minimize the presence of mercury switches in motor vehicle scrap and that the mercury switches removed are being properly managed, including the minimum frequency such means of corroboration will be implemented; and
[40 CFR§63.10685(b)(1)(ii)(C)]

(D) Provisions for taking corrective actions (i.e., actions resulting in scrap providers removing a higher percentage of mercury switches or other mercury-containing components) if needed, based on the results of procedures implemented in paragraph (b)(1)(ii)(C) of this section).
[40 CFR§63.10685(b)(1)(ii)(D)]

(3) You must require each motor vehicle scrap provider to provide an estimate of the number of mercury switches removed from motor vehicle scrap sent to your facility during the previous year and the basis for the estimate. The permitting authority may request documentation or additional information at any time.
[40 CFR§63.10685(a)(1)(iii)]

(4) You must establish a goal for each scrap provider to remove at least 80 percent of the mercury switches. Although a site-specific plan approved under paragraph (b)(1) of this section may require only the removal of convenience light switch mechanisms, the permitting authority will credit all documented and verifiable mercury-containing components removed from motor vehicle

scrap (such as sensors in anti-locking brake systems, security systems, active ride control, and other applications) when evaluating progress towards the 80 percent goal.
[40 CFR§63.10685(a)(1)(iv)]

(5) For each scrap provider, you must submit semiannual progress reports to the permitting authority that provide the number of mercury switches removed or the weight of mercury recovered from the switches, the estimated number of vehicles processed, an estimate of the percent of mercury switches removed, and certification that the removed mercury switches were recycled at RCRA-permitted facilities or otherwise properly managed pursuant to RCRA subtitle C regulations referenced in paragraph (b)(1)(ii)(A) of this section. This information can be submitted in aggregated form and does not have to be submitted for each scrap provider, contract, or shipment. The permitting authority may change the approval status of a site-specific plan following 90-days notice based on the progress reports or other information.
[40 CFR§63.10685(a)(1)(v)]

(B) **Option for approved mercury programs.** You must certify in your notification of compliance status that you participate in and purchase motor vehicle scrap only from scrap providers who participate in a program for removal of mercury switches that has been approved by the Administrator based on the criteria in paragraphs (b)(2)(i) through (iii) of this section. If you purchase motor vehicle scrap from a broker, you must certify that all scrap received from that broker was obtained from other scrap providers who participate in a program for the removal of mercury switches that has been approved by the Administrator based on the criteria in paragraphs (b)(2)(i) through (iii) of this section. The National Vehicle Mercury Switch Recovery Program and the Vehicle Switch Recovery Program mandated by Maine State law are EPA-approved programs under paragraph (b)(2) of this section unless and until the Administrator disapproves the program (in part or in whole) under paragraph (b)(2)(iii) of this section.
[40 CFR§63.10685(b)(2)]

(1) The program includes outreach that informs the dismantlers of the need for removal of mercury switches and provides training and guidance for removing mercury switches;
[40 CFR§63.10685(b)(2)(i)]

(2) The program has a goal to remove at least 80 percent of mercury switches from the motor vehicle scrap the scrap provider processes. Although a program approved under paragraph (b)(2) of this section may require only the removal of convenience light switch mechanisms, the Administrator will credit all documented and verifiable mercury-containing components removed from motor vehicle scrap (such as sensors in anti-locking brake systems, security systems, active ride control, and other applications) when evaluating progress towards the 80 percent goal; and
[40 CFR§63.10685(b)(2)(ii)]

(3) The program sponsor agrees to submit progress reports to the Administrator no less frequently than once every year that provide the number of mercury switches removed or the weight of mercury recovered from the switches, the estimated number of vehicles processed, an estimate of the percent of mercury

switches recovered, and certification that the recovered mercury switches were recycled at facilities with permits as required under the rules implementing subtitle C of RCRA (40 CFR parts 261 through 265 and 268). The progress reports must be based on a database that includes data for each program participant; however, data may be aggregated at the State level for progress reports that will be publicly available. The Administrator may change the approval status of a program or portion of a program (e.g., at the State level) following 90-days notice based on the progress reports or on other information.
[40 CFR§63.10685(b)(2)(iii)]

(4) You must develop and maintain onsite a plan demonstrating the manner through which your facility is participating in the EPA-approved program.
[40 CFR§63.10685(b)(1)(iv)]

(A) The plan must include facility-specific implementation elements, corporate-wide policies, and/or efforts coordinated by a trade association as appropriate for each facility.
[40 CFR§63.10685(b)(2)(iv)(A)]

(B) You must provide in the plan documentation of direction to appropriate staff to communicate to suppliers throughout the scrap supply chain the need to promote the removal of mercury switches from end-of-life vehicles. Upon the request of the permitting authority, you must provide examples of materials that are used for outreach to suppliers, such as letters, contract language, policies for purchasing agents, and scrap inspection protocols.
[40 CFR§63.10685(b)(2)(iv)(B)]

(C) You must conduct periodic inspections or provide other means of corroboration to ensure that scrap providers are aware of the need for and are implementing appropriate steps to minimize the presence of mercury in scrap from end-of-life vehicles.
[40 CFR§63.10685(b)(2)(iv)(C)]

(2) **§63.10686 What are the requirements for electric arc furnaces and argon-oxygen decarburization vessels?**

(i) You must install, operate, and maintain a capture system that collects the emissions from each EAF (including charging, melting, and tapping operations) and argon-oxygen decarburization (AOD) vessel and conveys the collected emissions to a control device for the removal of particulate matter (PM).
[40 CFR§63.10686(a)]

(ii) Except as provided in paragraph (c) of this section, you must not discharge or cause the discharge into the atmosphere from an EAF or AOD vessel any gases which:
[40 CFR§63.10686(b)]

(A) Exit from a control device and contain in excess of 0.0052 grains of PM per dry standard cubic foot (gr/dscf); and
[40 CFR§63.10686(b)(1)]

(B) Exit from a melt shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.
[40 CFR§63.10686(b)(2)]

4.1.5. **Natural Gas Combustion Units**

The natural gas-fired units identified in Appendix A: Table A-3 shall operate according to the following requirements:

a. Each unit shall be fired by PNG, shall not exceed the MDHI as given under Table 1.0 of this permit, shall not exceed the maximum emission limits for the specified process heaters given under Appendix A: Table A-3, and shall comply with the BACT requirements given in the following table;

Table 4.1.5(a): Natural Gas Combustion BACT

Pollutant	Emission Units	BACT Limit	BACT Technology(1)
CO	All Units in Table A-3	0.082 lb/mmBtu	Good Combustion Practices
NO_x	LD, TD LPHTR1 - 7 TPHTR1 - 2 SENPHTR1 - 2 BOXANN1 - 22 SLAG-CUT ASP	0.098 lb/mmBtu	LNB, Good Combustion Practices
	GALVFN1/2	0.05 lb/mmBtu	
	TF1	0.07 lb/mmBtu	
$PM_{2.5}/PM_{10(2)}$	All Units in Table A-3	0.00745 lb/mmBtu	Use of PNG, Good Combustion Practices
PM(3)	All Units in Table A-3	0.00186 lb/mmBtu	
SO_2	All Units in Table A-3	0.00059 lb/mmBtu	Use of PNG
VOCs	All Units in Table A-3	0.0054 lb/mmBtu	Good Combustion Practices
CO_2e	All Units in Table A-3	TPY Limits in Table A-3	Use of PNG, Good Combustion Practices

(1) LNB = Low-NO_x Burning Technology. For the purposes of this permit, "Good Combustion Practices" are defined to include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control emissions through proper combustion tuning, temperature, and air/fuel mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes Condensables.
(3) Filterable Only.

b. As the annual emission limits of all natural gas-fired combustion units listed under Table A-3 are based on operating at MDHI for 8,760 hours of operation, there are no annual limit on hours of operation or natural gas combusted on an annual basis for these units.

c. **45CSR2**
The Water Bath Vaporizer (ASP) is subject to the applicable limitations and standards under 45CSR2, including the requirements as given below under (1) through (3).

(1) The permittee shall not cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from the fuel burning units which is greater than ten (10) percent opacity based on a six minute block average.
[45CSR§2-3.1]

(2) The permittee shall not cause, suffer, allow or permit the discharge of particulate matter into the open air from the fuel burning units, measured in terms of pounds per hour in excess of the amount determined as follows:

(i) The product of 0.09 and the total design heat input for the fuel burning units in million British Thermal Units (B.T.U.'s) per hour, provided however that no more than twelve hundred (1200) pounds per hour of particulate matter shall be discharged into the open air.
[45CSR§2-4.1a]

(3) The visible emission standards set forth in section 3 of 45CSR2 shall apply at all times except in periods of start-ups, shutdowns and malfunctions. Where the Director believes that start-ups and shutdowns are excessive in duration and/or frequency, the Director may require an owner or operator to provide a written report demonstrating that such frequent start-ups and shutdowns are necessary. **[45CSR§2-9.1]**

d. **45CSR10**
The Water Bath Vaporizer (ASP) is subject to the applicable limitations and standards under 45CSR10, including the requirement as given below:

(1) The permittee shall not cause, suffer, allow or permit the discharge of sulfur dioxide into the open air from the fuel burning units measured in terms of pounds per hour, in excess of the product of 3.2 and the total design heat of the boilers in million BTU's per hour.
[45CSR§10-3.1]

(2) No person shall cause, suffer, allow or permit the combustion of any refinery process gas stream or any other process gas stream that contains hydrogen sulfide in a concentration greater than 50 grains per 100 cubic feet of gas except in the case of a person operating in compliance with an emission control and mitigation plan approved by the Director and U. S. EPA. In certain cases very small units may be considered exempt from this requirement if, in the opinion of the Director, compliance would be economically unreasonable and if the contribution of the unit to the surrounding air quality could be considered negligible.
[45CSR§10-5.1]

e. **40 CFR 60, Subpart Dc**
The Water Bath Vaporizer (ASP) is subject to the applicable record-keeping and reporting requirements given under 40 CFR §60.48c.

4.1.6. <u>Hot Mill and Cold Mill</u>

The Hot Mill and the Cold Mill shall operate according to the following requirements:

a. The permittee shall not exceed the maximum particulate matter emission limits for the Hot Mill and Cold Mill stack/vent emission points as given under Appendix A: Table A -4;

b. **Pickling and Galvanizing Line**
The Pickling Line (PKL-1) and Galvanizing Line shall be operated according to the following requirements:

(1) The pickling line tanks shall be covered and vented to the appropriate Pickling Line Scrubber (PKL1-SCR);

(2) The outlet concentration of HCl from the Pickling Line Scrubber Stack (PLST-1) shall not exceed a BACT concentration of 6 parts per million by volume (ppm_v);

(3) Mass emissions of HCL from Pickling Line 1 Scrubber Stack (PLST-1) shall not exceed 0.25 lbs/hr and 1.09 tons/yr (as based on a maximum flow rate of 7,185 dscfm);

(4) Spillage of acid, caustic, or other process materials shall be cleaned up as soon as practical and contained to minimize fugitive emissions;

(5) During non-operational periods, either a fume suppressant shall be used in the pickling bath, or the pickling bath shall be covered to reduce evaporative losses;

(6) Hydrogen gas cleaning shall be used to prepare the steel for galvanizing to prevent fumes from the zinc pot. The use of fluxing agents in the Galvanizing Line is not authorized; and

(7) **45CSR7 - Acid Mist Source**
The emissions of HCl from the Pickling Lines shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(i) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **45CSR7 - Particulate Matter Sources**
The Hot Mill and Cold Mill particulate matter sources, excluding those that meet the exemption requirements given under 45CSR§7-10.5 and those that particulate matter is generated solely from the combustion of natural gas, shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

4.1.7. **Storage Tanks**

Use of the fixed roof and open storage tanks shall be in accordance with the following:

a. Tank capacity shall be limited as specified under Table 1.0 of this permit;

b. The aggregate emissions of VOCs from all fixed roof storage tanks (T1 - T9, T24) shall not exceed a BACT Limit of 0.46 tons/year. The aggregate emissions of VOCs from all open Cold Degreaser Tanks (T25 - T29) shall not exceed a BACT Limit of 1.46 tons/year;

c. The aggregate emissions of HCl from all HCL Storage Tanks (T10 - T15) and the Spent Pickle Liquor Tanks (T16 - T23) shall not exceed a limit of 0.07 tons/year;

d. Material stored shall be as specified and the aggregate annual storage tank throughputs shall not exceed those given in the following table:

Table 4.1.7(d): Fixed Roof Storage Tanks Annual Throughput Limits

Tank ID	Material Stored	Gallons(1)
T1 - T6	Diesel	2,190,000
T7	Gasoline	120,000(2)
T8 -T9	Hydraulic Oil	730,000
T10 - T15	HCl	7,200,000
T16 - T23	Spent Pickle Liquor	7,200,000
T24	Used Oil	365,000

(1) This number represents the aggregate limit for all specified storage tanks.
(2) The permittee has chosen to comply with the 40 CFR 63, Subpart CCCCCC requirements for facilities with less than monthly throughput of less than 10,000 gallons of gasoline.

e. For all fixed roof storage tanks with the potential to emit VOCs (does not include T10 through T23 or T25 - T29), the permittee shall, for purposes **of** BACT, meet the following requirements:

(1) Utilize good operating practices in the operation of the storage tanks. Good operating practices shall mean maintaining and operating the storage tanks according to manufacturers

recommendations and regularly inspecting the tanks for areas of disrepair or failure that would allow the escape of pollutant-containing vapors.

(2) Maintain a white or aluminum color on all storage tank surfaces that are exposed to the sun to mitigate heat absorption of the tanks; and

(3) Utilize submerged fill on all tanks.

f. Operation of the Cold Degreaser Tanks shall be in accordance with the following:

(1) The cover of each degreaser tank shall be closed if not handling parts in the cleaner;

(2) The operation of a cold cleaner using a solvent with a vapor pressure that exceeds one (1.0) mmHg (0.019 psi) measured at 20° C (68° F) is prohibited; and

(3) Work area fans shall be positioned so that air is not directed across the opening of the tanks so as to facilitate volatization.

g. **40 CFR 63, Subpart CCCCCC**
The “gasoline dispensing facility” located at facility, as defined under §63.11132, shall comply with all applicable requirements of 40 CFR 63, Subpart CCCCCC including, but not limited to, the following standards:

(1) **§ 63.11116 Requirements for facilities with monthly throughput of less than 10,000 gallons of gasoline.**

(i) You must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:
[40 CFR§63.11116(a)]

(A) Minimize gasoline spills;
[40 CFR§63.11116(a)(1)]

(B) Clean up spills as expeditiously as practicable;
[40 CFR§63.11116(a)(2)]

(C) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use;
[40 CFR§63.11116(a)(3)]

(D) Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.
[40 CFR§63.11116(a)(4)]

4.1.8. Cooling Towers

The Cooling Towers shall operate in accordance with the following requirements:

a. The Cooling Towers shall use the control device specified under Section 1.0 at all times in operation, shall not exceed the specified maximum design and operational limits, and shall not exceed the emission limits in the following table:

Table 4.1.8(a): Cooling Tower Specifications

ID No.	Max Design Capacity Water Circulation Pump (gal/min)	Total Dissolved Solids (ppm)	Mist Eliminator Max Drift Rate (%)(1)	$PM_{2.5}/PM_{10}/PM$	
				PPH	TPY
CT1	52,000	1,500	0.0005	0.20	0.86
CT2	5,900	1,500	0.0005	0.02	0.10
CT3	8,500	1,500	0.0005	0.03	0.14
CT4	22,750	1,500	0.0005	0.09	0.37
CT5	90,000	1,500	0.0005	0.34	1.48
CT6	8,000	1,500	0.0005	0.03	0.13
CT7	3,000	1,500	0.0005	0.01	0.05
CT8	14,000	1,500	0.0005	0.05	0.23

(1) As based on manufacturer or vendor guarantee or applicable product literature.

b. BACT for all Cooling Towers listed under Table 4.1.8(a) is the PPH limit as based on the use of a High Efficiency Drift Eliminator with a maximum drift rate of 0.0005%.

4.1.9. **Emergency Engines**

The Emergency Engines, identified as EMGEN1 through EMGEN6, shall meet the following requirements:

a. Each unit shall not exceed 2,000 horsepower, shall be fired only with PNG, and shall not operate in excess of 100 hours per year nor exceed one (1) hour in any 24-hour period during times not defined as emergencies. Only one (1) engine shall be operated at a time during times not defined as emergencies;

b. The maximum emissions from each Emergency Engine shall not exceed the limits given in the following table:

Table 4.1.9(b): Emergency Engine Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	2.0 g/hp-hr	Subpart JJJJ Certification Annual Hrs of Op(3) Limit	17.64	0.88
NO_x	4.0 g/hp-hr	Subpart JJJJ Certification Annual Hrs of Op(3) Limit	8.82	0.44
$PM_{2.5(1)}$	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
$PM_{10(1)}$	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
PM(2)	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
SO_2	PPH	Annual Hrs of Op(3) Limit	8.23e-03	4.12e-04
VOCs	1.0 g/hp-hr	Subpart JJJJ Certification, Annual Hrs of Op(3) Limit	4.41	0.22
CO_2e	TPY	Annual Hrs of Op(3) Limit	1,639	82

(1) Includes Condensables.

(2) Filterable Only.
(3) Non-emergency hours of operation.

c. **40 CFR 60, Subpart JJJJ**
Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE. For owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 100 HP (except gasoline and rich burn engines that use LPG) manufactured prior to January 1, 2011 that were certified to the certification emission standards in 40 CFR part 1048 applicable to engines that are not severe duty engines, if such stationary SI ICE was certified to a carbon monoxide (CO) standard above the standard in Table 1 to this subpart, then the owners and operators may meet the CO certification (not field testing) standard for which the engine was certified.
[40 CFR §60.4233(e)]

Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards					
			g/HP-hr			ppmvd at 15% O_2		
			NO_x	CO	VOC(d)	NO_x	CO	VOC(d)
Emergency	HP≥130	1/1/2009	2.0	4.0	1.0	160	540	86

(a) Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O_2.
(d) For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.
[40 CFR60, Subpart JJJJ, Table 1]

d. **40 CFR 63, Subpart ZZZZ**
An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.
[40 CFR §63.6590(c)]

(1) A new or reconstructed stationary RICE located at an area source;
[40 CFR §63.6590(c)(1)]

4.1.10. Control Devices

a. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11.]

b. **Fabric Filters/Bin Vents/Baghouses**
Use of Fabric Filters/Bin Vents/Baghouses shall be in accordance with the following requirements:

(1) The permittee shall continuously monitor the differential pressure drop of baghouses EAF1-BH, EAF2-BH, and RM-BH so as to ensure proper continuous operation of the baghouses according to the following requirements:

(i) The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The range of acceptable pressure drops shall be based on the range recommended by the baghouse manufacturer or as defined during the most recent stack test; and

(ii) The frequency of data recording shall be, at a minimum, once every 15 minutes.

(2) Baghouses EAF1-BH and EAF2-BH shall meet all applicable requirements given under 40 CFR 60, Subpart AAa; and

(3) The filter material of all Fabric Filters/Bin Vents/Baghouses shall be replaced on a schedule as determined by the manufacturer.

c. **Melt Shop Collection Systems**
All hooding, duct, and collection systems shall be effective in capturing emissions from the intended equipment and in preventing excess fugitive emissions from the building. The hooding and duct systems shall be maintained free of holes, cracks, and other conditions that would substantially reduce the collection efficiency of the emission capture system.

d. **Wet Scrubbers/Mist Eliminators**
Use of Wet Scrubbers/Mist Eliminators shall be in accordance with the following requirements:

(1) Each scrubber/mist eliminator shall be designed, operated, and maintained according to good engineering practices or manufacturing recommendations so as to achieve, at a minimum, compliance with the particulate matter emission limits given under Appendix A, Table A-4 and, for scrubber PKL-1, the HCl emission limits given under 4.1.6(b)(2) and (3);

(2) The permittee shall continuously monitor the differential pressure drop of scrubber TCM-ME so as to ensure proper continuous operation of the scrubber according to the following requirements:

(i) The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The range of acceptable pressure drops shall be based on the range recommended by the scrubber manufacturer or as defined during the most recent stack test; and

(ii) The frequency of data recording shall be, at a minimum, once every 15 minutes.

(3). The liquor flow rate to the scrubbers/mist eliminators shall be set at a rate as determined by manufacturer's recommendation or site-specific testing so as achieve compliance with the associated emission limit. Any media or entrapment lattice used in the mist elimination process shall be maintained/repaired/replaced according to manufacturer's recommendations.

e. **<u>Flares</u>**
The flares, identified as VTG-Flare 1 and VTG-Flare 2, shall operate according to the following requirements:

(1) Each flare have a MDHI that does not exceed 12.37 mmBtu/hr, shall be air-assisted, and shall be designed and operated according to the requirements specified in 40 CFR 60, Section §60.18;

(2) Each flare shall be designed, operated, and maintained according to good engineering practices or manufacturing recommendations so as to achieve, at a minimum, a carbon monoxide and hydrocarbon DRE of 98.0%;

(3) Each flare shall be operated with a flame present at all times the VTGs are in operation, as determined by the methods specified in 4.2.10(b);

(4) The permittee shall operate and maintain each flare according to the manufacturer's specifications for operating and maintenance requirements to maintain the minimum guaranteed control efficiency listed under 4.1.10(e)(2); and

(5) **45CSR6**
Each flare is subject to 45CSR6. The requirements of 45CSR6 include but are not limited to the following:

(i) The permittee shall not cause, suffer, allow or permit particulate matter to be discharged from the flares into the open air in excess of the quantity determined by use of the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

[45CSR§6-4.1]

(ii) No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is twenty (20%) percent opacity or greater.
[45CSR6 §4.3]

(iii) The provisions of subsection 4.3 shall not apply to smoke which is less than forty percent (40%) opacity, for a period or periods aggregating no more than eight (8) minutes per start-up, or six (6) minutes in any sixty (60)-minute period for stoking operations.
[45CSR6 §4.4]

(iv) No person shall cause or allow the emission of particles of unburned or partially burned refuse or ash from any incinerator which are large enough to be individually distinguished in the open air.
[45CSR6 §4.5]

(v) Incinerators, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.
[45CSR6 §4.6]

(vi) Due to unavoidable malfunction of equipment, emissions exceeding those provided for in this rule may be permitted by the Director for periods not to exceed five (5) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.
[45CSR6 §8.2]

4.1.11 **Additional GHG BACT Requirements**
In addition to the GHG BACT requirements specified elsewhere in this permit, the permittee shall meet the following requirements:

a. Develop and implement training programs and good housekeeping programs help to decrease energy consumption throughout the plant;

b. Develop and implement energy monitoring and management systems help provide for optimal energy recovery and distribution between processes at the plant; and

c. Across all plant operations, utilize where possible energy efficient devices (e.g., motors, drives, pumps, fans, compressors, controls);

d. Unless approved by the Director to remove, modify, or replace a specific control strategy, the permittee shall implement the GHG Mitigation and Efficiency strategies listed under Table 4-66 of the permit application for the specifically listed emission units;

e. The permittee shall, within 60 days of plant startup, submit to the Director a GHG BACT Implementation Plan that describes the method of implementation of the requirements given under (a) through (d) above. The plan will include specifics on actions taken to meet the requirements including training methods, use of specific energy efficient devices, O&M procedures, etc. This plan will thereafter be maintained on-site and updated as needed.

4.1.12. **Applicable Rules**
The permittee shall meet all applicable requirements, including those not specified above, as given under 45CSR2, 45CSR6, 45CSR7, 45CSR10, 40 CFR 60, Subparts Dc, AAa, and JJJJ, and 40 CFR 63, Subparts ZZZZ, YYYYY, and CCCCCC. Any final revisions made to the above rules will, where applicable, supercede those sections specifically cited in this permit.

4.1.13. **Stack Parameters**
The emission point stack parameters (Inner Diameter, Emission Point Elevation, and UTM Coordinates) shall be in accordance with the specifications as given on the Emission Points Data Sheet (Attachment J) in the most updated version of Permit Application R14-0039. If needed, and granted prior approval by the Director, the permittee may provide information to show that as-built variations in the stack parameters will not result in any substantive changes to the results of the air impacts analysis required under §45-14-9 and §45-14-10.

4.2. Monitoring, Compliance Demonstration, Recording and Reporting Requirements

4.2.1. **Maximum Design Capacity Compliance**
Compliance with the maximum design capacity limitations as given under Table 1.0 and Section 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data,

or equivalent documentation that shows that the specific emission unit(s) or processing line in question is limited by design to a throughput or production rate that does not exceed the specified value under Table 1.0 and Section 4.1.

4.2.2. **Maximum Design Heat Input Compliance**
Compliance with the various combustion unit MDHI limitations as given under Table 1.0 and Section 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) in question is limited by design to an MDHI that does not exceed the specified value under Table 1.0 and Section 4.1.

4.2.3. **Quantities Monitored/Recorded**
To determine continuous compliance with maximum production, throughputs, and other limits given in Section 4.1 of the permit, the permittee shall monitor and record the following:

Table 4.2.3: Facility Quantities Monitored/Recorded

Quantity Monitored/Recorded	Emission Unit(s)	Permit Citation	Units	Period
Steel Production	EAF/LMFs	4.1.2	Tons	Monthly, 12-Month Rolling Total
Scrap Steel DRI Carbon Alloys Lime Slag	Various	4.1.3(a)	Tons	Monthly, 12-Month Rolling Total
Storage Tank Throughputs				
Diesel	T1-T6	4.1.7(d)	Gallons	Monthly, 12-Month Rolling Total
Gasoline	T7			
Hydraulic Oil	T8-T9			
HCl	T10-T15			
Spent Pickle Liquor	T16-T23			
Used Oil	T24			
Fuel Usage(1)	ASP	4.2.5	mmscf	Monthly
Non-Emergency Hours of Operation	EMGEN1 - 6	4.1.9(a)	Hours	Monthly, 12-Month Rolling Total

(1) Pursuant to 45CSR§2A-7.1(a)(1).

4.2.4. **EAFs/LMFs CEMS (BHST-1, BHST-2)**
Within 60 days after achieving the maximum design steel production rate at which the facility will be operated, but not later than 180 days after initial startup, the permittee shall, to show continuous compliance with the CO, NO_x, and SO_2 emission limits as given under Table 4.1.4(a), install and operate a Continuous Emissions Monitoring System (CEMS) for monitoring the emissions of CO, NO_x, and SO_2 from BHST-1 and BHST-2. The CEMS shall be installed, maintained and operated according to the manufacturers design, specifications, and recommendations, of which a protocol shall be developed by the permittee and approved by the Director prior to operation. The CEMS shall meet

the applicable performance specifications required by 40 Part 60, Appendix B, the applicable quality assurance procedures required in 40 CFR Part 60, Appendix F, and the requirements of 40 CFR 60.13. In lieu of the requirements of 40 CFR Part 60, Appendix F, 5.1.1, 5.1.3, and 5.1.4, the permittee may conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) on the CEMS at least once every three (3) years. The permittee shall conduct Cylinder Gas Audits (CGA) each calendar quarter during which a RAA or a RATA is not performed. Data recorded by the CEMS shall be kept for a period not less than three (3) years and shall be made available to the Director or his/her representative upon request.

4.2.5. **45CSR2**
The Water Bath Vaporizer (ASP) is subject to the applicable record-keeping requirements under 45CSR2A, including the requirements as given below under (a).

a. The owner or operator of a fuel burning unit(s) shall maintain records of the operating schedule, and the quality and quantity of fuel burned in each fuel burning unit as specified in paragraphs 7.1.a.1 through 7.1.a.6, as applicable.
[45CSR§2A-7.1(a)]

(1) For fuel burning unit(s) which burn only pipeline quality natural gas, such records shall include, but not be limited to, the date and time of start-up and shutdown, and the quantity of fuel consumed on a monthly basis.
[45CSR§2A-7.1(a)(1)]

4.2.6. **40 CFR 60, Subpart AAa**
The EAFs shall comply with all applicable Monitoring, Compliance Demonstration, Recording and Reporting Requirements of 40 CFR 60, Subpart AAa including, but not limited to, the following requirements:

a. **§ 60.273a Emissions Monitoring.**

(1) Except as provided under paragraphs (b) and (c) of this section, a continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) shall be installed, calibrated, maintained, and operated by the owner or operator subject to the provisions of this subpart.
[40 CFR§60.273a(a)]

(2) No continuous monitoring system shall be required on any control device serving the dust-handling system.
[40 CFR§60.273a(b)]

(3) A continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) is not required on any modular, multi-stack, negative-pressure or positive-pressure fabric filter if observations of the opacity of the visible emissions from the control device are performed by a certified visible emission observer; or on any single-stack fabric filter if visible emissions from the control device are performed by a certified visible emission observer and the owner installs and continuously operates a bag leak detection system according to paragraph (e) of this section. Visible emission observations shall be conducted at least once per day for at least three 6-minute periods when the furnace is operating in the melting and refining period. All visible emissions observations shall be conducted in accordance with Method 9. If visible emissions occur from more than one point, the opacity shall be recorded for any points where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one

incident of the visible emission, only one set of three 6-minute observations will be required. In that case, the Method 9 observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident. Records shall be maintained of any 6-minute average that is in excess of the emission limit specified in § 60.272a(a).
[40 CFR§60.273a(c)]

(4) A furnace static pressure monitoring device is not required on any EAF equipped with a DEC system if observations of shop opacity are performed by a certified visible emission observer as follows: Shop opacity observations shall be conducted at least once per day when the furnace is operating in the meltdown and refining period. Shop opacity shall be determined as the arithmetic average of 24 consecutive 15-second opacity observations of emissions from the shop taken in accordance with Method 9. Shop opacity shall be recorded for any point(s) where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of visible emissions, only one observation of shop opacity will be required. In this case, the shop opacity observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident.
[40 CFR§60.273a(d)]

(5) A bag leak detection system must be installed and continuously operated on all single-stack fabric filters if the owner or operator elects not to install and operate a continuous opacity monitoring system as provided for under paragraph (c) of this section. In addition, the owner or operator shall meet the visible emissions observation requirements in paragraph (c) of this section. The bag leak detection system must meet the specifications and requirements of [*40 CFR§60.273a(e)(1) through (8)*].
[40 CFR§60.273a(e)]

(6) For each bag leak detection system installed according to paragraph (e) of this section, the owner or operator shall initiate procedures to determine the cause of all alarms within 1 hour of an alarm. Except as provided for under paragraph (g) of this section, the cause of the alarm must be alleviated within 3 hours of the time the alarm occurred by taking whatever corrective action(s) are necessary. Corrective actions may include, but are not limited to [*the requirements given under 40 CFR§60.273a(f)(1) through (6)*].
[40 CFR§60.273a(f)]

(7) In approving the site-specific monitoring plan required in paragraph (e)(4) of this section, the Administrator or delegated authority may allow owners or operators more than 3 hours to alleviate specific conditions that cause an alarm if the owner or operator identifies the condition that could lead to an alarm in the monitoring plan, adequately explains why it is not feasible to alleviate the condition within 3 hours of the time the alarm occurred, and demonstrates that the requested additional time will ensure alleviation of the condition as expeditiously as practicable.
[40 CFR§60.273a(g)]

b. **§ 60.274a Monitoring of operations.**

(1) The owner or operator subject to the provisions of this subpart shall maintain records of the following information:
[40 CFR§60.274a(a)]

(A) All data obtained under paragraph (b) of this section; and
[40 CFR§60.274a(a)(1)]

(B) All monthly operational status inspections performed under paragraph © of this section. **[40 CFR§60.274a(a)(2)]**

(2) Except as provided under paragraph (e) of this section, the owner or operator subject to the provisions of this subpart shall check and record on a once-per-shift basis the furnace static pressure (if DEC system is in use, and a furnace static pressure gauge is installed according to paragraph (f) of this section) and either: check and record the control system fan motor amperes and damper position on a once-per-shift basis; install, calibrate, and maintain a monitoring device that continuously records the volumetric fl ow rate through each separately ducted hood; or install, calibrate, and maintain a monitoring device that continuously records the volumetric fl ow rate at the control device inlet and check and record damper positions on a once-per-shift basis. The monitoring device(s) may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring device(s) shall have an accuracy of ±10 percent over its normal operating range and shall be calibrated according to the manufacturer's instructions. The Administrator may require the owner or operator to demonstrate the accuracy of the monitoring device(s)relative to Methods 1 and 2 of appendix A of this part.
[40 CFR§60.274a(b)]

(3) When the owner or operator of an affected facility is required to demonstrate compliance with the standards under §60.272a(a)(3) and at any other time that the Administrator may require (under section 114 of the CAA, as amended) either: the control system fan motor amperes and all damper positions, the volumetric flow rate through each separately ducted hood, or the volumetric flow rate at the control device inlet and all damper positions shall be determined during all periods in which a hood is operated for the purpose of capturing emissions from the affected facility subject to paragraph (b) of this section. The owner or operator may petition the Administrator for reestablishment of these parameters whenever the owner or operator can demonstrate to the Administrator's satisfaction that the affected facility operating conditions upon which the parameters were previously established are no longer applicable. The values of these parameters as determined during the most recent demonstration of compliance shall be maintained at the appropriate level for each applicable period. Operation at other than baseline values may be subject to the requirements of §60.276a(c).
[40 CFR§60.274a(c)]

4.2.7. **Cooling Tower**
For the purposes of demonstrating initial and continuing compliance with the operational limits set forth in Table 4.1.8(a), the permittee shall, for all cooling towers, within 180 days of startup, take an initial grab sample of the cooling tower circulating water and analyze such to determine the total solids content of the cooling tower circulating water. Thereafter, the permittee shall test for solids content on an annual basis (with no more than 14 months between tests).

4.2.8. **RICE Oxidation Catalysts**
If applicable, the permittee shall meet the following requirements for use of Oxidation Catalysts on the Emergency Engines:

a. The permittee shall regularly inspect, properly maintain and/or replace catalytic reduction devices to ensure functional and effective operation of each engine's physical and operational design. The permittee shall ensure proper operation, maintenance and performance of catalytic reduction devices by:

(1) Maintaining proper operation of the automatic air/fuel ratio controller or automatic feedback controller; and

(2) Following the catalyst manufacturer emissions related operating and maintenance recommendations, or develop, implement, or follow a site-specific maintenance plan.

b. To demonstrate compliance with section 4.2.8, the permittee shall maintain records of the maintenance performed on each RICE and/or generator and shall maintain a copy of the site specific maintenance plan or manufacturer maintenance plan.

4.2.9. **Baghouse/Fabric Filter Compliance Demonstrations**
Unless specifically requested by the Secretary under 4.3.1. or listed in Table 4.3.2., compliance with all baghouse and fabric filter mass emission limits that have BACT outlet grain loading limits shall be based on vendor information or vendor guarantees that show the maximum outlet grain loading emissions from the baghouse/fabric filter is in compliance with the specific limit.

4.2.10. **Flares**
The permittee shall meet the following Monitoring, Compliance Demonstration, Recording and Reporting Requirements for the VTG Flare 1 and VTG Flare 2:

a. To demonstrate compliance with 4.1.10(e)(2), the permittee shall maintain records of all substantive actions undertaken in compliance with the manufacturer's specifications for operation and maintenance to maintain the minimum control efficiency;

b. To demonstrate compliance with the pilot flame requirements of 4.1.10(e)(3), the presence of a pilot flame shall be continuously monitored using a thermocouple or any other equivalent device to detect the presence of a flame when emissions are vented to it. The pilot shall be equipped such that it sounds an alarm, or initiates notification via remote alarm to the control room, when the pilot light is out;

c. For any absence of pilot flame, or other indication of smoking or improper equipment operation, the permittee must ensure the equipment is returned to proper operation as soon as practicable after the event occurs. At a minimum, the permittee must: (1) Check the air vent for obstruction. If an obstruction is observed, you must clear the obstruction as soon as practicable. (2) Check for liquid reaching the flare;

d. The permittee shall maintain records of the times and duration of all periods when the pilot flame was not present and vapors were vented to the device. The permittee shall maintain records of any inspections made pursuant to 4.2.10; and

e. Any time the flare is not operating when emissions are vented to it, shall be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days of the discovery.

4.2.11. **Control Device Monitoring**
The permittee shall install, maintain, and operate instrumentation to continuously monitor and record the control device parameters as required under 4.1.10 of this permit including, at a minimum, the following:

Table 4.2.11: Control Device Parameters Monitored/Recorded(1)

Control Device Description	Control Device ID	Parameter(s)
EAF Baghouses	EAF1-BH EAF2-BH	Pressure Drop
Rolling Mill Baghouse	RM-BH	Pressure Drop
Pickling Line Scrubber	PKL1-SCR	Liquid Flow Rate
Tandem Cold Mill Mist Eliminator	TCM-ME	Pressure Drop

(1) Does not include any monitoring as required by 40 CFR 60, Subpart AAa or 40 CFR 63, Subpart YYYYY.

4.2.12. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

a. The opacity limitations and the associated compliance determinations are given in the following table for sources of particulate matter:

Table 4.2.12(a): Visible Emissions Compliance Demonstrations

Emission Point(s)	Opacity Limit (%)(1)	Rule Citation	Compliance Demonstration
Melt Shop			
BHST-1/2	3%	40 CFR§60.272a(a)(2)	Section 4.2.12(b)
MSFUG CASTFUG	6%	40 CFR§60.272a(a)(3) 40 CFR§63.10686(b)(2)	
EAFVF1/2	10%	40 CFR§60.272a(b)	
45CSR2 Applicable Emission Points			
ASP-1	10%	40CSR§2-3.1	Section 4.2.12(c)(2)(i)
Flares (45CSR6 Applicability)			
VTDST1/2	20%(2)	45CSR§6-4.3 and 4.4	Section 4.2.12(c)(2)(ii)
45CSR7 Applicable Emission Points (Non-Material Handling)			
RM-BH TCMST	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iii)

Emission Point(s)	Opacity Limit (%)(1)	Rule Citation	Compliance Demonstration
PLST-1 PKLSB STM-BH SPMST1/2 CGL1-ST1/2 CGL2-ST1/2 SLAG-CUT-BH	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
45CSR7 Applicable Emission Points (Material Handling Stack/Vent)			
LCB-ST DRI-DOCK-ST DRIVF1/2/3/4 DRIBF1/2/3/4 DRI-DB1-BH DRI-DB2-BH DRI-CONV-BH LIME-DUMP-ST CARBON-DUMP-ST ALLOY-HANDLE-ST	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
45CSR7 Applicable Emission Points (Material Handling Non-Stack/Vent)			
DRI-DOCK-FUG BULK-DRI-1/2 DRI-EMG-1/2 SCRAP-DOCK-FUG SCRAP-RAIL-FUG SCRAP-BULK1 - 39 SLGSKP1 -3 SCRPSKP1 -4 LIME-DUMP-FUG CARBON-DUMP-FUG ALLOY-HANDLE-FUG Haulroads	20%(3)	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
Cooling Towers			
CT1 - 8	20%(3)	45CSR§7-3.1 and 3.2	Not Required(4)
Other Natural Gas Combustion			
TFST-1/2 GALVFN1-ST GALVFN2-ST GALVFUG SLAG-CUT-NG EMGEN1 - 6	None(5)	n/a	n/a

(1) Where multiple opacity limits apply, the more restrictive is listed.
(2) Shall not apply to smoke which is less than forty (40%) percent opacity, for a period or periods aggregating no more than eight (8) minutes per start-up.
(3) Shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.

(4) Due to the nature of the particulate matter emissions from the Cooling Towers (entrained in droplets), a compliance demonstration for the Cooling Towers is not practical.
(5) Natural gas combustion does not meet the definition of a "source operation" pursuant to 45CSR§7-2.38.

b. **40 CFR 60, Subpart AAa/40 CFR 63, Subpart YYYYY**
For Emission Points BHST-1/2, MSFUG, and CASTFUG, the permittee shall show compliance with the opacity requirements of 40 CFR 60, Subpart AAa, §60.272a(a) and 40 CFR 63, Subpart YYYYY, §63.10686, pursuant to the applicable requirements of Subpart AAa and Subpart YYYYY, respectively. Compliance with the opacity requirements of Subpart AAa shall show compliance with the opacity requirements of 45CSR7;

c. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

(1) The visible emission check shall determine the presence or absence of visible emissions. The observations shall be conducted according to Section 11 of EPA Method 22. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 which may include online web-based training as supplied by a Method 9 training company; and

(2) Specific emission points shall meet the following visible emissions monitoring requirements:

(i) **45CSR2**
Upon request by the Secretary, compliance with the visible emission requirements of Sections 3.1 and 3.2 of 45CSR2 as applicable to Emission Point ASP-1 shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 or by using measurements from continuous opacity monitoring systems approved by the Secretary. The Secretary may require the installation, calibration, maintenance and operation of continuous opacity monitoring systems and may establish policies for the evaluation of continuous opacity monitoring results and the determination of compliance with the visible emission requirements of 3.1 of 45CSR2;

(ii) **45CSR6**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to Emission Points VTDST1/2 shall be in accordance with the following: Visible emission checks shall be conducted at least once every seven (7) calendar days and these checks shall be performed for a sufficient time interval, but no less than a 6-minute interval, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions. If one year of weekly Method 22 readings show that there are no visible emissions, then the frequency of observations can be reduced to quarterly. If, during quarterly checks, visible emissions are observed, then the frequency of observations shall be returned to weekly;

(iii) **45CSR7**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to Emission Points RM-BH and TCMST shall be in accordance with the

following: Visible emission checks shall be conducted at least once per seven (7) calendar days. These checks shall be performed for a sufficient time interval, but no less than three (3) 6-minute intervals, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions; and

(iv) **45CSR7**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to all other emission points, excluding those identified under 4.2.9(c)(2)(iii), subject to 45CSR7 as shown under Table 4.2.9 above shall be in accordance with the following: Visible emission checks shall be conducted at least quarterly. These checks shall be performed for a sufficient time interval, but no less than a 6-minute interval, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions.

(3) If visible emissions are present at a source(s), the permittee shall perform Method 9 readings to confirm that visible emissions are within the applicable limits of this permit. Said Method 9 readings shall be taken as soon as practicable, but within twenty-four (24) hours of the Method 22 emission check.

e. For the purpose of demonstrating compliance with the visible emissions and opacity requirements, the permittee shall maintain records of the visible emission opacity tests and checks. The permittee shall maintain records of all monitoring data required by 4.2.12 documenting the date and time of each visible emission check, the emission point or equipment/ source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6-10 mph NE wind) during the visual emission check(s). Should a visible emission observation be required to be performed per the requirements specified in Method 9, the data records of each observation shall be maintained per the requirements of Method 9. For an emission unit out of service during the evaluation, the record of observation may note "out of service" (O/S) or equivalent; and

f. Any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40 CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

4.2.13. **Emission Point Map**
The permittee shall prepare and maintain an emission point map of the facility. This map shall consist of a diagram of the location and identification of all emission points at the facility that vent to ambient air. A legend shall be prepared with the map that identifies the emission point type and source(s) contributing to that emission point. This map shall be prepared within 180 days of startup and thereafter be updated as necessary to reflect current facility operations. The map(s) shall be retained on-site and be made available to the Director or his/her duly authorized representative upon request.

4.2.14. **Vendor Guarantees**
The permittee shall, at the time of initial startup, maintain on-site and have readily available to be made available to the Director or his/her representative upon request, a copy of the all current vendor guarantees relevant to the air emissions associated with the facility. This includes information relating to the performance of both emission units and control devices.

4.3. Performance Testing Requirements

4.3.1. **General Performance Testing**
At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of this permit, the permittee shall conduct or have conducted test(s) to determine compliance with the emission limitations established in this permit and/or applicable regulations.

4.3.2. **Specific Emissions Point Performance Testing**
Within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit, the permittee shall conduct, or have conducted, in accordance with a protocol submitted pursuant to 3.3.1(c), performance tests on the emission units (as emitted from the listed emission points) to show compliance with the specified pollutants as given in the following table:

Table 4.3.2.: Performance Testing Requirements

Emission Unit(s)	Emission Point(s)	Pollutants	Limit(1)
EAF1/LMF1/CAST1	BHST-1(2)	All Pollutants under Table 4.1.4(a) with the exception of Total HAPs, and CO_2e.	PPH gr/dcsf (PM)
EAF2/LMF2/CAST2	BHST-2(2)		
TF1	TFST-1	CO and NO_x	PPH
GALVFN1 GALVFN2(3)	GALVFN1-ST GALVFN2-ST		
ASP	ASP-1		
RM	RM-BH	$PM_{2.5}$, PM_{10}, PM(4)	PPH(4) gr/dscf
SPM1 SPM2(3)	SPMST1 SPMST2		

(1) Where applicable, test results will also be used to show compliance with lb/ton, lb/mmBtu, or other BACT performance limits.
(2) Initial and periodic performance testing on PM emitted from BHST-1 and BHST-2 shall be in accordance with the procedures outlined under §60.18 and §60.275a.
(3) Permittee may choose one of the identical listed units to test.
(4) Filterable Only.

4.3.3 With respect to the performance testing required above under Section 4.3.2, the permittee shall, after the initial performance test, periodically conduct additional performance testing on the specified sources according to the following schedule:

Table 4.3.3.: Performance Testing Schedule

Test	Test Results	Retesting Frequency
Initial Baseline	<50% of weight emission standard	Once/3 years
Initial Baseline	between 50% and 80 % of weight emission standard	Once/2 years
Initial Baseline	>80% of weight emission standard	Annual
Annual	after three successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Annual	after two successive tests indicate mass emission rates <80 % of weight emission standard	Once/2 years
Annual	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/2 years	After two successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Once/2 years	any tests indicates a mass emission rate <80 % of weight emission standard	Once/2 years
Once/2 years	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/3 years	any tests indicates a mass emission rate <50% of weight emission standard	Once/3 years
Once/3 years	any test indicates mass emission rates between 50% and 80 % of weight emission standard	Once/2 years
Once/3 years	any test indicates a mass emission rate >80% of weight emission standard	Annual

4.3.4. Performance testing for pollutants monitored by CEMS (CO, NO_x, and SO_2, as emitted from the Emission Point BHST-1 and BHST-2) are not subject to the performance testing schedule given under Table 4.3.3 and any performance testing shall, unless at such other reasonable time(s) as the Secretary may designate, be conducted on a schedule consistent with the required RATA testing.

4.3.5. The permittee shall use the test methods specified in Table 4.3.5. unless granted approval in writing by the Director to use an alternative test method in a protocol submitted pursuant to 3.3.1(c).

Table 4.3.5: Performance Test Methods

Pollutant	Test Method(1)
CO	Method 10
NO_x	Method 7E
$PM_{2.5}$ (filterable only)	Method 201A
PM_{10}/PM (filterable only)	Method 5
$PM_{2.5}$/PM_{10} (condensable)	Method 202
SO_2	Method 6C

Pollutant	Test Method[1]
VOCs	Method 18/25A
Lead	Method 12
HCl	Method 26A
Fluoride	Method 13

(1) All test methods refer to those given under 40 CFR 60, Appendix A

4.3.6. **40 CFR 60, Subpart AAa**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 60, Subpart AAa, Section §60.275a.

4.3.7. **40 CFR 63, Subpart YYYYY**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 63, Subpart YYYYY, Section §63.10686(d).

4.3.8. **40 CFR 60, Subpart JJJJ**
The permittee shall meet all applicable Performance Testing requirements for the emergency engines as given under 40 CFR 60, Subpart JJJJ, Section §60.4244.

4.4. Recordkeeping Requirements

4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit and time of sampling or measurements;

b. The date(s) analyses were performed;

c. The company or entity that performed the analyses;

d. The analytical techniques or methods used;

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

4.5. Additional Reporting Requirements

4.5.1. The permittee shall submit the following information to the DAQ according to the specified schedules:

a. The permittee shall submit reports of all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports; and

b. The permittee shall submit to the Director on or before March 15, a certification of compliance with all requirements of this permit for the previous calendar year ending on December 31. If, during the previous annual period, the permittee had been out of compliance with any part of this permit, it shall be noted along with the following information: 1) the source/equipment/process

that was non-compliant and the specific requirement of this permit that was not met, 2) the date the permitted discovered that the source/ equipment/process was out of compliance, 3) the date the Director was notified, 4) the corrective measures to get the source/equipment/process back into compliance, and 5) the date the source began to operate in compliance. The submission of any non-compliance report shall give no enforcement action immunity to episodes of non-compliance contained therein.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached ____, representing the period beginning ____________________________ and ending ____________________________, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] ____ ______________________
(please use blue ink) Responsible Official or Authorized Representative Date

Name and Title ____ ______________________________
(please print or type) Name Title

Telephone No. ______________________________ Fax No. ________________________________

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[1] This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The 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 a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

(I) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

(ii) the delegation of authority to such representative is approved in advance by the Director;

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of USEPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.

Table A-1 : Material Handling Stack/Vent Emission Limits

Emission Point ID	Description	Flow Rate(1)	Filter Outlet (gr/dscf)(2)		Hourly Emissions (lb/hr)(3)		Annual Emissions (ton/yr)	
		dscf/min	$PM_{2.5}$	PM/PM_{10}	$PM_{2.5}$	PM/PM_{10}	$PM_{2.5}$	PM/PM_{10}
LCB-ST	Lime, Carbon, and Briquetter Silos	38,000	0.0050	0.0050	1.63	1.63	7.13	7.13
DRI-DOCK-ST	DRI Unloading Dock (two units)	4,000	0.0005	0.0010	0.017	0.034	0.074	0.150
DRIVF1	DRI Storage Silo 1 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV1	DRI Storage Silo 1 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRIVF2	DRI Storage Silo 2 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV2	DRI Storage Silo 2 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRIVF3	DRI Storage Silo 3 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV3	DRI Storage Silo 3 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRIVF4	DRI Storage Silo 4 - Baghouse	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRIBV4	DRI Storage Silo 4 - Bin Vent	148	0.0005	0.0010	0.001	0.001	0.003	0.006
DRI-DB1-BH	DRI Day Bin #1	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRI-DB2-BH	DRI Day Bin #2	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
DRI-CONV-BH	DRI Transfer Conveyors	1,200	0.0005	0.0010	0.005	0.010	0.022	0.045
SLAG-CUT-BH	Slag Cutting	100,000	0.0010	0.0010	0.857	0.857	3.754	3.754
EAFVF1	EAF Baghouse 1 Dust Silo	1,000	0.0100	0.0100	0.086	0.086	0.375	0.375
EAFVF2	EAF Baghouse 2 Dust Silo	1,000	0.0100	0.0100	0.086	0.086	0.375	0.375
LIME-DUMP-ST	Lime Dump Station	2,000	0.0050	0.0050	0.086	0.086	0.375	0.375
CARBON-DUMP-ST	Carbon Dump Station	2,000	0.0050	0.0050	0.086	0.086	0.375	0.375
ALLOY-HANDLE-ST	Alloy Handling System	3,800	0.0050	0.0050	0.163	0.163	0.713	0.713

(1) Air flow rates represent the maximum design capacity of the mechanical flow through the listed particulate matter control device.

(2) gr/dscf = grains/dry standard cubic feet. For these emission points, baghouse/fabric filter is the BACT technology and the outlet loading is $PM_{2.5}/PM_{10}/PM$ BACT limit for the specified emission points.

(3) Hourly emission limits are based on a 24-hour average.

Table A-2 : Material Handling Non-Stack/Vent Emission Limits

Emission Point ID	Description	Material	Control Technology(1)(2)	Hourly Emissions (lb/hr)(3)			Annual Emissions (ton/yr)		
				$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
DRI-DOCK-FUG	DRI Unloading Dock - Fugitives	DRI	Good Housekeeping Practices Partial Enclosure	1.40E-02	9.26E-02	1.96E-01	7.82E-03	5.16E-02	1.09E-01
BULK-DRI-1	DRI Silo #1 Loadout	DRI	Good Housekeeping Practices Partial Enclosure	1.79E-03	1.18E-02	2.49E-02	7.82E-03	5.16E-02	1.09E-01
BULK-DRI-2	DRI Silo #2 Loadout	DRI	Good Housekeeping Practices Partial Enclosure	1.79E-03	1.18E-02	2.49E-02	7.82E-03	5.16E-02	1.09E-01
DRI-EMG-1	DRI Conveyor #1 Emergency Chute	DRI	Good Housekeeping Practices	1.40E-02	9.26E-02	1.96E-01	2.80E-05	1.85E-04	3.92E-04
DRI-EMG-2	DRI Silos Emergency Chute	DRI	Good Housekeeping Practices	8.98E-02	5.93E-01	1.25E+00	8.08E-04	5.33E-03	1.13E-02
LIME-DUMP-FUG	Lime Dump Station Fugitives	Lime	Good Housekeeping Practices Partial Enclosure	0.003	0.017	0.050	0.012	0.076	0.219
CARBON-DUMP-FUG	Carbon Dump Station Fugitives	Carbon		0.001	0.009	0.025	0.006	0.038	0.109
ALLOY-HANDLE-FUG	Alloy Handling System Fugitives	Alloy		0.007	0.044	0.125	0.010	0.067	0.194
SCRAP-DOCK-FUG	Barge Scrap Unloading	Scrap	Good Housekeeping Practices	0.026	0.090	0.180	0.031	0.108	0.217
SCRAP-RAIL-FUG	Rail Scrap Unloading	Scrap	Good Housekeeping Practices	0.009	0.030	0.060	0.004	0.014	0.029
SCRAP-BULK34	Barge Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.039	0.259	0.548	0.047	0.312	0.659
SCRAP-BULK35	Barge Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.018	0.119	0.251	0.047	0.312	0.659
SCRAP-BULK36	Rail Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.008	0.052	0.110	0.006	0.042	0.088
SCRAP-BULK37	Rail Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.018	0.119	0.251	0.006	0.042	0.088
SCRAP-BULK38	Truck Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.013	0.086	0.183	0.009	0.062	0.132
SCRAP-BULK39	Truck Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.018	0.119	0.251	0.009	0.062	0.132
SCRAP-BULK40	Scrap Charging	Scrap	Good Housekeeping Practices	0.014	0.095	0.201	0.063	0.416	0.879
SCRAP-BULK1	Dig Slag Inside Pot Barn	Slag	Good Housekeeping Practices Partial Enclosure Wet Suppression	0.029	0.078	0.160	0.053	0.141	0.289
SCRAP-BULK2	Loader Transport & Dump Slag Into Trench	Slag		0.029	0.078	0.160	0.053	0.141	0.289
SCRAP-BULK3	Loader Transport & Dump Slag Into F1 Feed Hopper/Grizzly	Slag		0.012	0.031	0.064	0.021	0.056	0.116
SCRAP-BULK4	TP: F1 Feed Hopper/Grizzly to P1 Oversize Pile	Slag		0.026	0.026	0.075	0.047	0.047	0.135
SCRAP-BULK5	TP: F1 Feed Hopper/Grizzly to C7 Crusher Conveyer	Slag		0.001	0.001	0.001	0.001	0.001	0.003
SCRAP-BULK6	TP: F1 Feed Hopper/Grizzly to C1A Main Conveyer	Slag		0.008	0.008	0.022	0.014	0.014	0.040
SCRAP-BULK7	TP: C7 to CR1 Crusher	Slag		0.002	0.002	0.006	0.004	0.004	0.011
SCRAP-BULK8	TP: CR1 Crusher to C8 Conveyer	Slag		0.012	0.012	0.026	0.021	0.021	0.047
SCRAP-BULK9	TP: CR1 Crusher to P2 Off-spec Storage	Slag		0.010	0.010	0.022	0.018	0.018	0.040
SCRAP-BULK10	TP: C8 Conveyer to C9 Conveyer	Slag		0.000	0.000	0.000	0.000	0.000	0.001
SCRAP-BULK11	TP: C9 Conveyer to C1A Conveyer	Slag		0.001	0.001	0.002	0.002	0.002	0.004
SCRAP-BULK12	TP: C1A Conveyer to B1 Surge Bin	Slag		0.001	0.001	0.002	0.002	0.002	0.004
SCRAP-BULK13	TP: B1 Surge Bin to C1 Conveyer	Slag		0.003	0.003	0.008	0.006	0.006	0.015
SCRAP-BULK14	TP: C1 Conveyor through M1 Mag Splitter to S1 Slag Screen	Slag		0.003	0.003	0.008	0.006	0.006	0.015
SCRAP-BULK15	TP: C1 Conveyor through M1 Mag Splitter to S2 Scrap Screen	Slag		0.003	0.003	0.008	0.005	0.005	0.015
SCRAP-BULK16	TP: S2 Scrap Screen to C6 Conveyor	Slag		0.0017	0.0017	0.0050	0.0031	0.0031	0.0090
SCRAP-BULK17	TP: S2 Scrap Screen to P3 Off-spec Storage	Slag		0.0015	0.0015	0.0043	0.0027	0.0027	0.0077
SCRAP-BULK18	TP: C6 Conveyor to P4 Off-spec Storage	Slag		0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
SCRAP-BULK19	TP: S1 Slag Screen to C2 Conveyer	Slag		0.0015	0.0015	0.0043	0.0027	0.0027	0.0077
SCRAP-BULK20	TP: C2 Conveyer to C5 Conveyer	Slag		0.0012	0.0012	0.0032	0.0021	0.0021	0.0058
SCRAP-BULK21	TP: C5 Conveyer to SLGSKP1	Slag		0.0012	0.0012	0.0032	0.0021	0.0021	0.0058

Table A-2 : Material Handling Non-Stack/Vent Emission Limits (Continued)

Emission Point ID	Description	Material	Control Technology	Hourly Emissions (lb/hr)[3]			Annual Emissions (ton/yr)		
				$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
SCRAP-BULK22	TP: S1 Slag Screen to C4 Conveyer	Slag	Good Housekeeping Practices Partial Enclosure Wet Suppression	0.0192	0.0192	0.0553	0.0346	0.0346	0.0995
SCRAP-BULK23	TP: C4 Conveyer to SLGSKP3	Slag		0.0009	0.0009	0.0024	0.0016	0.0016	0.0044
SCRAP-BULK24	TP: S1 Slag Screen to C3 Conveyer	Slag		0.0144	0.0144	0.0414	0.0260	0.0260	0.0746
SCRAP-BULK25	TP: C3 Conveyer to SLGSKP2	Slag		0.0006	0.0006	0.0016	0.0011	0.0011	0.0029
SCRAP-BULK26	TP: S1 Slag Screen to SLGSKP4	Slag		0.0096	0.0096	0.0276	0.0173	0.0173	0.0497
SCRAP-BULK27	Loader transports & loads products into trucks to product stockpiles	Slag		0.0011	0.0028	0.0058	0.0019	0.0051	0.0104
SCRAP-BULK28	Truck Dumps Products into Product Stockpiles	Slag		0.0117	0.0314	0.0642	0.0210	0.0564	0.1155
SCRAP-BULK29	Loader Into trucks, Oversize to Drop Ball Crusher	Slag		0.0117	0.0314	0.0642	0.0210	0.0564	0.1155
SCRAP-BULK30	Truck Dumps Oversize into Drop Ball Area	Slag		0.0002	0.0006	0.0013	0.0004	0.0011	0.0023
SCRAP-BULK31	Truck Transports Ladle Lip/Meltshop Cleanup Materials & Dumps at Drop Ball Site	Slag		0.0008	0.0020	0.0042	0.0014	0.0037	0.0075
SCRAP-BULK32	Truck Transports & Dumps Tundish at Lancing Station	Slag		0.0004	0.0011	0.0022	0.0007	0.0020	0.0040
SCRAP-BULK33	Ball Drop Crusher	Slag		0.0012	0.0012	0.0028	0.0022	0.0022	0.0050
SLGSKP1	Slag Stockpile 1	Slag	Water Sprays/Wet Suppression	0.01	0.06	0.12	0.04	0.26	0.54
SLGSKP2	Slag Stockpile 2	Slag		0.01	0.06	0.12	0.04	0.26	0.54
SLGSKP3	Slag Stockpile 3	Slag		0.01	0.06	0.12	0.04	0.26	0.54
SLGSKP4	Slag Stockpile 4	Slag		0.01	0.06	0.12	0.04	0.26	0.54
SCRPSKP1	Scrap Metal Stockpile 1	Scrap		0.02	0.15	0.31	0.10	0.64	1.36
SCRPSKP2	Scrap Metal Stockpile 2	Scrap		0.02	0.15	0.31	0.10	0.64	1.36
SCRPSKP3	Scrap Metal Stockpile 3	Scrap		0.02	0.15	0.31	0.10	0.64	1.36

(1) For the purposes of this permit, "Good Housekeeping Practices" are defined as maintaining all enclosures free of holes and cleaning spilled particulate matter from exposed areas where fugitive entrainment may easily occur.
(2) For the purposes of this permit, "Wet Supression" is defined as maintaining the mositure content of the material at a level that mitigates easily fugitive entrainment of particulate matter from the surface of the material.
(3) Hourly emission limits are based on a 24-hour average and are the BACT limits for the listed emission sources.

Table A-3: Natural Gas Combustion Emission Limits

Emission Point ID	Emission Unit ID	Description	MDHI	CO		NO_x		$PM_{2.5}/PM_{10}$		PM		SO_2		VOCs		CO_2e		Total HAPs	
			mmBtu/hr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
MSFUG	LD	Ladle Dryer	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR1	Horizontal Ladle Preheater 1	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR2	Horizontal Ladle Preheater 2	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR3	Horizontal Ladle Preheater 3	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR4	Horizontal Ladle Preheater 4	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR5	Horizontal Ladle Preheater 5	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR6	Vertical Ladle Preheater 6	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	LPHTR7	Vertical Ladle Preheater 7	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,693	0.001	0.006
MSFUG	TD	Tundish Dryer 1	6.00	0.49	2.16	0.59	2.58	0.04	0.20	0.011	0.049	0.004	0.015	0.03	0.14	703	3,077	0.011	0.048
MSFUG	TPHTR1	Tundish Preheater 1	9.00	0.74	3.25	0.88	3.86	0.07	0.29	0.017	0.073	0.005	0.023	0.05	0.21	1,054	4,616	0.017	0.073
MSFUG	TPHTR2	Tundish Preheater 2	9.00	0.74	3.25	0.88	3.86	0.07	0.29	0.017	0.073	0.005	0.023	0.05	0.21	1,054	4,616	0.017	0.073
MSFUG	SENPHTR1	Subentry Nozzle (SEN) Preheater 1	1.00	0.08	0.36	0.10	0.43	0.007	0.033	0.002	0.008	0.001	0.003	0.01	0.02	117	513	0.002	0.008
MSFUG	SENPHTR2	Subentry Nozzle (SEN) Preheater 2	1.00	0.08	0.36	0.10	0.43	0.007	0.033	0.002	0.008	0.001	0.003	0.01	0.02	117	513	0.002	0.008
GALVFN1-ST	GALVFN1	Galvanizing Furnace #1	64.00	5.27	23.09	3.20	14.02	0.48	2.09	0.119	0.522	0.038	0.165	0.35	1.51	7,494	32,825	0.118	0.517
GALVFN2-ST	GALVFN2	Galvanizing Furnace #2	64.00	5.27	23.09	3.20	14.02	0.48	2.09	0.119	0.522	0.038	0.165	0.35	1.51	7,494	32,825	0.118	0.517
GALVFUG	BOXANN1	Box Annealing Furnace #1	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN2	Box Annealing Furnace #2	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN3	Box Annealing Furnace #3	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN4	Box Annealing Furnace #4	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN5	Box Annealing Furnace #5	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN6	Box Annealing Furnace #6	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN7	Box Annealing Furnace #7	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN8	Box Annealing Furnace #8	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN9	Box Annealing Furnace #9	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN10	Box Annealing Furnace #10	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN11	Box Annealing Furnace #11	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN12	Box Annealing Furnace #12	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN13	Box Annealing Furnace #13	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN14	Box Annealing Furnace #14	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN15	Box Annealing Furnace #15	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN16	Box Annealing Furnace #16	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN17	Box Annealing Furnace #17	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN18	Box Annealing Furnace #18	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN19	Box Annealing Furnace #19	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN20	Box Annealing Furnace #20	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN21	Box Annealing Furnace #21	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
GALVFUG	BOXANN22	Box Annealing Furnace #22	5.00	0.41	1.80	0.25	1.10	0.04	0.16	0.009	0.041	0.003	0.013	0.03	0.12	585	2,564	0.009	0.040
TFST-1	TF1	Hot Mill Tunnel Furnace 1	150.00	12.35	54.11	10.50	45.99	1.12	4.90	0.279	1.224	0.088	0.386	0.81	3.54	17,565	76,933	0.277	1.212
SLAG-CUT-NG	SLAG-CUT	Slag Cutting	2.40	0.20	0.87	0.24	1.03	0.02	0.08	0.004	0.020	0.001	0.006	0.01	0.06	281	1,231	0.004	0.019
ASP-1	ASP	Water Bath Vaporizer	11.00	0.91	3.97	1.08	4.72	0.08	0.36	0.020	0.090	0.006	0.028	0.06	0.26	1,288	5,642	0.020	0.089

Table A-1 : Hot Mill and Cold Mill Stack/Vent Emission Limits

Emission Point ID	Description	Control Device	Flow Rate[1] dscf/min	Filter/Scrubber Outlet (gr/dscf)[2]			Hourly Emissions (lb/hr)[3]			Annual Emissions (ton/yr)		
				$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
RM-BH	Rolling Mill	Baghouse	117,716	0.0100	0.0100	0.0050	5.04	10.09	10.09	22.10	44.19	44.19
PLST-1	Pickling Line 1	Scrubber	7,185	0.0100	0.0100	0.0100	0.62	0.62	0.62	2.70	2.70	2.70
PKLSB	Pickle Line Scale Breaker	Baghouse	52,972	0.0030	0.0030	0.0030	1.36	1.36	1.36	5.97	5.97	5.97
TCMST	Tandem Cold Mill	Mist Eliminator	202,162	0.0066	0.0066	0.0100	11.44	11.44	17.33	50.09	50.09	75.90
STM-BH	Standalone Temper Mill	Baghouse	45,000	0.0013	0.0024	0.0025	0.50	0.93	0.96	2.20	4.05	4.22
SPMST1	Skin Pass Mill #1	Baghouse	24,587	0.0050	0.0100	0.0100	1.05	2.11	2.11	4.62	9.23	9.23
SPMST2	Skin Pass Mill #2	Baghouse	24,587	0.0050	0.0100	0.0100	1.05	2.11	2.11	4.62	9.23	9.23
CGL1-ST1	CGL1 - Cleaning Section	Scrubber	6,123	0.0030	0.0030	0.0030	0.16	0.16	0.16	0.69	0.69	0.69
CGL1-ST2	CGL1 - Passivation Section	Scrubber	9,350	0.0030	0.0030	0.0030	0.24	0.24	0.24	1.05	1.05	1.05
CGL2-ST1	CGL2 - Cleaning Section	Scrubber	6,123	0.0030	0.0030	0.0030	0.16	0.16	0.16	0.69	0.69	0.69
CGL2-ST2	CGL2 - Passivation Section	Scrubber	9,350	0.0030	0.0030	0.0030	0.24	0.24	0.24	1.05	1.05	1.05

(1) Air flow rates represent the maximum design capacity of the mechanical flow through the listed particulate matter control device.

(2) gr/dscf = grains/dry standard cubic feet. For these emission points, the listed control device is the BACT technology and the outlet loading is PM2.5/PM10/PM BACT limit for the specified emission points.

(3) Hourly emission limits are based on a 24-hour average.

Kessler, Joseph R <joseph.r.kessler@wv.gov>

R14-0039 Updated Permit Application Status

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Thu, Mar 24, 2022 at 3:15 PM
To: "Alteri, Sean [Corp]" <sean.alteri@nucor.com>, Bill Bruscino <bbruscino@trinityconsultants.com>
Cc: Beverly D McKeone <beverly.d.mckeone@wv.gov>, Jon D McClung <jon.d.mcclung@wv.gov>, Joseph R Kessler <joseph.r.kessler@wv.gov>

RE: Application Status: Complete
Nucor Steel West Virginia LLC
West Virginia Steel Mill
Permit Application: R14-0039
Plant ID No.: 053-00085

Dear Mr. Alteri:

Your application for the construction of a steel mill near Apple Grove, WV was received by the Division of Air Quality (DAQ) on January 21, 2022 and assigned to the writer for review. Upon an initial review of the application, it was determined that additional information was required. This information was requested in an e-mail dated February 18, 2022 and subsequently submitted on March 23, 2022. Upon further review of this additional information, the permit application has now been deemed complete as of March 23, 2022.

This determination of completeness shall not relieve the permit applicant of the requirement to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit determination.

Should you have any questions, please contact me at (304) 926-0499 ext. 41271 or reply to this email.

Thank You,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

3336 9320 6696 9460

Genola Dunlap
704-367-8679
App # R14-00039
Fac.# 053-0085
John Sarris - 14,500 —
Genola, Dunlap@
nucor.
Com

WV Dept of Env. Prot.
601 57th St SE
Charleston, WV 25304
304-926-0499

SALE

MID: 5993
TID: 00E30710 REF#: 00000011
Bank ID: 000000
Batch #: 345 RRN: 024956049848
01/24/22 13:50:48
AVS: Z CVC: M
Invoice #: R1400039
APPR CODE: 074416
VISA Manual CP
************4863 **/**

AMOUNT $14,500.00

APPROVED

X______________________

I AGREE TO PAY ABOVE TOTAL AMOUNT
IN ACCORDANCE WITH CARD ISSUER'S
AGREEMENT
(MERCHANT AGREEMENT IF CREDIT VOUCHER)
RETAIN THIS COPY FOR STATEMENT
VERIFICATION

Thank You
Please Come Again

MERCHANT COPY

Harless, Catherine L <catherine.l.harless@wv.gov>

APP# R14-00039 Fac# 053-0085 How much is this ?

3 messages

Harless, Catherine L <catherine.l.harless@wv.gov> Mon, Jan 24, 2022 at 1:05 PM
To: Stephanie R Mink <Stephanie.R.Mink@wv.gov>

--

Catherine.L.Harless@wv.gov

Catherine.L.Harless
Accounting Technician III
BTO - Fiscal Services
West Virginia Department of Environmental Protection

Mink, Stephanie R <stephanie.r.mink@wv.gov> Mon, Jan 24, 2022 at 1:08 PM
To: "Harless, Catherine L" <catherine.l.harless@wv.gov>

They will owe $14,500 for this application.

Thanks
Stephanie
[Quoted text hidden]

Harless, Catherine L <catherine.l.harless@wv.gov> Mon, Jan 24, 2022 at 1:13 PM
To: "Mink, Stephanie R" <stephanie.r.mink@wv.gov>

Thank you!
[Quoted text hidden]

UC Defaulted Accounts Search Results

Sorry, no records matching your criteria were found.

FEIN:	
Business name:	NUCOR STEEL WEST VIRGINIA LLC
Doing business as/Trading as:	

Please use your browsers back button to try again.

WorkforceWV	Unemployment Compensation	Offices of the Insurance Commissioner

Kessler, Joseph R <joseph.r.kessler@wv.gov>

R14-0039 Pre-Draft Permit

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Wed, Feb 23, 2022 at 3:21 PM
To: Bill Bruscino <bbruscino@trinityconsultants.com>, "Alteri, Sean [Corp]" <sean.alteri@nucor.com>
Cc: Joe Kessler <zoso13@suddenlink.net>, Jon D McClung <jon.d.mcclung@wv.gov>

Pursuant to our phone discussion, attached is a Pre-Draft version of the permit. This Pre-Draft version has not been reviewed or approved by my supervisor or the Director and is, therefore, subject to change. This version is being provided to facilitate discussions of permit structure, language, and operational flexibility only, and does not grant the applicant any authority to begin any work on the site beyond the scope granted by 45CSR13 and 45CSR14. At this time, the review of the permit application is on-going and the current status of the permit application remains incomplete based on the e-mail of February 18, 2022.

Thank you,

--

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

R14-0039 Pre-Draft (w App A).pdf
925K

West Virginia Department of Environmental Protection
Harold D. Ward
Cabinet Secretary

Construction Permit

R14-0039

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.) and 45 C.S.R. 13 — Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation. The permittee identified at the facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:

Nucor Steel West Virginia LLC
West Virginia Steel Mill
053-00085

Laura M. Crowder
Director, Division of Air Quality

Issued: DRAFT

Facility Location:	Apple Grove, Mason County, WV
Mailing Address:	1915 Rexford Road, Charlotte, NC 28211
Facility Description:	Sheet Steel Mill
SIC/NAICS Code:	3312/331110
UTM Coordinates:	Easting: 398.20 km • Northing: 4,278.87 km • Zone: 17
Latitude/Longitude:	38.65536/-82.16853
Permit Type:	Construction
Description:	Construction of a 3,000,000 tons per year sheet steel mill.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

The facility is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

Table of Contents

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
Raw Material Storage & Handling					
Scrap Storage & Handling					
SCRAP-RAIL	Fugitives	Railcar Scrap Unloading	New	200 TPH	n/a
SCRAP-DOCK	Fugitives	Barge Scrap Unloading	New	600 TPH	n/a
SCRAP-BULK34	Fugitives	Barge Scrap Pile Loading	New	600 TPH	n/a
SCRAP-BULK35	Fugitives	Barge Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK36	Fugitives	Rail Scrap Pile Loading	New	120 TPH	n/a
SCRAP-BULK37	Fugitives	Rail Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK38	Fugitives	Truck Scrap Pile Loading	New	200 TPH	n/a
SCRAP-BULK39	Fugitives	Truck Scrap Pile Loadout	New	275 TPH	n/a
SCRAP-BULK40	Fugitives	Scrap Charging	New	220 TPH	n/a
SCRPSKP1	Fugitives	Scrap Metal Stockpile 1	New	342,030 ft^2	WS
SCRPSKP2	Fugitives	Scrap Metal Stockpile 2	New	342,030 ft^2	WS
SCRPSKP3	Fugitives	Scrap Metal Stockpile 3	New	342,030 ft^2	WS
SCRPSKP4	Fugitives	Scrap Metal Stockpile 4	New	342,030 ft^2	WS
Lime, Carbon, and Briqettor Storage & Handling					
LIME-DUMP	LIME-DUMP-ST	Lime Dump Station	New	8 TPH	LIME-BH
	Fugitives				PE
CARBON-DUMP	CARBON-DUMP-ST	Carbon Dump Station	New	8 TPH	CARBON-BH
	Fugitives				PE
LCB	LCB-ST	Lime, Carbon, and Alloy Silos	New	Alloy - 550 TPH Carbon - 30 TPH	LCB-BH
Alloy Storage & Handling					
ALLOY-HANDLE	ALLOY-HANDLE-ST	Alloy Handling System	New	20 TPH	ALLOY-BH
	Fugitives				PE
Direct Reduced Iron (DRI) Storage & Handling					
DRI-DOCK	Fugitives	DRI Unloading Dock	New	500 TPH	PE
	DRI-DOCK-ST				DRI-DOCK-BH
DRI1	DRIVF1	DRI Storage Silo 1	New	64 TPH	DRI1-BH
	DRIBV1				DRI1-BV

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
DRI2	DRIVF2	DRI Storage Silo 2	New	64 TPH	DRI2-BH
	DRIBV2				DRI2-BV
DRI3	DRIVF3	DRI Storage Silo 3	New	64 TPH	DRI3-BH
	DRIBV3				DRI3-BV
DRI4	DRIVF4	DRI Storage Silo 4	New	64 TPH	DRI4-BH
	DRIBV4				DRI4-BV
DRI-DB1	DRI-DB1-BH	DRI Day Bin 1	New	64 TPH	DRI-DB1-BH
DRI-DB2	DRI-DB2-BH	DRI Day Bin 2	New	64 TPH	DRI-DB2-BH
BULK-DRI	BULK-DRI-1	DRI Silo 1 Loadout	New	64 TPH	PE
	BULK-DRI-2	DRI Silo 2 Loadout		64 TPH	PE
	BULK-EMG-1	DRI Conveyer 1 Emergency Chute		125 TPH	None
	BULK-EMG-1	DRI Silos Emergency Chute		800 TPH	None
DRI-CONV	DRI-CONV-BH	DRI Transfer Conveyers	New	64 TPH	DRI-CONV-BH
Haulraods					
FUGD-PAVED-01P through 10P	Fugitives	Paved Haulroads 1P - 10P	New	n/a	WS
FUGD-UNPAVED-1UP through 19U	Fugitives	Unpaved Haulroads 11U - 19U	New	n/a	WS
Melt Shop					
EAF1	BHST-1	Electric Arc Furnace 1	New	171 TPH, 22.18 mmBtu/hr[2]	EAF1-BH
	Fugitives				n/a
LMF1	BHST-1	Ladle Metallurgy Furnace 1	New	171 TPH	EAF1-BH
CAST1	BHST-1	Caster 1	New	171 TPH	EAF1-BH
	Fugitives				n/a
EAF2	BHST-2	Electric Arc Furnace 2	New	171 TPH, 22.18 mmBtu/hr[2]	EAF2-BH
	Fugitives				n/a
LMF2	BHST-2	Ladle Metallurgy Furnace 2	New	171 TPH	EAF2-BH
CAST2	BHST-2	Caster 2	New	171 TPH	EAF2-BH
	Fugitives				n/a

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
LD	Fugitives	Ladle Dryer	New	15 mmBtu/hr	n/a
EAFVF1	EAFVF1	EAF Baghouse 1 Dust Silo	New	0.84 TPH	EAFVF1-BV
EAFVF2	EAFVF2	EAF Baghouse 2 Dust Silo	New	0.84 TPH	EAFVF2-BV
LPHTR1	Fugitives	Horizontal Ladle Preheater 1	New	15 mmBtu/hr	n/a
LPHTR2	Fugitives	Horizontal Ladle Preheater 2	New	15 mmBtu/hr	n/a
LPHTR3	Fugitives	Horizontal Ladle Preheater 3	New	15 mmBtu/hr	n/a
LPHTR4	Fugitives	Horizontal Ladle Preheater 4	New	15 mmBtu/hr	n/a
LPHTR5	Fugitives	Horizontal Ladle Preheater 5	New	15 mmBtu/hr	n/a
LPHTR6	Fugitives	Vertical Ladle Preheater 6	New	15 mmBtu/hr	n/a
LPHTR7	Fugitives	Vertical Ladle Preheater 7	New	15 mmBtu/hr	n/a
TD	Fugitives	Tundish Dryer 1	New	6 mmBtu/hr	n/a
TPHTR1	Fugitives	Tundish Preheater 1	New	9 mmBtu/hr	n/a
TPHTR2	Fugitives	Tundish Preheater 2	New	9 mmBtu/hr	n/a
SENPHTR1	Fugitives	Subentry Nozzle (SEN) Preheater 1	New	9 mmBtu/hr	n/a
SENPHTR2	Fugitives	Subentry Nozzle (SEN) Preheater 2	New	9 mmBtu/hr	n/a
VTD1	VTDST1	Vacuum Tank 1	New	269 lbs-CO/hr	VTG-Flare 1
VTD2	VTDST2	Vacuum Tank 2	New	269 lbs-CO/hr	VTG-Flare 2
Hot Mill					
TF1	TFST-1	Hot Mill Tunnel Furnace 1	New	150 mmBtu/hr	None
TF2	TFST-2	Hot Mill Tunnel Furnace 2	New	150 mmBtu/hr	None
RM	RM-BH	Rolling Mill	New	342 TPH	RM-BH
SM	SM-BH	Scarfing Machine	New	342 TPH	SM-BH
Cold Mill					
PKLSB	PKLSB	Pickling Line Scale Breaker	New	342 TPH	PKLSB-BH
PKL-1	PLST-1	Pickling Line 1	New	171 TPH	PKL1-ME/SCR
PKL-2	PLST-2	Pickling Line 2	New	171 TPH	PKL2-ME/SCR
CGL1	CGL1-ST1	CGL1 - Cleaning Section	New	171 TPH	CGL1-SCR1
	CGL1-ST2	CGL1 - Passivation Section		171 TPH	CGL1-SCR2

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[1]
CGL2	CGL2-ST1	CGL2 - Cleaning Section	New	171 TPH	CGL2-SCR1
	CGL2-ST2	CGL2 - Passivation Section		171 TPH	CGL2-SCR2
GALVFN1	GALVFN1-ST	Galvanizing Furnace 1	New	83 mmBtu/hr	None
GALVFN2	GALVFN2-ST	Galvanizing Furnace 2	New	83 mmBtu/hr	None
CMBLR1	CMBLR1	Pickling Line Boiler 1	New	20 mmBtu/hr	None
CMBLR2	CMBLR2	Pickling Line Boiler 2	New	20 mmBtu/hr	None
CMBLR3	CMBLR3	Pickling Line Boiler 3	New	20 mmBtu/hr	None
BOXANN1	Fugitives	Box Annealing Furnace 1	New	10 mmBtu/hr	None
BOXANN2	Fugitives	Box Annealing Furnace 2	New	10 mmBtu/hr	None
BOXANN3	Fugitives	Box Annealing Furnace 3	New	10 mmBtu/hr	None
BOXANN4	Fugitives	Box Annealing Furnace 4	New	10 mmBtu/hr	None
BOXANN5	Fugitives	Box Annealing Furnace 5	New	10 mmBtu/hr	None
BOXANN6	Fugitives	Box Annealing Furnace 6	New	10 mmBtu/hr	None
BOXANN7	Fugitives	Box Annealing Furnace 7	New	10 mmBtu/hr	None
BOXANN8	Fugitives	Box Annealing Furnace 8	New	10 mmBtu/hr	None
BOXANN9	Fugitives	Box Annealing Furnace 9	New	10 mmBtu/hr	None
BOXANN10	Fugitives	Box Annealing Furnace 10	New	10 mmBtu/hr	None
BOXANN11	Fugitives	Box Annealing Furnace 11	New	10 mmBtu/hr	None
BOXANN12	Fugitives	Box Annealing Furnace 12	New	10 mmBtu/hr	None
BOXANN13	Fugitives	Box Annealing Furnace 13	New	10 mmBtu/hr	None
BOXANN14	Fugitives	Box Annealing Furnace 14	New	10 mmBtu/hr	None
BOXANN15	Fugitives	Box Annealing Furnace 15	New	10 mmBtu/hr	None
BOXANN16	Fugitives	Box Annealing Furnace 16	New	10 mmBtu/hr	None
BOXANN17	Fugitives	Box Annealing Furnace 17	New	10 mmBtu/hr	None
BOXANN18	Fugitives	Box Annealing Furnace 18	New	10 mmBtu/hr	None
BOXANN19	Fugitives	Box Annealing Furnace 19	New	10 mmBtu/hr	None
BOXANN20	Fugitives	Box Annealing Furnace 20	New	10 mmBtu/hr	None
BOXANN21	Fugitives	Box Annealing Furnace 21	New	10 mmBtu/hr	None
BOXANN22	Fugitives	Box Annealing Furnace 22	New	10 mmBtu/hr	None
TCM	TCMST	Tandem Cold Mill	New	342 TPH	TCM-ME
STM	STM-BH	Standalone Temper Mill	New	342 TPH	STM-BH

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
SPM1	SPMST1	Skin Pass Mill 1	New	114 TPH	SPM1-BH
SPM2	SPMST2	Skin Pass Mill 2	New	114 TPH	SPM2-BH
SPM3	SPMST3	Skin Pass Mill 3	New	114 TPH	SPM3-BH
Slag Processing					
SLGSKP1	Fugitives	Slag Storage Stockpile 1	New	177,625 ft^2	WS
SLGSKP2	Fugitives	Slag Storage Stockpile 2	New	32,541 ft^2	WS
SLGSKP3	Fugitives	Slag Storage Stockpile 3	New	368 ft^2	WS
SLAG-CUT	SLAG-CUT-NG	Slag Cutting Combustion	New	2.4 mmBtu/hr	None
	SLAG-CUT-BH	Slag Cutting		171 TPH	SLAG-CUT-BH
SCRAP-BULK1	SCRAP-BULK1	Dig Slag Inside Pot Barn	New	73 TPH	PE, WS
SCRAP-BULK2	SCRAP-BULK2	Loader Transport & Dump Slag Into Trench	New	73 TPH	PE, WS
SCRAP-BULK3	SCRAP-BULK3	Loader Transport & Dump Slag Into F1 Feed Hopper/Grizzly	New	73 TPH	PE, WS
SCRAP-BULK4	SCRAP-BULK4	TP: F1 Feed Hopper/Grizzly to XXXXX	New	73 TPH	PE, WS
SCRAP-BULK5	SCRAP-BULK5	TP: F1 Feed Hopper/Grizzly to C7 Crusher Conveyer	New	1.5 TPH	PE, WS
SCRAP-BULK6	SCRAP-BULK6	TP: F1 Feed Hopper/Grizzly to C1A Main Conveyer	New	22 TPH	PE, WS
SCRAP-BULK7	SCRAP-BULK7	TP: C7 to CR1 Crusher	New	50 TPH	PE, WS
SCRAP-BULK8	SCRAP-BULK8	TP: CR1 Crusher to C8 Conveyer	New	22 TPH	PE, WS
SCRAP-BULK9	SCRAP-BULK9	TP: CR1 Crusher to XXXXX	New	19 TPH	PE, WS
SCRAP-BULK10	SCRAP-BULK10	TP: C8 Conveyer to C9 Conveyer	New	3.3 TPH	PE, WS
SCRAP-BULK11	SCRAP-BULK11	TP: C9 Conveyer to C1A Conveyer	New	19 TPH	PE, WS
SCRAP-BULK12	SCRAP-BULK12	TP: C1A Conveyer to B1 Surge Bin	New	19 TPH	PE, WS
SCRAP-BULK13	SCRAP-BULK13	TP: B1 Surge Bin to C1 Conveyer	New	68 TPH	PE, WS

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
SCRAP-BULK14	SCRAP-BULK14	TP: C1 Conveyor through M1 Mag Splitter to S1 Slag Screen	New	68 TPH	PE, WS
SCRAP-BULK15	SCRAP-BULK15	TP: C1 Conveyor through M1 Mag Splitter to S2 Slag Screen	New	66 TPH	PE, WS
SCRAP-BULK16	SCRAP-BULK16	TP: S2 Slag Screen to C6 Conveyor	New	2.4 TPH	PE, WS
SCRAP-BULK17	SCRAP-BULK17	TP: S2 Slag Screen to XXXXX	New	2 TPH	PE, WS
SCRAP-BULK18	SCRAP-BULK18	TP: C6 Conveyor to XXXXX	New	0.4 TPH	PE, WS
SCRAP-BULK19	SCRAP-BULK19	TP: S1 Slag Screen to C2 Conveyer	New	2 TPH	PE, WS
SCRAP-BULK20	SCRAP-BULK20	TP: C2 Conveyer to C5 Conveyer	New	26 TPH	PE, WS
SCRAP-BULK21	SCRAP-BULK21	TP: C5 Conveyer to XXXXX	New	26 TPH	PE, WS
SCRAP-BULK22	SCRAP-BULK22	TP: S1 Slag Screen to C4 Conveyer	New	26 TPH	PE, WS
SCRAP-BULK23	SCRAP-BULK23	TP: C4 Conveyer to XXXXX	New	20 TPH	PE, WS
SCRAP-BULK24	SCRAP-BULK24	TP: S1 Slag Screen to C3 Conveyer	New	20 TPH	PE, WS
SCRAP-BULK25	SCRAP-BULK25	TP: C3 Conveyer to XXXXX	New	13 TPH	PE, WS
SCRAP-BULK26	SCRAP-BULK26	TP: S1 Slag Screen to XXXXX	New	13 TPH	PE, WS
SCRAP-BULK27	SCRAP-BULK27	Loader transports & loads products into trucks to XXXXX	New	6.6 TPH	PE, WS
SCRAP-BULK28	SCRAP-BULK28	Truck Dumps Products into Product Stockpiles	New	73 TPH	PE, WS
SCRAP-BULK29	SCRAP-BULK29	Loader Into trucks, Oversize to Drop Ball Crusher	New	73 TPH	PE, WS
SCRAP-BULK30	SCRAP-BULK30	Truck Dumps Oversize into Drop Ball Area	New	1.5 TPH	PE, WS
SCRAP-BULK31	SCRAP-BULK30	Truck Transports Ladle Lip/Meltshop Cleanup Materials & Dumps at Drop Ball Site	New	4.7 TPH	PE, WS

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device(1)
SCRAP-BULK32	SCRAP-BULK32	Truck Transports & Dumps Tundish at Lancing Station	New	2.6 TPH	PE, WS
SCRAP-BULK33	SCRAP-BULK33	Ball Drop Crusher	New	2.3 TPH	PE, WS
Auxiliary Operations/Equipment					
ASP	ASP-1	Water Bath Vaporizer	New	11 mmBtu/hr	None
Emergency Generators					
EMGEN1	EMGEN1	Emergency Generator 1	New	2,000 hp	TBD
EMGEN2	EMGEN2	Emergency Generator 2	New	2,000 hp	TBD
EMGEN3	EMGEN3	Emergency Generator 3	New	2,000 hp	TBD
EMGEN4	EMGEN4	Emergency Generator 4	New	2,000 hp	TBD
EMGEN5	EMGEN5	Emergency Generator 5	New	2,000 hp	TBD
EMGEN6	EMGEN6	Emergency Generator 6	New	2,000 hp	TBD
Cooling Towers					
CT1	CT1	Melt Shop ICW Cooling Tower	New	52,000 gpm	DE
CT2	CT2	Melt Shop DCW Cooling Tower	New	5,900 gpm	DE
CT3	CT3	Rolling Mill ICW Cooling Tower	New	8,500 gpm	DE
CT4	CT4	Rolling Mill DCW Cooling Tower	New	22,750 gpm	DE
CT5	CT5	Rolling Mill Quench/ACC Cooling Tower	New	90,000 gpm	DE
CT6	CT6	Light Plate DCW System	New	8,000 gpm	DE
CT7	CT7	Heavy Plate DCW System	New	3,000 gpm	DE
CT8	CT8	Air Separation Plant Cooling Tower	New	14,000 gpm	DE
Fixed Roof Storage Tanks					
T1	T1	Diesel Tank	New	5,000 gallon	None
T2	T2	Diesel Tank	New	1,000 gallon	None
T3	T3	Diesel Tank	New	1,000 gallon	None
T4	T4	Diesel Tank	New	1,000 gallon	None
T5	T5	Diesel Tank	New	2,000 gallon	None
T6	T6	Diesel Tank	New	2,000 gallon	None

Table 1.0: Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device[(1)]
T7	T7	Gasoline Tank	New	1,000 gallon	None
T8	T8	Caster Hydraulic Oil Tank	New	5,000 gallon	None
T9	T9	Hot Mill Hydraulic Oil Tank	New	5,000 gallon	None
T10	T10	HCL Tank 1	New	26,400 gallon	None
T11	T11	HCL Tank 2	New	26,400 gallon	None
T12	T12	HCL Tank 3	New	26,400 gallon	None
T13	T13	HCL Tank 4	New	26,400 gallon	None
T14	T14	HCL Tank 5	New	26,400 gallon	None
T15	T15	HCL Tank 6	New	26,400 gallon	None
T16	T16	SPL Tank 1	New	26,400 gallon	None
T17	T17	SPL Tank 2	New	26,400 gallon	None
T18	T18	SPL Tank 3	New	26,400 gallon	None
T19	T19	SPL Tank 4	New	26,400 gallon	None
T20	T20	SPL Tank 5	New	26,400 gallon	None
T21	T21	SPL Tank 6	New	26,400 gallon	None
T22	T22	SPL Tank 7	New	26,400 gallon	None
T23	T23	SPL Tank 8	New	26,400 gallon	None
T24	T24	Used Oil Tank	New	5,000 gallon	None
Other Tanks					
T25	T25	Cold Degreaser Tank[(4)]	New	80 gallon	None
T26	T26	Cold Degreaser Tank[(4)]	New	80 gallon	None
T27	T27	Cold Degreaser Tank[(4)]	New	80 gallon	None
T28	T28	Cold Degreaser Tank[(4)]	New	80 gallon	None
T29	T29	Cold Degreaser Tank[(4)]	New	80 gallon	None

(1) BH - Baghouse; BV - Bin Vent; DE - Drift Eliminator; ME - Mist Eliminator; SCR - Scrubber; WS - Water Sprays/Wet Suppression
(2) This heat input reflects the size of the natural gas-fire oxyfuel burners.
(3) The permit requires the engines to be in compliance with 40 CFR 60, Subpart JJJJ. This may require use of oxidation catalysts on the engines when installed.
(4) These tanks are open during use (see Section 4.1.7(f))

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR § 30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments
CBI	Confidential Business Information
CEM	Continuous Emission Monitor
CES	Certified Emission Statement
C.F.R. *or* CFR	Code of Federal Regulations
CO	Carbon Monoxide
C.S.R. *or* CSR	Codes of State Rules
DAQ	Division of Air Quality
DEP	Department of Environmental Protection
dscm	Dry Standard Cubic Meter
FOIA	Freedom of Information Act
HAP	Hazardous Air Pollutant
HON	Hazardous Organic NESHAP
HP	Horsepower
lbs/hr	Pounds per Hour
LDAR	Leak Detection and Repair
M	Thousand
MACT	Maximum Achievable Control Technology
MDHI	Maximum Design Heat Input
MM	Million
MMBtu/hr *or* mmbtu/hr	Million British Thermal Units per Hour
MMCF/hr *or* mmcf/hr	Million Cubic Feet per Hour
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter less than 2.5µm in diameter
PM_{10}	Particulate Matter less than 10µm in diameter
Ppb	Pounds per Batch
pph	Pounds per Hour
ppm	Parts per Million
Ppmv or ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration
psi	Pounds per Square Inch
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
TPY	Tons per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VEE	Visual Emissions Evaluation
VOC	Volatile Organic Compounds
VOL	Volatile Organic Liquids

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Law W.Va. Code §§22-5-1 et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation.*

2.4. Term and Renewal

2.4.1. This permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any applicable legislative rule.

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Application R14-0039 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.10 and 13-10.3]

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses and/or approvals from other agencies; i.e., local, state and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10. Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is 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 (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.

2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

b. The permitted facility was at the time being properly operated;

c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and,

d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emission, and corrective actions taken.

2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13.
[45CSR§13-10.1]

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§34]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1 State-Enforceable only.]

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45 C.S.R. 11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

3.2.1. **Emission Limit Averaging Time.** Unless otherwise specified, compliance with all annual limits shall be based on a rolling twelve (12) month total. A rolling twelve month total shall be the sum of the measured parameter of the previous twelve (12) calendar months. Compliance with all hourly emission limits shall be based, unless otherwise specified, on the applicable NAAQS averaging times or, where applicable, as given in any approved performance test method.

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

1. The permit or rule evaluated, with the citation number and language;
2. The result of the test for each permit or rule condition; and,
3. A statement of compliance or noncompliance with each permit or rule condition.

[WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State-Enforceable only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class or by private carrier with postage prepaid to the address(es), or submitted in electronic format by email as set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

If to the DAQ:

Director
WVDEP
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304-2345

If to the US EPA:

Section Chief
U.S. Environmental Protection Agency, Region III
Enforcement and Compliance Assurance Division
Air Section (3ED21)
1650 Arch Street
Philadelphia, PA 19103-2029

DAQ Compliance and Enforcement[1]:
DEPAirQualityReports@wv.gov

[1] For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, notice of Compliance Status Reports, Initial Notifications, etc.

3.5.4. **Operating Fee.**

3.5.4.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a Certified Emissions Statement (CES) and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.4.2. In accordance with 45CSR30 – Operating Permit Program, enclosed with this permit is a Certified Emissions Statement (CES) Invoice, from the date of initial startup through the following June 30. Said invoice and the appropriate fee shall be submitted to this office no later than 30 days prior to the date of initial startup. For any startup date other than July 1, the permittee shall pay a fee or prorated fee in accordance with the Section 4.5 of 45CSR22. A copy of this schedule may be found attached to the Certified Emissions Statement (CES) Invoice.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements

4.1. Limitations and Standards

4.1.1. Only those emission units/sources as identified in Table 1.0, with the exception of any *de minimis* sources as identified under Table 45-13B of 45CSR13, are authorized at the permitted facility by this permit. In accordance with the information filed in Permit Application R14-0039, the emission units/sources identified under Table 1.0 of this permit shall be installed, maintained, and operated so as to minimize any fugitive escape of pollutants, shall not exceed the listed maximum design capacities, shall use the specified control devices, and comply with any other information provided under Table 1.0.

4.1.2. The aggregate production of sheet steel in the EAFs (EAF-1 and EAF-2) shall not, on a rolling 12-month basis, exceed 3,000,000 tons per year as measured as the total tons of molten metal sent to the casters (CAST1 and CAST2).

4.1.3. **Material Handling & Storage Operations**
The handling of: (1) slag, (2) raw materials used in the production of steel: scrap steel, direct reduced iron (DRI), carbons, alloys, and lime, and (3) EAF Baghouse Dust shall be in accordance with the following requirements:

a. The permittee shall not exceed the specified maximum annual throughputs of the following materials:

Table 4.1.3(a): Maximum Annual Throughputs

Material	Limit	Units
Scrap Steel	1,925,000	TPY(1)
DRI	557,500	TPY(1)
Alloys	62,000	TPY(1)
Carbon	35,000	TPY(1)
Lime	70,000	TPY(1)
Slag	262,500	TPY(2)

(1) As measured prior to charging in the EAF/LMF.
(2) As measured processed through the F1 Slag Feed Hopper.

b. The permittee shall not exceed the specified maximum design capacities of the following equipment:

Table 4.1.3(b): Maximum Design Capacity

Emission Unit ID	Description	Limit	Units
CR1	Slag Crusher	50	TPH
S1	Slag Screen 1	68	TPH
S2	Slag Screen 2	66	TPH

c. The permittee shall not exceed the maximum emission limits for the material handling stack/vent emission points as given under Appendix A: Table A-1 and the material handling non-stack/vent emission points (including open stockpiles) as given under Appendix A: Table A-2;

d. The permittee shall perform all slag handling operations (including conveying, crushing, screening, and storing) only on slag that is wetted sufficiently (BACT) to mitigate the emissions of particulate matter;

e. A visible and/or audible warning device shall be installed on each of the EAF Baghouse Storage Silos to warn operators when the silos are full so that silos are not overloaded. The silos shall not be overloaded at any time. All particulate material retrieved from any of the EAF Baghouses shall be handled in a manner that will prevent excess material from becoming airborne into the atmosphere;

f. **Outdoor Feedstock Material Storage Areas**
All outdoor open feedstock material storage shall be in accordance with the following:

(1) The permittee is authorized to operate four (4) open scrap steel stockpiles (SCRPSKP1 through SCRPSKP4) that shall each not exceed a base of 342,030 ft^2 and three (3) open slag stockpiles (SLGSKP1 through SLGSKP3) that shall not exceed a base of 177,625 ft^2 (SLGSKP1), 32,541 ft^2 (SLGSKP2), and 368 ft^2 (SLGSKP1). The permittee shall manage on-pile activity so as to minimize the release of emissions from all open stockpiles;

(2) The permittee shall utilize water sprays as necessary on all open storage piles to keep the to mitigate any significant release of fugitive dust emissions from the piles both during periods of activity on the pile and from wind erosion;

(3) The permittee shall properly install, operate and maintain winterization systems for all water sprays in a manner that the water sprays will remain effective and functional, to the maximum extent practicable, during winter months and cold weather. At all times, including periods of cold weather, the permittee shall comply with the water spray requirements of this section; and

(4) All other feedstock material (DRI, carbon, alloys, and lime) shall at no times be stored in open storage piles within the plant boundary.

g. **Haulroads and Mobile Work Areas**
Fugitive particulate emissions resulting from use of haulroads and mobile work areas shall be minimized by the following:

(1) The permittee shall perform all necessary tasks to adequately maintain paved haulroads and paved mobile work areas (including a reasonable shoulder area) within the plant boundary;

(2) All unpaved roads and mobile work areas shall be graded with gravel, slag, or a mixture of the two so as to provide a suitable surface for the use of trucks and other heavy equipment. Unpaved roads and mobile work areas shall be provided with additional slag or gravel as needed to maintain the road surface;

(3) The permittee shall collect, in a timely fashion, material spilled on paved haulroads that could become airborne if it dried or were subject to vehicle traffic and shall maintain access to a vacuum sweeper truck in good operating condition, and shall utilize same as needed to remove excess dirt and dust from all paved haulroads and mobile work areas. The haulroads

and mobile work areas shall be flushed with water immediately prior to each vacuum sweeping (flushing may be part of vacuum sweeper truck);

(4) The permittee shall maintain a water truck on site and in good operating condition, and shall utilize same to apply a mixture of water and an environmentally acceptable dust control additive, hereinafter referred to as solution, as often as is necessary in order to minimize the atmospheric entrainment of fugitive particulate emissions that may be generated from haulroads and other work areas where mobile equipment is used. The spraybar shall be equipped with commercially available spray nozzles, of sufficient size and number, so as to provide adequate coverage to the area being treated.

The pump delivering the water/solution shall be of sufficient size and capacity so as to be capable of delivering to the spray nozzle(s) an adequate quantity of solution, and at a sufficient pressure, so as to assure that the treatment process will minimize the atmospheric entrainment of fugitive particulate emissions generated from the haulroads and work areas where mobile equipment is used.

The permittee shall properly install, operate and maintain winterization systems for all water trucks in a manner that the water truck will remain effective and functional, to the maximum extent practicable, during winter months and cold weather. At all times, including periods of cold weather, the permittee shall comply with the water truck requirements of this permit; and

(5) A maximum speed limit of 15 miles per hour shall be maintained on all haulroads. Clear and visible signs shall be posted displaying this speed limit wherever necessary to ensure compliance with this requirement.

h. **45CSR7**
The material handling sources identified under 4.1.3. above shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate

matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

4.1.4. **Melt Shop**
The emission units/sources in the Melt Shop shall meet the following requirements:

a. **EAFs/LMFs**
The EAFs (identified as EAF-1 and EAF-2) and LMFs (identified as LMF1 and LMF2) shall **each** not exceed the aggregate emission limits in the following table, as emitted from the associated baghouse (EAF1-BH and EAF2-BH), and shall utilize the specified **BACT** Technology, as given in the following table (the emission limits are in effect during all periods of operation):

Table 4.1.4(a): EAF/LMF Emission Limits

<table>
<tr><th>Pollutant</th><th>BACT Limit</th><th colspan="2">BACT Technology(1)</th><th>PPH</th><th>TPY</th></tr>
<tr><td>CO</td><td>2.02 lb/ton-steel(2)</td><td colspan="2">GCP(3)</td><td>341.83</td><td>1,499.00</td></tr>
<tr><td rowspan="2">NO_x</td><td rowspan="2">0.35 lb/ton-steel(2)</td><td>EAFs</td><td>Oxyfuel Burners</td><td rowspan="2">58.91</td><td rowspan="2">258.38</td></tr>
<tr><td>LMFs</td><td>GCP</td></tr>
<tr><td>$PM_{2.5}/PM_{10}$(4)</td><td>0.0052 gr/dscf</td><td colspan="2">Baghouse</td><td>49.19</td><td>215.45</td></tr>
<tr><td>PM(5)</td><td>0.0018 gr/dscf</td><td colspan="2">Baghouse</td><td>17.03</td><td>74.58</td></tr>
<tr><td>SO_2</td><td>0.24 lb/ton-steel(2)</td><td colspan="2">Scrap Management Plan(6)</td><td>40.36</td><td>177.00</td></tr>
<tr><td rowspan="3">VOCs</td><td rowspan="3">0.455 lb/ton-steel(2)</td><td rowspan="2">EAFs</td><td>GCP</td><td rowspan="3">76.99</td><td rowspan="3">337.69</td></tr>
<tr><td rowspan="2">Scrap Management Plan(6)</td></tr>
<tr><td>LMFs</td></tr>
<tr><td>Lead(7)</td><td>0.00045 lb/ton-steel</td><td colspan="2">Baghouse</td><td>0.08</td><td>0.33</td></tr>
<tr><td>Fluoride</td><td>0.00350 lb/ton-steel(8)</td><td colspan="2">Baghouse</td><td>1.19</td><td>5.20</td></tr>
<tr><td>Total HAPs</td><td>n/a</td><td colspan="2">n/a</td><td>0.18</td><td>0.78</td></tr>
<tr><td>CO_2e</td><td>TPY Limit</td><td colspan="2">OxyFuel Burners, See 4.1.4(c)(5)</td><td>49,826</td><td>186,909</td></tr>
</table>

(1) LNB = Low NO_x Burner; GCP = Good Combustion Practices
(2) Aggregated limit based on an EAF limit of 0.30 lb/ton-steel and LMF limit of 0.05 lb/ton-steel. Compliance based on a 30-day rolling average.
(3) For the purposes of this permit, "Good Combustion Practices" are defined to include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control emissions through proper combustion tuning, temperature, and air/fuel mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(4) Includes condensables.
(5) Filterable only.
(6) For the purposes of this permit, "Scrap Management Plan" is defined as being in compliance with the Scap Management Requirements under 40 CFR 63, Subpart YYYYY and XXXXX.
(7) Elemental Lead - not Lead Compounds defined as a HAP.
(8) XXXXX

b. **Melt Shop Fugitive Emissions**
The aggregate uncaptured fugitive emissions from the both EAFs/LMFs (identified as EAF-1 and EAF-2) and both the Casters (identified as CAST-1 and CAST-2) shall not exceed the limits given in the following table (these limits do not include the natural gas combustion exhaust emissions from various sources listed under Table 4.1.5(a)):

Table 4.1.4(b): EAFs/LMFs/Casters Fugitive Emission Limits(1)(2)(3)(4)

Pollutant	Source	PPH	TPY
CO	EAF-1/EAF-2	7.18	31.50
NO_x	EAF-1/EAF-2	1.88	8.25
$PM_{2.5}/PM_{10}$(3)	EAF-1/EAF-2	0.11	0.49
	CAST-1/CAST-2	0.21	0.90
PM(4)	EAF-1/EAF-2	0.19	0.85
	CAST-1/CAST-2	0.21	0.90
SO_2	EAF-1/EAF-2	1.37	6.00
VOCs	EAF-1/EAF-2	1.62	7.13
Lead(5)	EAF-1/EAF-2	0.0015	0.0068
Fluoride	EAF-1/EAF-2	0.012	0.053
Total HAPs	EAF-1/EAF-2	0.0015	0.0065
CO_2e	EAF-1/EAF-2	1,007	3,776

(1) With the exception of CO_2e, the PPH limits in this table represent the BACT emission limits and the particulate matter capture methods and control efficiencies given under 4.1.3(c) below represent the associated control method/technology. The BACT limit for CO_2e is the TPY limit.
(2) EAF/LMF fugitive non-particulate matter emissions based on 1% of total uncontrolled emissions (not captured by the DEC). Particulate Matter emissions based on 0.005% of uncontrolled emissions - using capture efficiency of DEC (99%), Canopy Hood (95%), and Melt Shop building (90%).
(3) Casters fugitives are only particulate matter emissions and based on 0.50% of total uncontrolled emissions - using capture efficiency of Canopy Hood (95%) and Melt Shop building (90%).
(4) All other natural gas combustion sources that exhaust in the Melt Shop building are considered fugitive and emitted from building openings. These limits are given under Table 4.1.5(a).
(5) Elemental Lead - not Lead Compounds defined as a HAP.

c. **EAF/LMF/Casting Operating Requirements**
The EAFs/LMFs shall be operated according to the following requirements:

(1) Each EAF will not exceed an aggregate oxyfuel burner heat input of 22.18 mmBtu/hr and the burners shall be fired only by pipeline quality natural gas (PNG);

(2) During melting operations when the roof is closed, the permittee shall utilize a direct-shell evacuation control (DEC) system designed and operated to achieve a minimum capture efficiency of 99% of all potential particulate matter emissions from the EAFs and LMFs and evacuate the exhaust to each associated EAF baghouse. A DEC system means a system that maintains a negative pressure within the EAF above the slag or metal and ducts emissions to the EAF baghouse; and

(3) The permittee shall utilize a roof canopy hood designed and operated to achieve a minimum capture efficiency of 95% of all potential fugitive particulate matter emissions from the EAFs/LMFs and Casters (CAST-1 and CAST-2).

(4) The permittee shall operate control equipment and/or implement work practice standards as reasonable precautions to prevent particulate matter from becoming airborne and exiting any opening from the Melt Shop building into the open air so as to achieve a minimum capture efficiency of 90% of all potential fugitive particulate matter emissions from the EAFs/LMFs and Casters (CAST-1 and CAST-2). Reasonable precautions include, but are not limited to the following:

(i) Downdraft and/or plastic strip air curtains at Melt Shop openings with the potential for fugitive particulate emissions;

(ii) Keeping other doors closed except for pass-through traffic;

(iii) The scrap charge bay door shall be maintained at all times with a plastic strip air curtain covering the top 15 feet of the opening; and

(iv) After removal from the EAFs, all molten slag shall be deposited into slag carrying pots and transported to the designated slag processing area.

(5) To comply with GHG BACT on the EAFs, the permittee shall meet the following design and operational requirements:

(i) Install and maintain seals and modern insulation media to minimize heat losses from EAF doors, roof, and any openings around the burners or other equipment traversing through the furnace shell;

(ii) Install, operate, and maintain oxyfuel burners in accordance with manufacturer's specifications to maximize heat transfer, reduce heat losses, and reduce electrode consumption resulting in high thermal efficiency and reduced electrical energy consumption;

(iii) Employ foamy slag practices to reduce radiation heat losses and increases the electric power efficiency of the EAFs;

(iv) Optimize process control operations to reduce electricity consumption through monitoring integration of real-time monitoring of process variables along with realtime control systems for carbon injection and lance oxygen practices; and

(v) Implement a preventative maintenance program that is consistent with the manufacturer's instructions for routine and long-term maintenance of equipment important to the operation, including EAF doors, burners, etc.;

d. **Vacuum Tank Degassers Requirements**
The Vacuum Tank Degassers (VTGs), identified as VTD1 and VTD2, shall be operated according to the following requirements:

(1) Once the ladle is enclosed in the VTGs and a vacuum is drawn, all gas from the units shall be pulled through a particulate filter and combusted in the associated VTG Flare. The flare shall be designed and operated according to the requirements given under 4.1.10(e);

(2) The VTGs shall not be operated simultaneously;

(3) The emissions from each VTG, as controlled by the VTG Flare, shall not exceed the limits given in the following table (Emission Points VTGST-1 and VTGST-2):

Table 4.1.4(d)(3): VTG/Flaring Emission Limits

Pollutant	BACT Limit	BACT Technology(1)	PPH	TPY
CO	PPH Limit	Flaring	5.38	14.93
NO_x	PPH Limit	§60.18 Flare Design	0.84	3.69
$PM_{2.5}/PM_{10}$(4)	0.0083 gr/scf (pre flare)	Particulate Filter §60.18 Flare Design	0.07	0.33
PM(5)	0.0083 gr/scf (pre flare)	Particulate Filter §60.18 Flare Design	0.07	0.33
SO_2	PPH Limit	§60.18 Flare Design	0.01	0.03
VOCs	PPH Limit	§60.18 Flare Design	1.73	7.60
Total HAPs	n/a	n/a	0.02	0.10
CO_2e	TPY Limit		1,863	7,504

(1) The Particulate Filter is located prior to the flare and captures emissions generated by the VTG. It does not control the trace amount of particulate matter generated by the flare's combustion exhaust.

(4) The particulate matter filter controlling the offgases from each VTG (prior to combustion in the flare) shall not exceed an exit loading rate of 0.0083 gr/dscf (defined as BACT); and

(5) **45CSR10 - Refinery Gas Stream**
VTG-1 and VTG-2 are subject to the applicable limitations and standards under 45CSR10, including the requirement as given below:

(1) No person shall cause, suffer, allow or permit the combustion of any refinery process gas stream or any other process gas stream that contains hydrogen sulfide in a concentration greater than 50 grains per 100 cubic feet of gas except in the case of a person operating in compliance with an emission control and mitigation plan approved by the Director and U. S. EPA. In certain cases very small units may be considered exempt from this requirement if, in the opinion of the Director, compliance would be economically unreasonable and if the contribution of the unit to the surrounding air quality could be considered negligible.
[45CSR§10-5.1]

e. **45CSR7**
The EAFs, LMFs, and Casters shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

f. **45CSR10**
The Emission Points BHST-1 and BHST-2 are subject to the applicable limitations and standards under 45CSR10, including the requirements given below:

(1) No person shall cause, suffer, allow or permit the emission into the open air from any source operation an in-stack sulfur dioxide concentration exceeding 2,000 parts per million by volume from existing source operations, except as provided in subdivisions 4.1.a through 4.1.e.
[45CSR§10-4.1]

(2) Compliance with the allowable sulfur dioxide concentration limitations from manufacturing process source operation(s) set forth in this rule shall be based on a block three (3) hour averaging time.
[45CSR§10-4.2]

g. **40 CFR 60, Subpart AAa**
The EAFs shall comply with all applicable requirements of 40 CFR 60, Subpart AAa including, but not limited to, the following standards:

(1) **§ 60.272a Standard for particulate matter.**

(i) On and after the date of which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from an EAF or an AOD vessel any gases which:
[40 CFR§60.272a(a)]

(A) Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf);
[40 CFR§60.272a(a)(1)]

(B) Exit from a control device and exhibit 3 percent opacity or greater; and
[40 CFR§60.272a(a)(2)]

(C) Exit from a shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.
[40 CFR§60.272a(a)(3)]

(ii) On and after the date on which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from the dust-handling system any gases that exhibit 10 percent opacity or greater.
[40 CFR§60.272a(b)]

h. **40 CFR 63, Subpart YYYYY**
The EAFs shall comply with all applicable requirements of 40 CFR 63, Subpart YYYYY including, but not limited to, the following standards:

(1) **§63.10685 What are the requirements for the control of contaminants from scrap?**

(i) **Chlorinated plastics, lead, and free organic liquids.** For metallic scrap utilized in the EAF at your facility, you must comply with the requirements in either paragraph (a)(1) or (2) of this section. You may have certain scrap at your facility subject to paragraph (a)(1) of this section and other scrap subject to paragraph (a)(2) of this section provided the scrap remains segregated until charge make-up.
[40 CFR§63.10685(a)]

(A) **Pollution prevention plan**. For the production of steel other than leaded steel, you must prepare and implement a pollution prevention plan for metallic scrap selection and inspection to minimize the amount of chlorinated plastics, lead, and free organic liquids that is charged to the furnace. For the production of leaded steel, you must prepare and implement a pollution prevention plan for scrap selection and inspection to minimize the amount of chlorinated plastics and free organic liquids in the scrap that is charged to the furnace. You must submit the scrap pollution prevention plan to the permitting authority for approval. You must operate according to the plan as submitted during the review and approval process, operate according to the approved plan at all times after approval, and address any deficiency identified by the permitting authority within 60 days following disapproval of a plan. You may request approval to revise the plan and may operate according to the revised plan unless and until the revision is disapproved by the permitting authority. You must keep a copy of the plan onsite, and you must provide training on the plan's requirements to all plant personnel with materials acquisition or inspection duties. Each plan must include the information in paragraphs (a)(1)(i) through (iii) of this section:
[40 CFR§63.10685(a)(1)]

(1) Specifications that scrap materials must be depleted (to the extent practicable) of undrained used oil filters, chlorinated plastics, and free organic liquids at the time of charging to the furnace.
[40 CFR§63.10685(a)(1)(i)]

(2) A requirement in your scrap specifications for removal (to the extent practicable) of lead-containing components (such as batteries, battery cables, and wheel weights) from the scrap, except for scrap used to produce leaded steel.
[40 CFR§63.10685(a)(1)(ii)]

(3) Procedures for determining if the requirements and specifications in paragraph (a)(1) of this section are met (such as visual inspection or periodic audits of scrap providers) and procedures for taking corrective actions with vendors whose shipments are not within specifications.
[40 CFR§63.10685(a)(1)(iii)]

(4) The requirements of paragraph (a)(1) of this section do not apply to the routine recycling of baghouse bags or other internal process or maintenance materials in the furnace. These exempted materials must be identified in the pollution prevention plan.
[40 CFR§63.10685(a)(1)(iv)]

(B) **Restricted metallic scrap.** For the production of steel other than leaded steel, you must not charge to a furnace metallic scrap that contains scrap from motor vehicle bodies, engine blocks, oil filters, oily turnings, machine shop borings, transformers or capacitors containing polychlorinated biphenyls, lead-containing components, chlorinated plastics, or free organic liquids. For the production of leaded steel, you must not charge to the furnace metallic scrap that contains scrap from motor vehicle bodies, engine blocks, oil filters, oily turnings, machine shop borings, transformers or capacitors containing polychlorinated biphenyls, chlorinated plastics, or free organic liquids. This restriction does not apply to any post-consumer engine blocks, post-consumer oil filters, or oily turnings that are processed or cleaned to the extent practicable such that the materials do not include lead components, chlorinated plastics, or free organic liquids. This restriction does not apply to motor vehicle scrap that is charged to recover the chromium or nickel content if you meet the requirements in paragraph (b)(3) of this section.
[40 CFR§63.10685(a)(2)]

(ii) **Mercury requirements.** For scrap containing motor vehicle scrap, you must procure the scrap pursuant to one of the compliance options in paragraphs (b)(1), (2), or (3) of this section for each scrap provider, contract, or shipment. For scrap that does not contain motor vehicle scrap, you must procure the scrap pursuant to the requirements in paragraph (b)(4) of this section for each scrap provider, contract, or shipment. You may have one scrap provider, contract, or shipment subject to one compliance provision and others subject to another compliance provision.
[40 CFR§63.10685(b)]

(A) **Site-specific plan for mercury switches**. You must comply with the requirements in paragraphs (b)(1)(i) through (v) of this section.
[40 CFR§63.10685(b)(1)]

(1) You must include a requirement in your scrap specifications for removal of mercury switches from vehicle bodies used to make the scrap.
[40 CFR§63.10685(b)(1)(i)]

(2) You must prepare and operate according to a plan demonstrating how your facility will implement the scrap specification in paragraph (b)(1)(i) of this section for removal of mercury switches. You must submit the plan to the permitting authority for approval. You must operate according to this plan as submitted during the review and approval process, operate according to the

approved plan at all times after approval, and address any deficiency identified by the permitting authority within 60 days following disapproval of a plan. You may request approval to revise the plan and may operate according to the revised plan unless and until the revision is disapproved by the permitting authority. The permitting authority may change the approval status of the plan upon 90-days written notice based upon the semiannual compliance report or other information. The plan must include:
[40 CFR§63.10685(b)(1)(ii)]

(A) A means of communicating to scrap purchasers and scrap providers the need to obtain or provide motor vehicle scrap from which mercury switches have been removed and the need to ensure the proper management of the mercury switches removed from that scrap as required under the rules implementing subtitle C of the Resource Conservation and Recovery Act (RCRA) (40 CFR parts 261 through 265 and 268). The plan must include documentation of direction to appropriate staff to communicate to suppliers throughout the scrap supply chain the need to promote the removal of mercury switches from end-of-life vehicles. Upon the request of the permitting authority, you must provide examples of materials that are used for outreach to suppliers, such as letters, contract language, policies for purchasing agents, and scrap inspection protocols;
[40 CFR§63.10685(b)(1)(ii)(A)]

(B) Provisions for obtaining assurance from scrap providers that motor vehicle scrap provided to the facility meet the scrap specification;
[40 CFR§63.10685(b)(1)(ii)(B)]

(C) Provisions for periodic inspections or other means of corroboration to ensure that scrap providers and dismantlers are implementing appropriate steps to minimize the presence of mercury switches in motor vehicle scrap and that the mercury switches removed are being properly managed, including the minimum frequency such means of corroboration will be implemented; and
[40 CFR§63.10685(b)(1)(ii)(C)]

(D) Provisions for taking corrective actions (i.e., actions resulting in scrap providers removing a higher percentage of mercury switches or other mercury-containing components) if needed, based on the results of procedures implemented in paragraph (b)(1)(ii)(C) of this section).
[40 CFR§63.10685(b)(1)(ii)(D)]

(3) You must require each motor vehicle scrap provider to provide an estimate of the number of mercury switches removed from motor vehicle scrap sent to your facility during the previous year and the basis for the estimate. The permitting authority may request documentation or additional information at any time.
[40 CFR§63.10685(a)(1)(iii)]

(4) You must establish a goal for each scrap provider to remove at least 80 percent of the mercury switches. Although a site-specific plan approved under paragraph (b)(1) of this section may require only the removal of convenience light switch mechanisms, the permitting authority will credit all documented and verifiable mercury-containing components removed from motor vehicle

scrap (such as sensors in anti-locking brake systems, security systems, active ride control, and other applications) when evaluating progress towards the 80 percent goal.
[40 CFR§63.10685(a)(1)(iv)]

(5) For each scrap provider, you must submit semiannual progress reports to the permitting authority that provide the number of mercury switches removed or the weight of mercury recovered from the switches, the estimated number of vehicles processed, an estimate of the percent of mercury switches removed, and certification that the removed mercury switches were recycled at RCRA-permitted facilities or otherwise properly managed pursuant to RCRA subtitle C regulations referenced in paragraph (b)(1)(ii)(A) of this section. This information can be submitted in aggregated form and does not have to be submitted for each scrap provider, contract, or shipment. The permitting authority may change the approval status of a site-specific plan following 90-days notice based on the progress reports or other information.
[40 CFR§63.10685(a)(1)(v)]

(B) **Option for approved mercury programs.** You must certify in your notification of compliance status that you participate in and purchase motor vehicle scrap only from scrap providers who participate in a program for removal of mercury switches that has been approved by the Administrator based on the criteria in paragraphs (b)(2)(i) through (iii) of this section. If you purchase motor vehicle scrap from a broker, you must certify that all scrap received from that broker was obtained from other scrap providers who participate in a program for the removal of mercury switches that has been approved by the Administrator based on the criteria in paragraphs (b)(2)(i) through (iii) of this section. The National Vehicle Mercury Switch Recovery Program and the Vehicle Switch Recovery Program mandated by Maine State law are EPA-approved programs under paragraph (b)(2) of this section unless and until the Administrator disapproves the program (in part or in whole) under paragraph (b)(2)(iii) of this section.
[40 CFR§63.10685(b)(2)]

(1) The program includes outreach that informs the dismantlers of the need for removal of mercury switches and provides training and guidance for removing mercury switches;
[40 CFR§63.10685(b)(2)(i)]

(2) The program has a goal to remove at least 80 percent of mercury switches from the motor vehicle scrap the scrap provider processes. Although a program approved under paragraph (b)(2) of this section may require only the removal of convenience light switch mechanisms, the Administrator will credit all documented and verifiable mercury-containing components removed from motor vehicle scrap (such as sensors in anti-locking brake systems, security systems, active ride control, and other applications) when evaluating progress towards the 80 percent goal; and
[40 CFR§63.10685(b)(2)(ii)]

(3) The program sponsor agrees to submit progress reports to the Administrator no less frequently than once every year that provide the number of mercury switches removed or the weight of mercury recovered from the switches, the estimated number of vehicles processed, an estimate of the percent of mercury

switches recovered, and certification that the recovered mercury switches were recycled at facilities with permits as required under the rules implementing subtitle C of RCRA (40 CFR parts 261 through 265 and 268). The progress reports must be based on a database that includes data for each program participant; however, data may be aggregated at the State level for progress reports that will be publicly available. The Administrator may change the approval status of a program or portion of a program (e.g., at the State level) following 90-days notice based on the progress reports or on other information.
[40 CFR§63.10685(b)(2)(iii)]

(4) You must develop and maintain onsite a plan demonstrating the manner through which your facility is participating in the EPA-approved program.
[40 CFR§63.10685(b)(1)(iv)]

(A) The plan must include facility-specific implementation elements, corporate-wide policies, and/or efforts coordinated by a trade association as appropriate for each facility.
[40 CFR§63.10685(b)(2)(iv)(A)]

(B) You must provide in the plan documentation of direction to appropriate staff to communicate to suppliers throughout the scrap supply chain the need to promote the removal of mercury switches from end-of-life vehicles. Upon the request of the permitting authority, you must provide examples of materials that are used for outreach to suppliers, such as letters, contract language, policies for purchasing agents, and scrap inspection protocols.
[40 CFR§63.10685(b)(2)(iv)(B)]

(C) You must conduct periodic inspections or provide other means of corroboration to ensure that scrap providers are aware of the need for and are implementing appropriate steps to minimize the presence of mercury in scrap from end-of-life vehicles.
[40 CFR§63.10685(b)(2)(iv)(C)]

(2) **§63.10686 What are the requirements for electric arc furnaces and argon-oxygen decarburization vessels?**

(i) You must install, operate, and maintain a capture system that collects the emissions from each EAF (including charging, melting, and tapping operations) and argon-oxygen decarburization (AOD) vessel and conveys the collected emissions to a control device for the removal of particulate matter (PM).
[40 CFR§63.10686(a)]

(ii) Except as provided in paragraph (c) of this section, you must not discharge or cause the discharge into the atmosphere from an EAF or AOD vessel any gases which:
[40 CFR§63.10686(b)]

(A) Exit from a control device and contain in excess of 0.0052 grains of PM per dry standard cubic foot (gr/dscf); and
[40 CFR§63.10686(b)(1)]

(B) Exit from a melt shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.
[40 CFR§63.10686(b)(2)]

4.1.5. **Natural Gas Combustion Units**

The natural gas-fired units identified in Appendix A: Table A-3 shall operate according to the following requirements:

a. Each unit shall be fired by PNG, shall not exceed the MDHI as given under Table 1.0 of this permit, shall not exceed the maximum emission limits for the specified process heaters given under Appendix A: Table A-3, and shall comply with the BACT requirements given in the following table;

Table 4.1.5(a): Natural Gas Combustion BACT

Pollutant	Emission Units	BACT Limit	BACT Technology(1)
CO	All Units in Table A-3	0.082 lb/mmBtu	Good Combustion Practices
NO_x	LD, TD LPHTR1 - 7 TPHTR1 - 2 SENPHTR1 - 2 BOXANN1 - 22 SLAG-CUT ASP	0.098 lb/mmBtu	LNB, Good Combustion Practices
	CMBLR1 - 3 GALVFN1 - 3	0.05 lb/mmBtu	
	TF1 - 2	0.07 lb/mmBtu	
$PM_{2.5}/PM_{10(2)}$	All Units in Table A-3	0.00186 lb/mmBtu	Use of PNG, Good Combustion Practices
PM(3)	All Units in Table A-3	0.00745 lb/mmBtu	
SO_2	All Units in Table A-3	0.00059 lb/mmBtu	Use of PNG
VOCs	All Units in Table A-3	0.0054 lb/mmBtu	Good Combustion Practices
CO_2e	All Units in Table A-3	TPY Limits in Table A-3	Use of PNG, Good Combustion Practices(4)

(1) LNB = Low-NO_x Burning Technology. For the purposes of this permit, "Good Combustion Practices" are defined to include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control emissions through proper combustion tuning, temperature, and air/fuel mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes Condensables.
(3) Filterable Only.

b. As the annual emission limits of all natural gas-fired combustion units listed under Table A-3 are based on operating at MDHI for 8,760 hours of operation, there are no annual limit on hours of operation or natural gas combusted on an annual basis for these units.

c. **45CSR2**
The Pickling Line Boilers (CMBLR1 through CMBLR3) and the Water Bath Vaporizer (ASP) are subject to the applicable limitations and standards under 45CSR2, including the requirements as given below under (1) through (3).

(1) The permittee shall not cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from the fuel burning units which is greater than ten (10) percent opacity based on a six minute block average.
[45CSR§2-3.1]

(2) The permittee shall not cause, suffer, allow or permit the discharge of particulate matter into the open air from the fuel burning units, measured in terms of pounds per hour in excess of the amount determined as follows:

(i) The product of 0.09 and the total design heat input for the fuel burning units in million British Thermal Units (B.T.U.'s) per hour, provided however that no more than twelve hundred (1200) pounds per hour of particulate matter shall be discharged into the open air.
[45CSR§2-4.1a]

(3) The visible emission standards set forth in section 3 of 45CSR2 shall apply at all times except in periods of start-ups, shutdowns and malfunctions. Where the Director believes that start-ups and shutdowns are excessive in duration and/or frequency, the Director may require an owner or operator to provide a written report demonstrating that such frequent start-ups and shutdowns are necessary.
[45CSR§2-9.1]

d. **45CSR10**
The Pickling Line Boilers (CMBLR1 through CMBLR3) and the Water Bath Vaporizer (ASP) are subject to the applicable limitations and standards under 45CSR10, including the requirement as given below:

(1) The permittee shall not cause, suffer, allow or permit the discharge of sulfur dioxide into the open air from the fuel burning units measured in terms of pounds per hour, in excess of the product of 3.2 and the total design heat of the boilers in million BTU's per hour.
[45CSR§10-3.1]

(2) No person shall cause, suffer, allow or permit the combustion of any refinery process gas stream or any other process gas stream that contains hydrogen sulfide in a concentration greater than 50 grains per 100 cubic feet of gas except in the case of a person operating in compliance with an emission control and mitigation plan approved by the Director and U. S. EPA. In certain cases very small units may be considered exempt from this requirement if, in the opinion of the Director, compliance would be economically unreasonable and if the contribution of the unit to the surrounding air quality could be considered negligible.
[45CSR§10-5.1]

e. **40 CFR 60, Subpart Dc**
The Pickling Line Boilers (CMBLR1 through CMBLR3) and the Water Bath Vaporizer (ASP) are subject to the applicable record-keeping and reporting requirements given under 40 CFR §60.48c.

4.1.6. Hot Mill and Cold Mill

The Hot Mill and the Cold Mill shall operate according to the following requirements:

a. The permittee shall not exceed the maximum particulate matter emission limits for the Hot Mill and Cold Mill stack/vent emission points as given under Appendix A: Table A -4;

b. **Pickling and Galvanizing Line**
The Pickling Lines (PKL-1 and PKL-2) and Galvanizing Line shall be operated according to the following requirements:

(1) The pickling line tanks shall be covered and vented to the appropriate Pickling Line Scrubber (PKL1-SCR or PKL2-SCR);

(2) The outlet concentration of HCl from each Pickling Line Scrubber Stack (PLST-1 and PLST-2) shall not exceed a BACT concentration of 6 parts per million by volume (ppm_v);

(3) Mass emissions of HCL from Pickling Line 1 Scrubber Stack (PLST-1) shall not exceed 0.56 lbs/hr and 2.47 tons/yr (as based on a maximum flow rate of 16,271 dscfm). Mass emissions of HCL from Pickling Line 2 Scrubber Stack (PLST-2) shall not exceed 0.25 lbs/hr and 1.09 tons/yr (as based on a maximum flow rate of 7,185 dscfm);

(4) Spillage of acid, caustic, or other process materials shall be cleaned up as soon as practical and contained to minimize fugitive emissions;

(5) During non-operational periods, either a fume suppressant shall be used in the pickling bath, or the pickling bath shall be covered to reduce evaporative losses; and

(6) Hydrogen gas cleaning shall be used to prepare the steel for galvanizing to prevent fumes from the zinc pot. The use of fluxing agents in the Galvanizing Line is not authorized.

(7) **45CSR7 - Acid Mist Source**
The emissions of HCl from the Pickling Lines shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(i) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **45CSR7 - Particulate Matter Sources**
The Hot Mill and Cold Mill particulate matter sources, excluding those that meet the exemption requirements given under 45CSR§7-10.5 and those that particulate matter is generated solely from the combustion of natural gas, shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) **Scarfing Machine (SM) 45CSR7 Emission Limit**
Particulate matter emissions shall not exceed a concentration of 0.030 grains per dry standard cubic foot from a machine scarfing operation during periods in which scarfing is actually being performed.
[45CSR§7-4.10(h)]

(5) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

4.1.7. **Storage Tanks**
Use of the fixed roof and open storage tanks shall be in accordance with the following:

a. Tank capacity shall be limited as specified under Table 1.0 of this permit;

b. The aggregate emissions of VOCs from all fixed roof storage tanks (T1 - T9) shall not exceed a **BACT** Limit of 0.67 tons/year. The aggregate emissions of VOCs from all open Cold Degreaser Tanks (T25 - T29) shall not exceed a **BACT** Limit of 1.46 tons/year;

c. The aggregate emissions of HCl from all HCL Storage Tanks shall not exceed a limit of 0.07 tons/year;

d. Material stored shall be as specified and the aggregate annual storage tank throughputs shall not exceed those given in the following table:

Table 4.1.7(d): Fixed Roof Storage Tanks Annual Throughput Limits

Tank ID	Material Stored	Gallons(1)
T1 - T6	Diesel	2,190,000
T7	Gasoline	120,000(2)

Tank ID	Material Stored	Gallons(1)
T8 -T9	Hydraulic Oil	730,000
T10 - T15	HCl	7,200,000
T16 - T23	Spent Pickle Liquor	7,200,000
T24	Used Oil	365,000

(1) This number represents the aggregate limit for all specified storage tanks.
(2) The permittee has chosen to comply with the 40 CFR 63, Subpart CCCCCC requirements for facilities with less than monthly throughput of less than 10,000 gallons of gasoline.

e. For all fixed roof storage tanks with the potential to emit VOCs (does not include T10 through T23), the permittee shall, for purposes **of BACT**, meet the following requirements:

(1) Utilize good operating practices in the operation of the storage tanks. Good operating practices shall mean maintaining and operating the storage tanks according to manufacturers recommendations and regularly inspecting the tanks for areas of disrepair or failure that would allow the escape of pollutant-containing vapors.

(2) Maintain a white or aluminum color on all storage tank surfaces that are exposed to the sun to mitigate heat absorption of the tanks; and

(3) Utilize submerged fill on all tanks.

f. Operation of the Cold Degreaser Tanks shall be in accordance with the following:

(1) The cover of each degreaser tank shall be closed if not handling parts in the cleaner;

(2) The operation of a cold cleaner using a solvent with a vapor pressure that exceeds one (1.0) mmHg (0.019 psi) measured at 20° C (68° F) is prohibited;

(3) Work area fans shall be positioned so that air is not directed across the opening of the tanks so as to facilitate volatization.

g. **40 CFR 63, Subpart CCCCCC**
The "gasoline dispensing facility" located at facility, as defined under §63.11132, shall comply with all applicable requirements of 40 CFR 63, Subpart CCCCCC including, but not limited to, the following standards:

(1) **§ 63.11116 Requirements for facilities with monthly throughput of less than 10,000 gallons of gasoline.**

(i) You must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:
[40 CFR§63.11116(a)]

(A) Minimize gasoline spills;
[40 CFR§63.11116(a)(1)]

(B) Clean up spills as expeditiously as practicable;
[40 CFR§63.11116(a)(2)]

(C) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use;
[40 CFR§63.11116(a)(3)]

(D) Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.
[40 CFR§63.11116(a)(4)]

4.1.8. **Cooling Towers**

The Cooling Towers shall operate in accordance with the following requirements:

a. The Cooling Towers shall use the control device specified under Section 1.0 at all times in operation, shall not exceed the specified maximum design and operational limits, and shall not exceed the emission limits in the following table:

Table 4.1.8(a): Cooling Tower Specifications

ID No.	Max Design Capacity Water Circulation Pump (gal/min)	Total Dissolved Solids (ppm)	Mist Eliminator Max Drift Rate (%)(1)	$PM_{2.5}/PM_{10}/PM$	
				PPH	TPY
CT1	52,000	1,500	0.0005	0.20	0.86
CT2	5,900	1,500	0.0005	0.02	0.10
CT3	8,500	1,500	0.0005	0.03	0.14
CT4	22,750	1,500	0.0005	0.09	0.37
CT5	90,000	1,500	0.0005	0.34	1.48
CT6	8,000	1,500	0.0005	0.03	0.13
CT7	3,000	1,500	0.0005	0.01	0.05
CT8	14,000	1,500	0.0005	0.05	0.23

(1) As based on manufacturer or vendor guarantee or applicable product literature.

b. BACT for all Cooling Towers listed under Table 4.1.8(a) is the PPH limit as based on the use of a High Efficiency Drift Eliminator with a maximum drift rate of 0.0005%.

4.1.9. **Emergency Engines**

The Emergency Engines, identified as EMGEN1 through EMGEN6, shall meet the following requirements:

a. Each unit shall not exceed 2,000 horsepower, shall be fired only with PNG, and shall not operate in excess of 100 hours per year nor 0.5 hours in any 24-hour period during times not defined as emergencies;

b. The maximum emissions from each Emergency Engine shall not exceed the limits given in the following table:

Table 4.1.9(b): Emergency Engine Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	2.0 g/hp-hr	Subpart JJJJ Certification Annual Hrs of Op(3) Limit	17.64	0.88
NO_x	4.0 g/hp-hr	Subpart JJJJ Certification Annual Hrs of Op(3) Limit	8.82	0.44
$PM_{2.5(1)}$	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
$PM_{10(1)}$	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
PM(2)	PPH	Annual Hrs of Op(3) Limit	0.68	0.03
SO_2	PPH	Annual Hrs of Op(3) Limit	8.23e-03	4.12e-04
VOCs	1.0 g/hp-hr	Subpart JJJJ Certification, Annual Hrs of Op(3) Limit	4.41	0.22
CO_2e	TPY	Annual Hrs of Op(3) Limit	1,639	82

(1) Includes Condensables.
(2) Filterable Only.
(3) Non-emergency hours of operation.

c. **40 CFR 60, Subpart JJJJ**
Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE. For owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 100 HP (except gasoline and rich burn engines that use LPG) manufactured prior to January 1, 2011 that were certified to the certification emission standards in 40 CFR part 1048 applicable to engines that are not severe duty engines, if such stationary SI ICE was certified to a carbon monoxide (CO) standard above the standard in Table 1 to this subpart, then the owners and operators may meet the CO certification (not field testing) standard for which the engine was certified.
[40 CFR §60.4233(e)]

Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards					
			g/HP-hr			ppmvd at 15% O_2		
			NO_x	CO	VOC(d)	NO_x	CO	VOC(d)
Emergency	HP≥130	1/1/2009	2.0	4.0	1.0	160	540	86

(a) Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O_2.
(d) For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.
[40 CFR60, Subpart JJJJ, Table 1]

d. **40 CFR 63, Subpart ZZZZ**
An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines.

No further requirements apply for such engines under this part.
[40 CFR §63.6590(c)]

(1) A new or reconstructed stationary RICE located at an area source;
[40 CFR §63.6590(c)(1)]

4.1.10. **Control Devices**

a. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11.]

b. **Fabric Filters/Bin Vents/Baghouses**
Use of Fabric Filters/Bin Vents/Baghouses shall be in accordance with the following requirements:

(1) The permittee shall continuously monitor the differential pressure drop of baghouses EAF1-BH, EAF2-BH, RM-BH, and SM-BH so as to ensure proper continuous operation of the baghouses according to the following requirements:

(i) The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The range of acceptable pressure drops shall be based on the range recommended by the baghouse manufacturer or as defined during the most recent stack test; and

(ii) The frequency of data recording shall be, at a minimum, once every 15 minutes.

(2) Baghouses EAF1-BH and EAF2-BH shall meet all applicable requirements given under 40 CFR 60, Subpart Aaa; and

(3) The filter material of all Fabric Filters/Bin Vents/Baghouses shall be replaced on a schedule as determined by the manufacturer.

c. **Melt Shop Collection Systems**
All hooding, duct, and collection systems shall be effective in capturing emissions from the intended equipment and in preventing excess fugitive emissions from the building. The hooding and duct systems shall be maintained free of holes, cracks, and other conditions that would substantially reduce the collection efficiency of the emission capture system.

d. **Wet Scrubbers/Mist Eliminators**
Use of Wet Scrubbers/Mist Eliminators shall be in accordance with the following requirements:

(1) Each scrubber/mist eliminator shall be designed, operated, and maintained according to good engineering practices or manufacturing recommendations so as to achieve, at a minimum, compliance with the particulate matter emission limits given under Appendix A, Table A-4 and, for scrubbers PKL-1 and PKL-2, the HCl emission limits given under 4.1.6(b)(2);

(2) The permittee shall continuously monitor the differential pressure drop of scrubber TCM-ME/SCR so as to ensure proper continuous operation of the scrubber according to the following requirements:

(i) The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The range of acceptable pressure drops shall be based on the range recommended by the scrubber manufacturer or as defined during the most recent stack test; and

(ii) The frequency of data recording shall be, at a minimum, once every 15 minutes.

(3). The liquor flow rate to the scrubbers shall be set at a rate as determined by manufacturer's recommendation or site-specific testing so as achieve compliance with the associated emission limit.

e. **Flares**
The flares, identified as VTG-Flare 1 and VTG-Flare 2, shall operate according to the following requirements:

(1) Each flare have a MDHI that does not exceed 12.37 mmBtu/hr, shall be air-assisted, and shall be designed and operated according to the requirements specified in 40 CFR 60, Section §60.18;

(2) Each flare shall be designed, operated, and maintained according to good engineering practices or manufacturing recommendations so as to achieve, at a minimum, a carbon monoxide and hydrocarbon DRE of 98.0%;

(3) Each flare shall be operated with a flame present at all times the VTGs are in operation, as determined by the methods specified in 4.2.7(b);

(4) The permittee shall operate and maintain each flare according to the manufacturer's specifications for operating and maintenance requirements to maintain the minimum guaranteed control efficiency listed under 4.1.10(e)(2); and

(5) **45CSR6**
Each flare is subject to 45CSR6. The requirements of 45CSR6 include but are not limited to the following:

(i) The permittee shall not cause, suffer, allow or permit particulate matter to be discharged from the flares into the open air in excess of the quantity determined by use of the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

[45CSR§6-4.1]

(ii) No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is twenty (20%) percent opacity or greater.
[45CSR6 §4.3]

(iii) The provisions of subsection 4.3 shall not apply to smoke which is less than forty percent (40%) opacity, for a period or periods aggregating no more than eight (8) minutes per start-up, or six (6) minutes in any sixty (60)-minute period for stoking operations.
[45CSR6 §4.4]

(iv) No person shall cause or allow the emission of particles of unburned or partially burned refuse or ash from any incinerator which are large enough to be individually distinguished in the open air.
[45CSR6 §4.5]

(v) Incinerators, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.
[45CSR6 §4.6]

(vi) Due to unavoidable malfunction of equipment, emissions exceeding those provided for in this rule may be permitted by the Director for periods not to exceed five (5) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.
[45CSR6 §8.2]

4.1.11 **Facility-Wide GHG BACT Requirements**
The permittee shall meet the following facility-wide GHG BACT Requirements:

a. XXXXX

4.1.11. **Applicable Rules**
The permittee shall meet all applicable requirements, including those not specified above, as given under 45CSR2, 45CSR6, 45CSR7, 45CSR10, 40 CFR 60, Subparts Dc, AAa, and JJJJ, and 40 CFR 63, ZZZZ, YYYYY, and CCCCCC. Any final revisions made to the above rules will, where applicable, supercede those specifically cited in this permit.

4.1.12. **Stack Parameters**
The emission point stack parameters (Inner Diameter, Emission Point Elevation, and UTM Coordinates) shall be in accordance with the specifications as given on the Emission Points Data Sheet (Attachment J) in the most updated version of Permit Application R14-0039. If needed, and granted prior approval by the Director, the permittee may provide information to show that as-built variations in the stack parameters will not result in any substantive changes to the results of the air impacts analysis required under §45-14-9 and §45-14-10.

4.2. Monitoring, Compliance Demonstration, Recording and Reporting Requirements

4.2.1. **Maximum Design Capacity Compliance**
Compliance with the maximum design capacity limitations as given under Table 1.0 and Section 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data,

or equivalent documentation that shows that the specific emission unit(s) or processing line in question is limited by design to a throughput or production rate that does not exceed the specified value under Table 1.0 and Section 4.1.

4.2.2. **Maximum Design Heat Input Compliance**
Compliance with the various combustion unit MDHI limitations as given under Table 1.0 and Section 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) in question is limited by design to an MDHI that does not exceed the specified value under Table 1.0 and Section 4.1.

4.2.3. **Quantities Monitored/Recorded**
To determine continuous compliance with maximum production, throughputs, and other limits given in Section 4.1 of the permit, the permittee shall monitor and record the following:

Table 4.2.3: Facility Quantities Monitored/Recorded

Quantity Monitored/Recorded	Emission Unit(s)	Citation	Units	Period
Steel Production	EAF/LMFs	4.1.2	Tons	Monthly, 12-Month Rolling Total
Scrap Steel DRI Carbon Alloys Lime Slag	Various	4.1.3(a)	Tons	Monthly, 12-Month Rolling Total
Storage Tank Throughputs				
Diesel	T1-T6	4.1.7(d)	Gallons	Monthly, 12-Month Rolling Total
Gasoline	T7			
Hydraulic Oil	T8-T9			
HCl	T10-T15			
Spent Pickle Liquor	T16-T23			
Used Oil	T24			
Fuel Usage(1)	CMBLR1/3 ASP	4.2.5	mmscf	Monthly
Non-Emergency Hours of Operation	EMGEN1 - 6	4.1.9(a)	Hours	Monthly, 12-Month Rolling Total
XXXXX				

4.2.4. **EAFs/LMFs CEMS (BHST-1, BHST-2)**
Within 60 days after achieving the maximum design steel production rate at which the facility will be operated, but not later than 180 days after initial startup, the permittee shall, to show continuous compliance with the CO and NO_x, emission limits as given under Table 4.1.4(a), install and operate a Continuous Emissions Monitoring System (CEMS) for monitoring the emissions of CO and NO_x from BHST-1 and BHST-2. The CEMS shall be installed, maintained and operated according to the

manufacturers design, specifications, and recommendations, of which a protocol shall be developed by the permittee and approved by the Director prior to operation. The CEMS shall meet the applicable performance specifications required by 40 Part 60, Appendix B, the applicable quality assurance procedures required in 40 CFR Part 60, Appendix F, and the requirements of 40 CFR 60.13. In lieu of the requirements of 40 CFR Part 60, Appendix F, 5.1.1, 5.1.3, and 5.1.4, the permittee may conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) on the CEMS at least once every three (3) years. The permittee shall conduct Cylinder Gas Audits (CGA) each calendar quarter during which a RAA or a RATA is not performed. Data recorded by the CEMS shall be kept for a period not less than three (3) years and shall be made available to the Director or his/her representative upon request.

4.2.5. **45CSR2**
The Pickling Line Boilers (CMBLR1 through CMBLR3) and the Water Bath Vaporizer (ASP) are subject to the applicable record-keeping requirements under 45CSR2A, including the requirements as given below under (a).

a. The owner or operator of a fuel burning unit(s) shall maintain records of the operating schedule, and the quality and quantity of fuel burned in each fuel burning unit as specified in paragraphs 7.1.a.1 through 7.1.a.6, as applicable.
[45CSR§2A-7.1(a)]

(1) For fuel burning unit(s) which burn only pipeline quality natural gas, such records shall include, but not be limited to, the date and time of start-up and shutdown, and the quantity of fuel consumed on a monthly basis.
[45CSR§2A-7.1(a)(1)]

4.2.6. **40 CFR 60, Subpart AAa**
The EAFs shall comply with all applicable Monitoring, Compliance Demonstration, Recording and Reporting Requirements of 40 CFR 60, Subpart AAa including, but not limited to, the following requirements:

a. **§ 60.273a Emissions Monitoring.**

(1) Except as provided under paragraphs (b) and (c) of this section, a continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) shall be installed, calibrated, maintained, and operated by the owner or operator subject to the provisions of this subpart.
[40 CFR§60.273a(a)]

(2) No continuous monitoring system shall be required on any control device serving the dust-handling system.
[40 CFR§60.273a(b)]

(3) A continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) is not required on any modular, multi-stack, negative-pressure or positive-pressure fabric filter if observations of the opacity of the visible emissions from the control device are performed by a certified visible emission observer; or on any single-stack fabric filter if visible emissions from the control device are performed by a certified visible emission observer and the owner installs and continuously operates a bag leak detection system according to paragraph (e) of this section. Visible emission observations shall be conducted at least once per day for at least three 6-minute periods when

the furnace is operating in the melting and refining period. All visible emissions observations shall be conducted in accordance with Method 9. If visible emissions occur from more than one point, the opacity shall be recorded for any points where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of the visible emission, only one set of three 6-minute observations will be required. In that case, the Method 9 observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident. Records shall be maintained of any 6-minute average that is in excess of the emission limit specified in § 60.272a(a).
[40 CFR§60.273a(c)]

(4) A furnace static pressure monitoring device is not required on any EAF equipped with a DEC system if observations of shop opacity are performed by a certified visible emission observer as follows: Shop opacity observations shall be conducted at least once per day when the furnace is operating in the meltdown and refining period. Shop opacity shall be determined as the arithmetic average of 24 consecutive 15-second opacity observations of emissions from the shop taken in accordance with Method 9. Shop opacity shall be recorded for any point(s) where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of visible emissions, only one observation of shop opacity will be required. In this case, the shop opacity observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident.
[40 CFR§60.273a(d)]

(5) A bag leak detection system must be installed and continuously operated on all single-stack fabric filters if the owner or operator elects not to install and operate a continuous opacity monitoring system as provided for under paragraph (c) of this section. In addition, the owner or operator shall meet the visible emissions observation requirements in paragraph (c) of this section. The bag leak detection system must meet the specifications and requirements of [*40 CFR§60.273a(e)(1) through (8)*].
[40 CFR§60.273a(e)]

(6) For each bag leak detection system installed according to paragraph (e) of this section, the owner or operator shall initiate procedures to determine the cause of all alarms within 1 hour of an alarm. Except as provided for under paragraph (g) of this section, the cause of the alarm must be alleviated within 3 hours of the time the alarm occurred by taking whatever corrective action(s) are necessary. Corrective actions may include, but are not limited to [*the requirements given under 40 CFR§60.273a(f)(1) through (6)*].
[40 CFR§60.273a(f)]

(7) In approving the site-specific monitoring plan required in paragraph (e)(4) of this section, the Administrator or delegated authority may allow owners or operators more than 3 hours to alleviate specific conditions that cause an alarm if the owner or operator identifies the condition that could lead to an alarm in the monitoring plan, adequately explains why it is not feasible to alleviate the condition within 3 hours of the time the alarm occurred, and demonstrates that the requested additional time will ensure alleviation of the condition as expeditiously as practicable.
[40 CFR§60.273a(g)]

b. **§ 60.274a Monitoring of operations.**

(1) The owner or operator subject to the provisions of this subpart shall maintain records of the following information:
[40 CFR§60.274a(a)]

(A) All data obtained under paragraph (b) of this section; and
[40 CFR§60.274a(a)(1)]

(B) All monthly operational status inspections performed under paragraph © of this section.
[40 CFR§60.274a(a)(2)]

(2) Except as provided under paragraph (e) of this section, the owner or operator subject to the provisions of this subpart shall check and record on a once-per-shift basis the furnace static pressure (if DEC system is in use, and a furnace static pressure gauge is installed according to paragraph (f) of this section) and either: check and record the control system fan motor amperes and damper position on a once-per-shift basis; install, calibrate, and maintain a monitoring device that continuously records the volumetric fl ow rate through each separately ducted hood; or install, calibrate, and maintain a monitoring device that continuously records the volumetric fl ow rate at the control device inlet and check and record damper positions on a once-per-shift basis. The monitoring device(s) may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring device(s) shall have an accuracy of ±10 percent over its normal operating range and shall be calibrated according to the manufacturer's instructions. The Administrator may require the owner or operator to demonstrate the accuracy of the monitoring device(s)relative to Methods 1 and 2 of appendix A of this part.
[40 CFR§60.274a(b)]

(3) When the owner or operator of an affected facility is required to demonstrate compliance with the standards under §60.272a(a)(3) and at any other time that the Administrator may require (under section 114 of the CAA, as amended) either: the control system fan motor amperes and all damper positions, the volumetric flow rate through each separately ducted hood, or the volumetric flow rate at the control device inlet and all damper positions shall be determined during all periods in which a hood is operated for the purpose of capturing emissions from the affected facility subject to paragraph (b) of this section. The owner or operator may petition the Administrator for reestablishment of these parameters whenever the owner or operator can demonstrate to the Administrator's satisfaction that the affected facility operating conditions upon which the parameters were previously established are no longer applicable. The values of these parameters as determined during the most recent demonstration of compliance shall be maintained at the appropriate level for each applicable period. Operation at other than baseline values may be subject to the requirements of §60.276a(c).
[40 CFR§60.274a(c)]

4.2.7. **Cooling Tower**
For the purposes of demonstrating initial and continuing compliance with the operational limits set forth in Table 4.1.8(a), the permittee shall, for all cooling towers, within 180 days of startup, take an initial grab sample of the cooling tower circulating water and analyze such to determine the total solids content of the cooling tower circulating water. Thereafter, the permittee shall test for solids content on an annual basis (with no more than 14 months between tests).

4.2.8. **RICE Oxidation Catalysts**
If applicable, the permittee shall meet the following requirements for use of Oxidation Catalysts on the Emergency Engines:

a. The permittee shall regularly inspect, properly maintain and/or replace catalytic reduction devices to ensure functional and effective operation of each engine's physical and operational design. The permittee shall ensure proper operation, maintenance and performance of catalytic reduction devices by:

(1) Maintaining proper operation of the automatic air/fuel ratio controller or automatic feedback controller; and

(2) Following the catalyst manufacturer emissions related operating and maintenance recommendations, or develop, implement, or follow a site-specific maintenance plan.

b. To demonstrate compliance with section 4.2.8, the permittee shall maintain records of the maintenance performed on each RICE and/or generator and shall maintain a copy of the site specific maintenance plan or manufacturer maintenance plan.

4.2.9. **Baghouse/Fabric Filter Compliance Demonstrations**
Unless specifically requested under 4.3.1. or listed in Table 4.3.2., compliance with all baghouse and fabric filter mass emission limits that have BACT outlet grain loading limits shall be based on vendor information or vendor guarantees that show the maximum outlet grain loading emissions from the baghouse/fabric filter is in compliance with the specific limit.

4.2.10. **Flares**
The permittee shall meet the following Monitoring, Compliance Demonstration, Recording and Reporting Requirements for the VTG Flare 1 and VTG Flare 2:

a. To demonstrate compliance with 4.1.10(e)(2), the permittee shall maintain records of all substantive actions undertaken in compliance with the manufacturer's specifications for operation and maintenance to maintain the minimum control efficiency;

b. To demonstrate compliance with the pilot flame requirements of 4.1.10(e)(3), the presence of a pilot flame shall be continuously monitored using a thermocouple or any other equivalent device to detect the presence of a flame when emissions are vented to it. The pilot shall be equipped such that it sounds an alarm, or initiates notification via remote alarm to the control room, when the pilot light is out;

c. For any absence of pilot flame, or other indication of smoking or improper equipment operation, the permittee must ensure the equipment is returned to proper operation as soon as practicable after the event occurs. At a minimum, the permittee must: (1) Check the air vent for obstruction. If an obstruction is observed, you must clear the obstruction as soon as practicable. (2) Check for liquid reaching the flare;

d. The permittee shall maintain records of the times and duration of all periods when the pilot flame was not present and vapors were vented to the device. The permittee shall maintain records of any inspections made pursuant to 4.2.10; and

e. Any time the flare is not operating when emissions are vented to it, shall be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days of the discovery.

4.2.11. **Control Device Monitoring**
The permittee shall install, maintain, and operate instrumentation to continuously monitor and record the control device parameters as required under 4.1.10 of this permit including, at a minimum, the following:

Table 4.2.11: Control Device Parameters Monitored/Recorded(1)

Control Device Description	Control Device ID	Parameter(s)
EAF Baghouses	EAF1-BH EAF2-BH	Pressure Drop
Rolling Mill Baghouse	RM-BH	Pressure Drop
Scarfing Mill Baghouse	SM-BH	Pressure Drop
Pickling Line Mist Eliminators/Scrubbers	PKL1-ME/SCR PKL2-ME/SCR	Liquid Flow Rate
Tandem Cold Mill Mist Eliminator	TCM-ME	Pressure Drop

(1) Does not include any monitoring as required by 40 CFR 60, Subpart AAa or 40 CFR 63, Subpart YYYYY.

4.2.12. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

a. The opacity limitations and the associated compliance determinations are given in the following table for sources of particulate matter:

Table 4.2.12(a): Visible Emissions Compliance Demonstrations

Emission Point(s)	Opacity Limit (%)(1)	Rule Citation	Compliance Demonstration
Melt Shop			
BHST-1/2	3%	40 CFR§60.272a(a)(2)	Section 4.2.12(b)
MSFUG CASTFUG	6%	40 CFR§60.272a(a)(3) 40 CFR§63.10686(b)(2)	
EAFVF1/2	10%	40 CFR§60.272a(b)	
45CSR2 Applicable Emission Points			
CMBLR1/2/3 ASP-1	10%	40CSR§2-3.1	Section 4.2.12(c)(2)(i)
Flares (45CSR6 Applicability)			
VTDST1/2	20%(2)	45CSR§6-4.3 and 4.4	Section 4.2.12(c)(2)(ii)

Emission Point(s)	Opacity Limit (%)[1]	Rule Citation	Compliance Demonstration
45CSR7 Applicable Emission Points (Non-Material Handling)			
RM-BH SM-BH TCMST SPMST3	20%[3]	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iii)
PLST-1/2 PKLSB STM-BH SPMST1/2 CGL1-ST1/2 CGL2-ST1/2 SLAG-CUT-BH	20%[3]	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
45CSR7 Applicable Emission Points (Material Handling Stack/Vent)			
LCB-ST DRI-DOCK-ST DRIVF1/2/3/4 DRIBF1/2/3/4 DRI-DB1-BH DRI-DB2-BH DRI-CONV-BH LIME-DUMP-ST CARBON-DUMP-ST ALLOY-HANDLE-ST	20%[3]	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
45CSR7 Applicable Emission Points (Material Handling Non-Stack/Vent)			
DRI-DOCK-FUG BULK-DRI-1/2 DRI-EMG-1/2 SCRAP-DOCK-FUG SCRAP-RAIL-FUG SCRAP-BULK1 - 39 SLGSKP1 -3 SCRPSKP1 -4 LIME-DUMP-FUG CARBON-DUMP-FUG ALLOY-HANDLE-FUG Haulroads	20%[3]	45CSR§7-3.1 and 3.2	Section 4.2.12(c)(2)(iv)
Cooling Towers			
CT1 - 8	20%[3]	45CSR§7-3.1 and 3.2	Not Required[5]

Emission Point(s)	Opacity Limit (%)(1)	Rule Citation	Compliance Demonstration
Other Natural Gas Combustion			
TFST-1/2 GALVFN1-ST GALVFN2-ST GALVFUG SLAG-CUT-NG EMGEN1 - 6	None(4)	n/a	n/a

(1) Where multiple opacity limits apply, the more restrictive is listed.
(2) Shall not apply to smoke which is less than forty (40%) percent opacity, for a period or periods aggregating no more than eight (8) minutes per start-up.
(3) Shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
(4) Natural gas combustion does not meet the definition of a "source operation" pursuant to 45CSR§7-2.38.
(5) Due to the nature of the particulate matter emissions from the Cooling Towers (entrained in droplets), a compliance demonstration for the Cooling Towers is not practical.

b. **40 CFR 60, Subpart AAa/40 CFR 63, Subpart YYYYY**
For Emission Points BHST-1/2, MSFUG, and CASTFUG, the permittee shall show compliance with the opacity requirements of 40 CFR 60, Subpart AAa, §60.272a(a) and 40 CFR 63, Subpart YYYYY, §63.10686, pursuant to the applicable requirements of Subpart AAa and Subpart YYYYY, respectively. Compliance with the opacity requirements of Subpart AAa shall show compliance with the opacity requirements of 45CSR7;

c. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

(1) The visible emission check shall determine the presence or absence of visible emissions. The observations shall be conducted according to Section 11 of EPA Method 22. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 which may include online web-based training as supplied by a Method 9 training company; and

(2) Specific emission points shall meet the following visible emissions monitoring requirements:

(i) **45CSR2**
Upon request by the Secretary, compliance with the visible emission requirements of Sections 3.1 and 3.2 of 45CSR2 as applicable to Emission Points CMBLR1/2/3 and ASP-1 shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 or by using measurements from continuous opacity monitoring systems approved by the Secretary. The Secretary may require the installation, calibration, maintenance and operation of continuous opacity monitoring systems and may establish policies for the evaluation of continuous opacity monitoring results and the determination of compliance with the visible emission requirements of 3.1 of 45CSR2;

(ii) **45CSR6**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to Emission Points CMBLR1/2/3 and ASP-1 shall be in accordance with the following: Visible emission checks shall be conducted at least once every seven (7) calendar days and these checks shall be performed for a sufficient time interval, but no less than a 6-minute interval, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions. If one year of weekly Method 22 readings show that there are no visible emissions, then the frequency of observations can be reduced to quarterly. If, during quarterly checks, visible emissions are observed, then the frequency of observations shall be returned to weekly;

(iii) **45CSR7**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to Emission Points RM-BH, SM-BH, TCMST, and SPMST3 shall be in accordance with the following: Visible emission checks shall be conducted at least once per seven (7) calendar days. These checks shall be performed for a sufficient time interval, but no less than three (3) 6-minute intervals, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions; and

(iv) **45CSR7**
Compliance with the visible emission requirements of Section 3.1 and 3.2 of 45CSR7 as applicable to all other emission points, excluding those identified under 4.2.9(c)(2)(iii), subject to 45CSR7 as shown under Table 4.2.9 above shall be in accordance with the following: Visible emission checks shall be conducted at least quarterly. These checks shall be performed for a sufficient time interval, but no less than a 6-minute interval, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions.

(3) If visible emissions are present at a source(s), the permittee shall perform Method 9 readings to confirm that visible emissions are within the applicable limits of this permit. Said Method 9 readings shall be taken as soon as practicable, but within twenty-four (24) hours of the Method 22 emission check.

e. For the purpose of demonstrating compliance with the visible emissions and opacity requirements, the permittee shall maintain records of the visible emission opacity tests and checks. The permittee shall maintain records of all monitoring data required by 4.2.9 documenting the date and time of each visible emission check, the emission point or equipment/ source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6-10 mph NE wind) during the visual emission check(s). Should a visible emission observation be required to be performed per the requirements specified in Method 9, the data records of each observation shall be maintained per the requirements of Method 9. For an emission unit out of service during the evaluation, the record of observation may note "out of service" (O/S) or equivalent; and

f. Any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

4.2.10. **Baghouse/Fabric Filter Compliance Demonstrations**
Unless specifically requested under 4.3.1. or listed in Table 4.3.2., compliance with all baghouse and fabric filter mass emission limits that have BACT outlet grain loading limits shall be based on vendor information or vendor guarantees that show the maximum outlet grain loading emissions from the baghouse/fabric filter is in compliance with the specific limit.

4.2.11. **Emission Point Map**
The permittee shall prepare and maintain an emission point map of the facility. This map shall consist of a diagram of the location and identification of all emission points at the facility that vent to ambient air. A legend shall be prepared with the map that identifies the emission point type and source(s) contributing to that emission point. This map shall be prepared within 180 days of startup and thereafter be updated as necessary to reflect current facility operations. The map(s) shall be retained on-site and be made available to the Director or his/her duly authorized representative upon request.

4.2.13. **Vendor Guarantees**
The permittee shall, at the time of initial startup, maintain on-site and have readily available to be made available to the Director or his/her representative upon request, a copy of the all current vendor guarantees relevant to the air emissions associated with the facility. This includes information relating to the performance of both emission units and control devices.

4.3. Performance Testing Requirements

4.3.1. **General Performance Testing**
At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of this permit, the permittee shall conduct or have conducted test(s) to determine compliance with the emission limitations established in this permit and/or applicable regulations.

4.3.2. **Specific Emissions Point Performance Testing**
Within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit, the permittee shall conduct, or have conducted, in accordance with a protocol submitted pursuant to 3.3.1(c), performance tests on the emission units (as emitted from the listed emission points) to show compliance with the specified pollutants as given in the following table:

Table 4.3.2.: Performance Testing Requirements

Emission Unit(s)	Emission Point	Pollutants	Limit[1]
EAF1/LMF1/CAST1	BHST-1[2]	All Pollutants under Table 4.1.4(a) with the exception of Total HAPs, and CO_2e.	PPH gr/dcsf (PM)
EAF2/LMF2/CAST2	BHST-2[2]		
TF1	TFST-1	CO and NO_x	PPH
TF2	TFST-2		

Emission Unit(s)	Emission Point	Pollutants	Limit[(1)]
RM	RM-BH	$PM_{2.5}$, PM_{10}, PM[(3)]	PPH[(3)] gr/dscf
SM	SM-BH		
TBD			

(1) Where applicable, test results will also be used to show compliance with lb/ton, lb/mmBtu, or other BACT performance limits.
(2) Initial and periodic performance testing on PM emitted from BHST-1 and BHST-2 shall be in accordance with the procedures outlined under §60.18 and §60.275a.
(3) Filterable Only.

4.3.3 With respect to the performance testing required above under Section 4.3.2, the permittee shall, after the initial performance test, periodically conduct additional performance testing on the specified sources according to the following schedule:

Table 4.3.3.: Performance Testing Schedule

Test	Test Results	Retesting Frequency
Initial Baseline	<50% of weight emission standard	Once/3 years
Initial Baseline	between 50% and 80 % of weight emission standard	Once/2 years
Initial Baseline	>80% of weight emission standard	Annual
Annual	after three successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Annual	after two successive tests indicate mass emission rates <80 % of weight emission standard	Once/2 years
Annual	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/2 years	After two successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Once/2 years	any tests indicates a mass emission rate <80 % of weight emission standard	Once/2 years
Once/2 years	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/3 years	any tests indicates a mass emission rate <50% of weight emission standard	Once/3 years
Once/3 years	any test indicates mass emission rates between 50% and 80 % of weight emission standard	Once/2 years
Once/3 years	any test indicates a mass emission rate >80% of weight emission standard	Annual

4.3.4. Performance testing for pollutants monitored by CEMS (CO and NO_x, as emitted from the Emission Point BHST-1 and BHST-2) are not subject to the performance testing schedule given under Table 4.3.4 and any performance testing shall, unless at such other reasonable time(s) as the Secretary may designate, be conducted on a schedule consistent with the required RATA testing.

4.3.5. The permittee shall use the test methods specified in Table 4.3.4. unless granted approval in writing by the Director to use an alternative test method in a protocol submitted pursuant to 3.3.1(c).

Table 4.3.5: Performance Test Methods

Pollutant	Test Method(1)
CO	Method 10
NO_x	Method 7E
$PM_{2.5}$ (filterable only)	Method 201A
PM_{10}/PM (filterable only)	Method 5
$PM_{2.5}$/PM_{10} (condensable)	Method 202
SO_2	Method 6C
VOCs	Method 18/25A
Lead	Method 12
HCl	Method 26A
Fluoride	Method 13

(1) All test methods refer to those given under 40 CFR 60, Appendix A

4.3.6. **40 CFR 60, Subpart AAa**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 60, Subpart AAa, Section §60.275a.

4.3.7. **40 CFR 63, Subpart YYYYY**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 63, Subpart YYYYY, Section §63.10686(d).

4.3.8. **40 CFR 60, Subpart JJJJ**
The permittee shall meet all applicable Performance Testing requirements for the emergency engines as given under 40 CFR 60, Subpart JJJJ, Section §60.4244.

4.4. Recordkeeping Requirements

4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit and time of sampling or measurements;

b. The date(s) analyses were performed;

c. The company or entity that performed the analyses;

d. The analytical techniques or methods used;

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

4.5. Additional Reporting Requirements

4.5.1. The permittee shall submit the following information to the DAQ according to the specified schedules:

a. The permittee shall submit reports of all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports; and

b. The permittee shall submit to the Director on or before March 15, a certification of compliance with all requirements of this permit for the previous calendar year ending on December 31. If, during the previous annual period, the permittee had been out of compliance with any part of this permit, it shall be noted along with the following information: 1) the source/equipment/process that was non-compliant and the specific requirement of this permit that was not met, 2) the date the permitted discovered that the source/ equipment/process was out of compliance, 3) the date the Director was notified, 4) the corrective measures to get the source/equipment/process back into compliance, and 5) the date the source began to operate in compliance. The submission of any non-compliance report shall give no enforcement action immunity to episodes of non-compliance contained therein.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached ____, representing the period beginning ________________________________ and ending ________________________________, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] ____ ____________________________
(please use blue ink) Responsible Official or Authorized Representative Date

Name and Title ____ ________________________________
(please print or type) Name Title

Telephone No. ___________________________________ Fax No. ____________________________________

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[1] This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The 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 a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

   (I) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

   (ii) the delegation of authority to such representative is approved in advance by the Director;

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of USEPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.

Appendix A: Table A-1

Nucor Steel West Virginia LLC: WV Steel Plant

R14-0039: 053-00085

Table A-1 : Material Handling Stack/Vent Emission Limits

Emission Point ID	Description	Flow Rate[1]	Filter Outlet (gr/dscf)[2]		Hourly Emissions (lb/hr)[3]		Annual Emissions (ton/yr)	
		dscf/min	$PM_{2.5}$	PM/PM_{10}	$PM_{2.5}$	PM/PM_{10}	$PM_{2.5}$	PM/PM_{10}
LCB-ST	Lime, Carbon, and Briquetter Silos	38,000	0.005	0.005	1.63	1.63	7.13	7.13
DRI-DOCK-ST	DRI Unloading Dock (two units)	4,000	0.00049	0.001	0.017	0.034	0.074	0.150
DRIVF1	DRI Storage Silo 1 - Baghouse	23,543	0.00049	0.001	0.099	0.202	0.433	0.884
DRIBV1	DRI Storage Silo 1 - Bin Vent	148	0.00049	0.001	0.001	0.001	0.003	0.006
DRIVF2	DRI Storage Silo 2 - Baghouse	23,543	0.00049	0.001	0.099	0.202	0.433	0.884
DRIBV2	DRI Storage Silo 2 - Bin Vent	148	0.00049	0.001	0.001	0.001	0.003	0.006
DRIVF3	DRI Storage Silo 3 - Baghouse	23,543	0.00049	0.001	0.099	0.202	0.433	0.884
DRIBV3	DRI Storage Silo 3 - Bin Vent	148	0.00049	0.001	0.001	0.001	0.003	0.006
DRIVF4	DRI Storage Silo 4 - Baghouse	23,543	0.00049	0.001	0.099	0.202	0.433	0.884
DRIBV4	DRI Storage Silo 4 - Bin Vent	148	0.00049	0.001	0.001	0.001	0.003	0.006
DRI-DB1-BH	DRI Day Bin #1	1,200	0.00049	0.001	0.005	0.010	0.022	0.045
DRI-DB2-BH	DRI Day Bin #2	1,200	0.00049	0.001	0.005	0.010	0.022	0.045
DRI-CONV-BH	DRI Transfer Conveyors	1,200	0.00049	0.001	0.005	0.010	0.022	0.045
EAFVF1	EAF Baghouse 1 Dust Silo	1,000	0.01	0.01	0.086	0.086	0.375	0.375
EAFVF2	EAF Baghouse 2 Dust Silo	1,000	0.01	0.01	0.086	0.086	0.375	0.375
LIME-DUMP-ST	Lime Dump Station	2,000	0.005	0.005	0.086	0.086	0.375	0.375
CARBON-DUMP-ST	Carbon Dump Station	2,000	0.005	0.005	0.086	0.086	0.375	0.375
ALLOY-HANDLE-ST	Alloy Handling System	3,800	0.005	0.005	0.163	0.163	0.713	0.713

(1) Air flow rates represent the maximum design capacity of the mechanical flow through the listed particulate matter control device.

(2) gr/dscf = grains/dry standard cubic feet. For these emission points, baghouse/fabric filter is the BACT technology and the outlet loading is $PM_{2.5}/PM_{10}/PM$ BACT limit for the specified emission points.

(3) Hourly emission limits are based on a 24-hour average.

Appendix A: Table A-2
Nucor Steel West Virginia LLC: WV Steel Plant
R14-0039: 053-00085

Table A-2 : Material Handling Non-Stack/Vent Emission Limits

Emission Point ID	Description	Material	Control Technology[(1)(2)]	Hourly Emissions (lb/hr)[(3)]			Annual Emissions (ton/yr)		
				$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
DRI-DOCK-FUG	DRI Unloading Dock - Fugitives	DRI	Good Housekeeping Practices Partial Enclosure	6.53	3.64	3.09	1.72	0.47	0.26
BULK-DRI-1	DRI Silo #1 Loadout	DRI	Good Housekeeping Practices Partial Enclosure	0.83	3.64	0.39	1.72	0.06	0.26
BULK-DRI-2	DRI Silo #2 Loadout	DRI	Good Housekeeping Practices Partial Enclosure	0.83	3.64	0.39	1.72	0.06	0.26
DRI-EMG-1	DRI Conveyor #1 Emergency Chute	DRI	Good Housekeeping Practices	6.53	0.01	3.09	0.01	0.47	0.00
DRI-EMG-2	DRI Silos Emergency Chute	DRI	Good Housekeeping Practices	41.77	0.38	19.76	0.18	2.99	0.03
LIME-DUMP-FUG	Lime Dump Station Fugitives	Lime	Good Housekeeping Practices Partial Enclosure	0.050	0.219	0.017	0.076	0.003	0.012
CARBON-DUMP-FUG	Carbon Dump Station Fugitives	Carbon		0.025	0.109	0.009	0.038	0.001	0.006
ALLOY-HANDLE-FUG	Alloy Handling System Fugitives	Alloy		0.125	0.194	0.044	0.067	0.007	0.010
SCRAP-DOCK-FUG	Barge Scrap Unloading	Scrap	Good Housekeeping Practices	0.180	0.217	0.090	0.108	0.026	0.031
SCRAP-RAIL-FUG	Rail Scrap Unloading	Scrap	Good Housekeeping Practices	0.060	0.029	0.030	0.014	0.009	0.004
SCRAP-BULK34	Barge Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.548	0.659	0.259	0.312	0.039	0.047
SCRAP-BULK35	Barge Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.251	0.659	0.119	0.312	0.018	0.047
SCRAP-BULK36	Rail Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.110	0.088	0.052	0.042	0.008	0.006
SCRAP-BULK37	Rail Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.251	0.088	0.119	0.042	0.018	0.006
SCRAP-BULK38	Truck Scrap Pile Loading	Scrap	Good Housekeeping Practices	0.183	0.132	0.086	0.062	0.013	0.009
SCRAP-BULK39	Truck Scrap Pile Loadout	Scrap	Good Housekeeping Practices	0.251	0.132	0.119	0.062	0.018	0.009
SCRAP-BULK40	Scrap Charging	Scrap	Good Housekeeping Practices	0.201	0.879	0.095	0.416	0.014	0.063
SCRAP-BULK1	Dig Slag Inside Pot Barn	Slag	Good Housekeeping Practices Partial Enclosure Wet Suppression	0.160	0.289	0.078	0.141	0.029	0.053
SCRAP-BULK2	Loader Transport & Dump Slag Into Trench	Slag		0.160	0.289	0.078	0.141	0.029	0.053
SCRAP-BULK3	Loader Transport & Dump Slag Into F1 Feed Hopper/Grizzly	Slag		0.064	0.116	0.031	0.056	0.012	0.021
SCRAP-BULK4	TP: F1 Feed Hopper/Grizzly to P1 Oversize Pile	Slag		0.075	0.135	0.026	0.047	0.026	0.047
SCRAP-BULK5	TP: F1 Feed Hopper/Grizzly to C7 Crusher Conveyer	Slag		0.001	0.003	0.001	0.001	0.001	0.001
SCRAP-BULK6	TP: F1 Feed Hopper/Grizzly to C1A Main Conveyer	Slag		0.022	0.040	0.008	0.014	0.008	0.014
SCRAP-BULK7	TP: C7 to CR1 Crusher	Slag		0.006	0.011	0.002	0.004	0.002	0.004
SCRAP-BULK8	TP: CR1 Crusher to C8 Conveyer	Slag		0.026	0.047	0.012	0.021	0.012	0.021
SCRAP-BULK9	TP: CR1 Crusher to P2 Output Pile	Slag		0.022	0.040	0.010	0.018	0.010	0.018
SCRAP-BULK10	TP: C8 Conveyer to C9 Conveyer	Slag		0.000	0.001	0.000	0.000	0.000	0.000
SCRAP-BULK11	TP: C9 Conveyer to C1A Conveyer	Slag		0.002	0.004	0.001	0.002	0.001	0.002
SCRAP-BULK12	TP: C1A Conveyer to B1 Surge Bin	Slag		0.002	0.004	0.001	0.002	0.001	0.002
SCRAP-BULK13	TP: B1 Surge Bin to C1 Conveyer	Slag		0.008	0.015	0.003	0.006	0.003	0.006
SCRAP-BULK14	TP: C1 Conveyor through M1 Mag Splitter to S1 Slag Screen	Slag		0.008	0.015	0.003	0.006	0.003	0.006
SCRAP-BULK15	TP: C1 Conveyor through M1 Mag Splitter to S2 Scrap Screen	Slag		0.008	0.015	0.003	0.005	0.003	0.005
SCRAP-BULK16	TP: S2 Scrap Screen to C6 Conveyor	Slag		0.0050	0.0090	0.0017	0.0031	0.0017	0.0031
SCRAP-BULK17	TP: S2 Scrap Screen to P3 Scrap Pile	Slag		0.0043	0.0077	0.0015	0.0027	0.0015	0.0027
SCRAP-BULK18	TP: C6 Conveyor to P3 Scrap Pile	Slag		0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
SCRAP-BULK19	TP: S1 Slag Screen to C2 Conveyer	Slag		0.0043	0.0077	0.0015	0.0027	0.0015	0.0027
SCRAP-BULK20	TP: C2 Conveyer to C5 Conveyer	Slag		0.0032	0.0058	0.0012	0.0021	0.0012	0.0021
SCRAP-BULK21	TP: C5 Conveyer to P5 Product Pile	Slag		0.0032	0.0058	0.0012	0.0021	0.0012	0.0021

Table A-2 : Material Handling Non-Stack/Vent Emission Limits (Continued)

Emission Point ID	Description	Material	Control Technology	Hourly Emissions (lb/hr)[3]			Annual Emissions (ton/yr)		
				$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
SCRAP-BULK22	TP: S1 Slag Screen to C4 Conveyer	Slag	Good Housekeeping Practices Partial Enclosure Wet Suppression	0.0553	0.0995	0.0192	0.0346	0.0192	0.0346
SCRAP-BULK23	TP: C4 Conveyer to P7 Product Pile	Slag		0.0024	0.0044	0.0009	0.0016	0.0009	0.0016
SCRAP-BULK24	TP: S1 Slag Screen to C3 Conveyer	Slag		0.0414	0.0746	0.0144	0.0260	0.0144	0.0260
SCRAP-BULK25	TP: C3 Conveyer to P6 Product Pile	Slag		0.0016	0.0029	0.0006	0.0011	0.0006	0.0011
SCRAP-BULK26	TP: S1 Slag Screen to P8 Product Pile	Slag		0.0276	0.0497	0.0096	0.0173	0.0096	0.0173
SCRAP-BULK27	Loader transports & loads products into trucks to product stockpiles	Slag		0.0058	0.0104	0.0028	0.0051	0.0011	0.0019
SCRAP-BULK28	Truck Dumps Products into Product Stockpiles	Slag		0.0642	0.1155	0.0314	0.0564	0.0117	0.0210
SCRAP-BULK29	Loader Into trucks, Oversize to Drop Ball Crusher	Slag		0.0642	0.1155	0.0314	0.0564	0.0117	0.0210
SCRAP-BULK30	Truck Dumps Oversize into Drop Ball Area	Slag		0.0013	0.0023	0.0006	0.0011	0.0002	0.0004
SCRAP-BULK31	Truck Transports Ladle Lip/Meltshop Cleanup Materials & Dumps at Drop Ball Site	Slag		0.0042	0.0075	0.0020	0.0037	0.0008	0.0014
SCRAP-BULK32	Truck Transports & Dumps Tundish at Lancing Station	Slag		0.0022	0.0040	0.0011	0.0020	0.0004	0.0007
SCRAP-BULK33	Ball Drop Crusher	Slag		0.0028	0.0050	0.0012	0.0022	0.0012	0.0022
SLGSKP1	Slag Stockpile 1	Slag	Water Sprays/Wet Suppression	0.05	0.32	0.67	0.21	1.39	2.95
SLGSKP2	Slag Stockpile 2	Slag		0.01	0.06	0.12	0.04	0.26	0.54
SLGSKP3	Slag Stockpile 3	Slag		0.00	0.00	0.00	0.00	0.00	0.01
SCRPSKP1	Scrap Metal Stockpile 1	Scrap		0.09	0.61	1.30	0.41	2.68	5.67
SCRPSKP2	Scrap Metal Stockpile 2	Scrap		0.09	0.61	1.30	0.41	2.68	5.67
SCRPSKP3	Scrap Metal Stockpile 3	Scrap		0.09	0.61	1.30	0.41	2.68	5.67
SCRPSKP4	Scrap Metal Stockpile 4	Scrap		0.09	0.61	1.30	0.41	2.68	5.67

(1) For the purposes of this permit, "Good Housekeeping Practices" are defined as maintaining all enclosures free of holes and cleaning spilled particulate matter from exposed areas where fugitive entrainment may easily occur.
(2) For the purposes of this permit, "Wet Supression" is defined as maintaining the mositure content of the material at a level that mitigates easily fugitive entrainment of particulate matter from the surface of the material.
(3) Hourly emission limits are based on a 24-hour average and are the BACT limits for the listed emission sources.

Table A-3: Natural Gas Combustion Emission Limits

Emission Point ID	Emission Unit ID	Description	MDHI	CO		NO_x		$PM_{2.5}/PM_{10}$		PM		SO_2		VOCs		CO_2e		Total HAPs	
			mmBtu/hr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
MSFUG	LD	Ladle Dryer	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,685	0.001	0.006
MSFUG	LPHTR1	Horizontal Ladle Preheater 1	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,685	0.001	0.006
MSFUG	LPHTR2	Horizontal Ladle Preheater 2	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,685	0.001	0.006
MSFUG	LPHTR3	Horizontal Ladle Preheater 3	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,685	0.001	0.006
MSFUG	LPHTR4	Horizontal Ladle Preheater 4	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,685	0.001	0.006
MSFUG	LPHTR5	Horizontal Ladle Preheater 5	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,685	0.001	0.006
MSFUG	LPHTR6	Vertical Ladle Preheater 6	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,685	0.001	0.006
MSFUG	LPHTR7	Vertical Ladle Preheater 7	15.00	1.24	5.41	1.47	6.44	0.11	0.49	0.028	0.122	0.009	0.039	0.08	0.35	1,756	7,685	0.001	0.006
MSFUG	TD	Tundish Dryer 1	6.00	0.49	2.16	0.59	2.58	0.04	0.20	0.011	0.049	0.004	0.015	0.03	0.14	703	3,074	0.011	0.048
MSFUG	TPHTR1	Tundish Preheater 1	9.00	0.74	3.25	0.88	3.86	0.07	0.29	0.017	0.073	0.005	0.023	0.05	0.21	1,054	4,611	0.017	0.073
MSFUG	TPHTR2	Tundish Preheater 2	9.00	0.74	3.25	0.88	3.86	0.07	0.29	0.017	0.073	0.005	0.023	0.05	0.21	1,054	4,611	0.017	0.073
MSFUG	SENPHTR1	Subentry Nozzle (SEN) Preheater 1	1.00	0.08	0.36	0.10	0.43	0.001	0.002	0.000	0.001	0.001	0.003	0.01	0.02	117	512	0.002	0.008
MSFUG	SENPHTR2	Subentry Nozzle (SEN) Preheater 2	1.00	0.08	0.36	0.10	0.43	0.001	0.002	0.000	0.001	0.001	0.003	0.01	0.02	117	512	0.002	0.008
CMBLR1	CMBLR1	Pickling Line Boiler 1	20.00	1.65	7.21	1.00	4.38	0.15	0.65	0.037	0.163	0.012	0.052	0.11	0.47	2,342	10,247	0.037	0.162
CMBLR2	CMBLR2	Pickling Line Boiler 2	20.00	1.65	7.21	1.00	4.38	0.15	0.65	0.037	0.163	0.012	0.052	0.11	0.47	2,342	10,247	0.037	0.162
CMBLR3	CMBLR3	Pickling Line Boiler 3	20.00	1.65	7.21	1.00	4.38	0.15	0.65	0.037	0.163	0.012	0.052	0.11	0.47	2,342	10,247	0.037	0.162
GALVFN1-ST	GALVFN1	Galvanizing Furnace #1	83.00	6.84	29.94	4.15	18.18	0.62	2.71	0.155	0.677	0.049	0.214	0.45	1.96	9,719	42,526	0.153	0.671
GALVFN2-ST	GALVFN2	Galvanizing Furnace #2	83.00	6.84	29.94	4.15	18.18	0.62	2.71	0.155	0.677	0.049	0.214	0.45	1.96	9,719	42,526	0.153	0.671
GALVFUG	BOXANN1	Box Annealing Furnace #1	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN2	Box Annealing Furnace #2	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN3	Box Annealing Furnace #3	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN4	Box Annealing Furnace #4	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN5	Box Annealing Furnace #5	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN6	Box Annealing Furnace #6	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN7	Box Annealing Furnace #7	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN8	Box Annealing Furnace #8	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN9	Box Annealing Furnace #9	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN10	Box Annealing Furnace #10	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN11	Box Annealing Furnace #11	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN12	Box Annealing Furnace #12	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN13	Box Annealing Furnace #13	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN14	Box Annealing Furnace #14	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN15	Box Annealing Furnace #15	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN16	Box Annealing Furnace #16	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN17	Box Annealing Furnace #17	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN18	Box Annealing Furnace #18	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN19	Box Annealing Furnace #19	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN20	Box Annealing Furnace #20	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN21	Box Annealing Furnace #21	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
GALVFUG	BOXANN22	Box Annealing Furnace #22	10.00	0.82	3.61	0.98	4.29	0.07	0.33	0.019	0.082	0.006	0.026	0.05	0.24	1,171	5,124	0.018	0.081
TFST-1	TF1	Hot Mill Tunnel Furnace 1	150.00	12.35	54.11	10.50	45.99	1.12	4.90	0.279	1.224	0.088	0.386	0.81	3.54	17,565	76,854	0.277	1.212
TFST-2	TF2	Hot Mill Tunnel Furnace 2	150.00	12.35	54.11	10.50	45.99	1.12	4.90	0.279	1.224	0.088	0.386	0.81	3.54	17,565	76,854	0.277	1.212
SLAG-CUT-NG	SLAG-CUT	Slag Cutting	2.40	0.20	0.87	0.24	1.03	0.02	0.08	0.004	0.020	0.001	0.006	0.01	0.06	281	1,230	0.004	0.019
ASP-1	ASP	Water Bath Vaporizer	11.00	0.91	3.97	1.08	4.72	0.08	0.36	0.020	0.090	0.006	0.028	0.06	0.26	1,288	5,636	0.020	0.089

Table A-1 : Hot Mill and Cold Mill Stack/Vent Emission Limits

Emission Point ID	Description	Control Device	Flow Rate[1]	Filter/Scrubber Outlet (gr/dscf)[2]			Hourly Emissions (lb/hr)[3]			Annual Emissions (ton/yr)		
			dscf/min	$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM	$PM_{2.5}$	PM_{10}	PM
RM-BH	Rolling Mill	Baghouse	117,716	0.010	0.010	0.010	10.09	10.09	10.09	44.19	44.19	44.19
SM-BH	Scarfing Machine	Baghouse	85,557	0.010	0.010	0.010	7.33	7.33	7.33	32.12	32.12	32.12
PLST-1	Pickling Line 1	Scrubber	16,271	0.010	0.010	0.010	1.39	1.39	1.39	6.11	6.11	6.11
PLST-2	Pickling Line 2	Scrubber	7,185	0.010	0.010	0.010	0.62	0.62	0.62	2.70	2.70	2.70
PKLSB	Pickle Line Scale Breaker	Baghouse	52,972	0.003	0.003	0.003	1.36	1.36	1.36	5.97	5.97	5.97
TCMST	Tandem Cold Mill	Mist Eliminator	217,000	0.010	0.010	0.010	18.60	18.60	18.60	81.47	81.47	81.47
STM-BH	Standalone Temper Mill	Baghouse	45,000	0.0013	0.0024	0.0025	0.50	0.93	0.96	2.20	4.05	4.22
SPMST1	Skin Pass Mill #1	Baghouse	40,259	0.010	0.010	0.010	3.45	3.45	3.45	15.11	15.11	15.11
SPMST2	Skin Pass Mill #2	Baghouse	24,587	0.010	0.010	0.010	2.11	2.11	2.11	9.23	9.23	9.23
SPMST3	Skin Pass Mill #3	Baghouse	24,587	0.010	0.010	0.010	2.11	2.11	2.11	9.23	9.23	9.23
CGL1-ST1	CGL1 - Cleaning Section	Scrubber	12,247	0.003	0.003	0.003	0.31	0.31	0.31	1.38	1.38	1.38
CGL1-ST2	CGL1 - Passivation Section	Scrubber	9,350	0.003	0.003	0.003	0.24	0.24	0.24	1.05	1.05	1.05
CGL2-ST1	CGL2 - Cleaning Section	Scrubber	12,247	0.003	0.003	0.003	0.31	0.31	0.31	1.38	1.38	1.38
CGL2-ST2	CGL2 - Passivation Section	Scrubber	9,350	0.003	0.003	0.003	0.24	0.24	0.24	1.05	1.05	1.05

(1) Air flow rates represent the maximum design capacity of the mechanical flow through the listed particulate matter control device.

(2) gr/dscf = grains/dry standard cubic feet. For these emission points, the listed control device is the BACT technology and the outlet loading is PM2.5/PM10/PM BACT limit for the specified emission points.

(3) Hourly emission limits are based on a 24-hour average.

Kessler, Joseph R <joseph.r.kessler@wv.gov>

R14-0039 Permit Application Status

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Fri, Feb 18, 2022 at 1:27 PM
To: Bill Bruscino <bbruscino@trinityconsultants.com>, "Alteri, Sean [Corp]" <sean.alteri@nucor.com>
Cc: Beverly D McKeone <beverly.d.mckeone@wv.gov>, Jon D McClung <jon.d.mcclung@wv.gov>, Joseph R Kessler <joseph.r.kessler@wv.gov>

RE: Application Status: Incomplete
Nucor Steel West Virginia LLC
West Virginia Steel Mill
Permit Application: R14-0039
Plant ID No.: 053-00085

Dear Mr. Alteri:

Your application for the construction of a steel mill near Apple Grove, WV was received by the Division of Air Quality (DAQ) on January 21, 2022 and assigned to the writer for review. Upon an initial review of the application, it has been determined that the following item(s) need to be addressed prior to the application being deemed complete:

1. Pursuant to §45-14-9 and §45-14-10, the air impacts analysis (air dispersion modeling results) has not been submitted. We understand that you have received approval of the modeling protocol and that this analysis will be submitted upon completion. We also understand that, according to information in the modeling protocol, the Additional Impacts Analysis as required under §45-14-12 will also be submitted with the air impacts analysis.

It is important to note that submission of the item(s) listed above shall not relieve the permit applicant of the requirement to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit determination (§45-14-2.19). Should you have any questions, please contact me at (304) 926-0499 ext. 41271.

Thank You,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

Kessler, Joseph R <joseph.r.kessler@wv.gov>

RE: Point Pleasant Register - Affidavit of Publication

1 message

Bill Bruscino <BBruscino@trinityconsultants.com> Tue, Feb 15, 2022 at 11:58 AM
To: "Alteri, Sean [Corp]" <sean.alteri@nucor.com>, "Kessler, Joseph R" <joseph.r.kessler@wv.gov>

Thanks,

Bill

William Bruscino, P.E.

Manager of Consulting Services – Columbus, OH

P 614.433.0733 M 225.274.5147

Email: bbruscino@trinityconsultants.com

110 Polaris Pkwy, Suite 200 Westerville, OH 43082

Trinity Consultants

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Stay current on important EHS developments. Subscribe today to receive our free *EHS Quarterly*.

From: Alteri, Sean [Corp] <sean.alteri@nucor.com>
Sent: Friday, February 11, 2022 1:12 PM
To: Kessler, Joseph R <joseph.r.kessler@wv.gov>; Bill Bruscino <BBruscino@trinityconsultants.com>
Subject:

Sean Alteri

Environmental Manager

Nucor Corporate

1915 Rexford Road • Charlotte, NC 28211

Phone: 704.264.8828

Cell: 980.244.9459

Sean.Alteri@Nucor.com

Point Pleasant Register - Affidavit of Publication.pdf
174K

AFFP

Affidavit of Publication

STATE OF WEST VIRGINIA } SS
COUNTY OF MASON }

Brenda Davis, being duly sworn, says:

That she is Customer Service of the POINT PLEASANT REGISTER, a daily newspaper of general circulation, printed and published in POINT PLEASANT, MASON County, WEST VIRGINIA; that the publication, a copy of which is attached hereto, was published in the said newspaper on the following dates:

Jan 27,2022

That said newspaper was regularly issued and circulated on those dates.

SIGNED:

Brenda Davis

Subscribed to and sworn to me this 27th day of Jan 2022

Patricia Y. Wamsley

Patricia Y. Wamsley, MASON County, WEST VIRGINIA

My commission expires: Feb. 17, 2025

$ 42.98

50034342 90141074 614-433-0733

Trinity Consultants
William Bruscino, P.E.
110 Polaris Pkwy, Suite 200

Westerville, OH 43082

NOTICE OF APPLICATION

Notice is given that Nucor Steel West Virginia LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Construction Permit for a sheet steel mill to be located across from 28995 Huntington Road near Apple Grove, in Mason County, West Virginia. The latitude and longitude coordinates are: 38.655361 degrees latitude and -82.168528 degrees longitude. The applicant estimates the potential to discharge the following Regulated Air Pollutants will be: 489 tons of particulate matter, 731 tons of particulate matter 10 microns or less in aerodynamic diameter, 700 tons of particulate matter 2.5 microns or less in aerodynamic diameter, 850 tons of nitrogen oxides, 3,413 tons of carbon monoxide, 362 tons of sulfur dioxide, 728 tons of volatile organic compounds, 14 tons of hazardous air pollutants, and 0.68 tons of lead per year. Startup of operation is planned to begin on or about the 1st day of January, 2024. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, West Virginia, 25304, for at least 30 calendar days from the date of publication of this notice. Written comments will also be received via email at DEPAirQualityPermitting@WV.gov. Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 41281 during normal business hours.

Dated this the 21st day of January 2022.

By: Nucor Corporation
John Farris
Vice President & General Manager
1915 Rexford Road
Charlotte, NC 28211

1/27/22

Kessler, Joseph R <joseph.r.kessler@wv.gov>

Nucor WV FLM Responses

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Fri, Feb 11, 2022 at 3:06 PM
To: "Alteri, Sean [Corp]" <sean.alteri@nucor.com>, Bill Bruscino <bbruscino@trinityconsultants.com>

Attached

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

2 attachments

22.02.04 FS FLM Response.pdf
156K

22.02.10 NPS FLM Response.pdf
709K

Kessler, Joseph R <joseph.r.kessler@wv.gov>

(no subject)

1 message

Alteri, Sean [Corp] <sean.alteri@nucor.com> Fri, Feb 11, 2022 at 1:11 PM
To: "Kessler, Joseph R" <joseph.r.kessler@wv.gov>, Bill Bruscino <BBruscino@trinityconsultants.com>

Sean Alteri

Environmental Manager

Nucor Corporate

1915 Rexford Road • Charlotte, NC 28211

Phone: 704.264.8828

Cell: 980.244.9459

Sean.Alteri@Nucor.com

NSWV WV COA 02-01-22.pdf
172K

State of West Virginia

Certificate

I, Mac Warner, Secretary of State,
of the State of West Virginia, hereby certify that

NUCOR STEEL WEST VIRGINIA LLC

has filed the appropriate registration documents in my office according to the provisions of the West Virginia Code and hereby declare the organization listed above as duly registered with the Secretary of State's Office.

Given under my hand and
the Great Seal of West Virginia
on this day of
February 01, 2022

Mac Warner

Secretary of State

Kessler, Joseph R <joseph.r.kessler@wv.gov>

RE: [EXTERNAL] WV PSD Application Notification (R14-0039 - Nucor Steel West Virginia LLC)

1 message

Stacy, Andrea <Andrea_Stacy@nps.gov> Thu, Feb 10, 2022 at 9:51 PM
To: "Kessler, Joseph R" <joseph.r.kessler@wv.gov>, "Salazer, Holly" <Holly_Salazer@nps.gov>, "Notar, John" <John_Notar@nps.gov>, "King, Kirsten L" <kirsten_king@nps.gov>, Melanie Pitrolo <mpitrolo@fs.fed.us>, Ralph Perron <ralph.perron@usda.gov>, "Pitrolo, Melanie -FS" <melanie.pitrolo@usda.gov>, "Prosperi, Alexia - FS" <Alexia.Prosperi@usda.gov>, "Shepherd, Don" <Don_Shepherd@nps.gov>, "Schaberl, James P" <Jim_Schaberl@nps.gov>
Cc: Jon D McClung <jon.d.mcclung@wv.gov>, Beverly D McKeone <beverly.d.mckeone@wv.gov>, Laura M Crowder <laura.m.crowder@wv.gov>

Joe,

Thank you for notifying the NPS of the PSD permit application for Nucor Steel West Virginia LLC facility. Nucor Steel is proposing to construct a new 3,000,000 ton/year sheet steel mill in Mason County, WV. Based on the proposed maximum hourly emissions and the distance to Shenandoah National Park, we do not anticipate that a Class I AQRV analysis will be necessary for this permit.

I will note that I quickly reviewed the BACT conclusions provided in the permit. Nucor made the following statement in their SO2 BACT analysis:

> *"The SO_2 concentrations in the exhaust of the proposed EAFs will be below the levels typically controlled by flue gas desulfurization systems. Therefore, flue gas desulfurization control would not be effective in removing any additional SO_2 emissions from the proposed EAFs, and it is considered technically infeasible."*

I have attached a permit for the Gerdau MACSteel facility in Michigan (RBLC ID: MI-0438), which injects lime into the fabric filter baghouse to provide additional SO_2 control (essentially DSI) for the EAF/LMF. While it is difficult to directly compare emission rates on a lb/ton basis due to process variations at steel mills (e.g., the Gerdau MacSteel plant produces a high sulfur content steel which uses higher sulfur charge materials), this indicates that additional SO_2 control is feasible.

Please consider this information when evaluating Nucor's BACT analysis. Feel free to give me a call if you have any questions. Thanks!

Andrea

From: Kessler, Joseph R <joseph.r.kessler@wv.gov>
Sent: Monday, January 24, 2022 10:40 AM
To: Stacy, Andrea <Andrea_Stacy@nps.gov>; Salazer, Holly <Holly_Salazer@nps.gov>; Notar, John <John_Notar@nps.gov>; King, Kirsten L <kirsten_king@nps.gov>; Melanie Pitrolo <mpitrolo@fs.fed.us>; Ralph Perron <ralph.perron@usda.gov>; Pitrolo, Melanie -FS <melanie.pitrolo@usda.gov>
Cc: Joseph R Kessler <joseph.r.kessler@wv.gov>; Jon D McClung <jon.d.mcclung@wv.gov>; Beverly D McKeone <beverly.d.mckeone@wv.gov>; Laura M Crowder <laura.m.crowder@wv.gov>
Subject: [EXTERNAL] WV PSD Application Notification (R14-0039 - Nucor Steel West Virginia LLC)

Attached is the **FLM Notification Form** for the following PSD Permit Application submitted on January 21, 2022:

Permit Number:	**R14-0039**
Applicant:	**Nucor Steel West Virginia LLC**
Facility:	**West Virginia Steel Mill**
Location:	**Apple Grove, Mason County, WV**
Facility ID Number:	**053-00085**

The WV DAQ is providing notification that a PSD application has been filed for the proposed construction of a major source in Mason County, WV. The proposed facility is a 3,000,000 ton/year sheet steel mill. The application was submitted on January 21, 2022 and has not yet been deemed complete. The modeling protocol has been approved but the results of the modeling analysis have not yet been submitted. The highest calculated Q/D (based on Otter Creek NWA) is 8.77 (refer to page 197 of the application for Q/D calculation table).

The permit application is available online at: https://dep.wv.gov/daq/permitting/Documents/NucorSteel/R14-0039%20Permit%20Application.pdf

The modeling protocol is available online at: https://dep.wv.gov/daq/permitting/Documents/NucorSteel/FINAL%20Nucor%20Steel%20WV%20Modeling%20Protocol%202022-0112.pdf

Feel free to contact me if you have any questions,

Thank You,

--

Joe Kessler, PE

Engineer

West Virginia Division of Air Quality

601-57th St., SE

Charleston, WV 25304

Phone: (304) 926-0499 x41271

Joseph.r.kessler@wv.gov

2018_PTI.pdf
396K

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

October 29, 2018

PERMIT TO INSTALL
75-18

ISSUED TO
Gerdau MacSteel, Inc.

LOCATED AT
3000 Front Street
Monroe, Michigan

IN THE COUNTY OF
Monroe

STATE REGISTRATION NUMBER
B7061

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environmental Quality. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: **September 18, 2018**	
DATE PERMIT TO INSTALL APPROVED: **October 29, 2018**	SIGNATURE: Mary Ann Dolehanty
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

Table of Contents

Common Abbreviations / Acronyms

Common Acronyms

AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEM	Continuous Emission Monitoring
CFR	Code of Federal Regulations
COM	Continuous Opacity Monitoring
Department/ department	Michigan Department of Environmental Quality
EU	Emission Unit
FG	Flexible Group
GACS	Gallons of Applied Coating Solids
GC	General Condition
GHGs	Greenhouse Gases
HVLP	High Volume Low Pressure*
ID	Identification
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MAERS	Michigan Air Emissions Reporting System
MAP	Malfunction Abatement Plan
MDEQ	Michigan Department of Environmental Quality
MSDS	Material Safety Data Sheet
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standard for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PS	Performance Specification
PSD	Prevention of Significant Deterioration
PTE	Permanent Total Enclosure
PTI	Permit to Install
RACT	Reasonable Available Control Technology
ROP	Renewable Operating Permit
SC	Special Condition
SCR	Selective Catalytic Reduction
SNCR	Selective Non-Catalytic Reduction
SRN	State Registration Number
TEQ	Toxicity Equivalence Quotient
USEPA/EPA	United States Environmental Protection Agency
VE	Visible Emissions

Pollutant / Measurement Abbreviations

acfm	Actual cubic feet per minute
BTU	British Thermal Unit
°C	Degrees Celsius
CO	Carbon Monoxide
CO_2e	Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H_2S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-methane Organic Compounds
NO_x	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM10	Particulate Matter equal to or less than 10 microns in diameter
PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
scf	Standard cubic feet
sec	Seconds
SO_2	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
µg	Microgram
µm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig.

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**

2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**

3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**

4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**

5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to R 336.1219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of R 336.1219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. **(R 336.1219)**

6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**

7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**

8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.

9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R 336.1301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R 336.1303. **(R 336.1301)**
    a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
    b) A visible emission limit specified by an applicable federal new source performance standard.
    c) A visible emission limit specified as a condition of this Permit to Install.

12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R 336.1370(2). **(R 336.1370)**

13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R 336.2001 and R 336.2003, under any of the conditions listed in R 336.2001. **(R 336.2001)**

SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EUEAF	An electric arc furnace (EAF) with 130 tons of liquid steel per hour capacity used to melt steel scrap in a batch operation. Electrodes are lowered and raised through the furnace roof for melting the steel scrap. Six oxy-fuel burners are used to increase the steel melting rate. The molten steel is gravity fed from the EAF to the ladle used in the LMF by tapping at the bottom of the unit. Emissions are captured from the EAF via the use of a Direct Evacuation Control (DEC) system and separately using a canopy hood located directly above the EAF. DEC captured emissions go through a duct elbow that contains an adjustable gap opening to allow extra air to enter the system so that CO and hydrogen are combusted prior to entering a reaction chamber that acts to further reduce CO and VOC emissions. DEC emissions are then directed to a baghouse (DVBAGHOUSE-01). Emissions not captured by the DEC are captured by the canopy hood and are also sent to DVBAGHOUSE-01.	05/05/1978/ 01/04/2013/ 10/27/2014 Permit Issue Date	FGMELTSHOP FGMACTYYYYY
EULMF	The LMF is a complete ladle metallurgy system which includes arc reheating, alloy additions, powder injections and stirring. The LMF emissions are routed to a baghouse (DVLMFBAGHOUSE) via removable covers or decks, which are located over the ladle while the process is operating. Fugitive emissions from this process exit via the West Ladle Bay roof monitor vent.	01/04/2013/ 10/27/2014 Permit Issue Date	FGMELTSHOP FGMACTYYYYY FGLMFVTD
EUVTD	Two vacuum tank degassers (VTD) which remove entrained gases from the molten metal. Only one station can be degassed at a time. This emission unit does not include reheating. The VTD emissions are routed to the LMF baghouse (DVLMFBAGHOUSE) via removable covers or decks, which are located over the ladle while the process is operating.	01/04/2013/ 10/27/2014 Permit Issue Date	FGMELTSHOP FGMACTYYYYY FGLMFVTD
EULADLEPREHEAT2	A new 30 MMBTU/hr natural gas-fired ladle preheater will be installed in the Melt Shop Building. The emissions will be vented inside the Melt Shop exiting the building via the East Ladle Bay roof monitor vent and routed to DVLMFBAGHOUSE.	Permit Issue Date	FGMELTSHOP FGMACTYYYYY FGLMFVTD
EUROADS&PKG-01	Facility roadways, parking area, material storage areas, stockpile areas, permittee slag transferring and hauling operations, and material handling operations.	05/05/1978	FGMACTYYYYY
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290.			

The following conditions apply to:
EUEAF

DESCRIPTION: An electric arc furnace (EAF) with 130 tons of liquid steel per hour capacity used to melt steel scrap in a batch operation. Electrodes are lowered and raised through the furnace roof for melting the steel scrap. Six oxy-fuel burners are used to increase the steel melting rate. The molten steel is gravity fed from the EAF to the ladle used in the LMF by tapping at the bottom of the unit. Emissions are captured from the EAF via the use of a Direct Evacuation Control (DEC) system and separately using a canopy hood located directly above the EAF. DEC captured emissions go through a duct elbow that contains an adjustable gap opening to allow extra air to enter the system so that CO and hydrogen are combusted prior to entering a reaction chamber that acts to further reduce CO and VOC emissions. DEC emissions are then directed to a baghouse (DVBAGHOUSE-01). Emissions not captured by the DEC are captured by the canopy hood and are also sent to DVBAGHOUSE-01.

Flexible Group ID: FGMELTSHOP, FGMACTYYYYY

POLLUTION CONTROL EQUIPMENT: DVBAGHOUSE-01 and Direct Evacuation Control (DEC) and CO and VOC reaction chamber

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Visible Emissions	3%	6-minute average	EUEAF baghouse stacks	SC VI.2	R 336.1362, R 336.2810, 40 CFR 60.272a(a)(2)
2. Visible Emissions	6%	6-minute average	Vents and openings in the upper portion of the EUEAF portion of the Melt Shop building including the roof that may receive fugitive emissions from the EAF.	SC VI.7	R 336.1331, R 336.2803, R 336.2804, 40 CFR 60.272a(a)(3)
3. PM	0.0018 gr/dscf	Hourly	EUEAF Baghouse	SC V.1	R 336.1225, R 336.1331, 40 CFR 60.272a(a)(1)
4. PM	7.84 pph	Hourly	EUEAF Baghouse	SC V.1	R 336.1331, R 336.2803, R 336.2804
5. PM	32.15 tpy	12-month rolling time period as determined at the end of each calendar month.	EUEAF Baghouse	SC VI.5	R 336.1331, R 336.2803, R 336.2804
6. PM10	12.91 pph	Hourly	EUEAF Baghouse	SC V.1	R 336.2803, R 336.2804, R 336.2810
7. PM10	49.7 tpy	12-month rolling time period as determined at the end of each calendar month.	EUEAF Baghouse	SC VI.5	R 336.2803, R 336.2804, R 336.2810
8. PM2.5	12.91 pph	Hourly	EUEAF Baghouse	SC V.1	R 336.2803, R 336.2804

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
9. PM2.5	49.7 tpy	12-month rolling time period as determined at the end of each calendar month.	EUEAF Baghouse	SC VI.5	R 336.1205, R 336.2803, R 336.2804
10. SO_2	0.25 lb/ton liquid steel	Monthly average	EUEAF Baghouse	SC VI.5	R 336.2803, R 336.2804, R 336.2810
11. SO_2	32.5 pph	Hourly	EUEAF Baghouse	SC VI.4	R 336.2803, R 336.2804, R 336.2810
12. SO_2	112.5 tpy	12-month rolling time period as determined at the end of each calendar month.	EUEAF Baghouse	SC VI.5	R 336.2803, R 336.2804, R 336.2810
13. CO	2.0 lb/ton liquid steel	Monthly average	EUEAF Baghouse	SC VI.4 SC VI.5	R 336.2804, R 336.2810
14. CO	260.0 pph	Hourly	EUEAF Baghouse	SC VI.4	R 336.2804, R 336.2810
15. CO	900 tpy	12-month rolling time period as determined at the end of each calendar month.	EUEAF Baghouse	SC VI.5	R 336.2804, R 336.2810
16. NO_x	0.27 lb/ton liquid steel	Hourly	EUEAF Baghouse	SC V.1	R 336.2803, R 336.2804, R 336.2810, R 336.2908
17. NO_x	35.1 pph	Hourly	EUEAF Baghouse	SC V.1	R 336.2803, R 336.2804, R 336.2810, R 336.2908
18. NO_x	121.5 tpy	12-month rolling time period as determined at the end of each calendar month.	EUEAF Baghouse	SC VI.5	R 336.2803, R 336.2804, R 336.2810, R 336.2908
19. VOC	0.1 lb/ton liquid steel[1]	Hourly	EUEAF Baghouse	SC V.1	R 336.1702(a)
20. VOC	13.0 pph[1]	Hourly	EUEAF Baghouse	SC V.1	R 336.1702(a)
21. VOC	45.0 tpy	12-month rolling time period as determined at the end of each calendar month.	EUEAF Baghouse	SC VI.5	R 336.1702(a)
22. Lead	0.10 pph	Hourly	EUEAF Baghouse	SC V.1	R 336.2802(4)(d)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
23. Lead	0.4 tpy	12-month rolling time period as determined at the end of each calendar month.	EUEAF Baghouse	SC VI.5	R 336.2802(4)(d)
24. Mercury (as Hg)	0.033 pph	Hourly	EUEAF Baghouse	SC V.2	R 336.1224, R 336.1225, 40 CFR 63.10685
25. Mercury (as Hg)	271 lb/year	12-month rolling time period as determined at the end of each calendar month.	EUEAF Baghouse	SC VI.5	R 336.1224, R 336.1225, 40 CFR 63.10685

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not melt any radioactive scrap metal in EUEAF. **(40 CFR 52.21)**

2. The permittee shall not transfer material from EUEAF to the LMF without a ladle cover. **(R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1362, R 336.1702, 336.1910, R 336.2810)**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall not operate EUEAF unless the DEC, CO/VOC reaction chamber, the EAF canopy hood, quench system, the supersonic carbon injector system and DVBAGHOUSE-01 are installed and operating properly. **(R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1362, R 336.1702, R 336.2810, R 336.1910)**

2. The permittee shall not operate EUEAF unless the combustion controls, including real time process optimization (RTPO) and the oxy-fuel burners are installed and operating properly. **(R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1362, R 336.1702, R 336.2810; R 336.2908)**

3. The permittee shall not operate EUEAF unless the transferring of liquid steel to the LMF ladles is accomplished by tapping the bottom of the unit. **(R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1362, R 336.1702, R 336.2810)**

4. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor and record the visible emissions from the EUEAF baghouse stacks (SVBH-01-Stack1 and SVBH-01-Stack2) on a continuous basis. **(R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.2802, R 336.2810)**

5. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor and record the SO_2 and CO emissions and exhaust flow rate on a continuous basis, from the EUEAF baghouse stacks (SVBH-01-Stack1 and SVBH-01-Stack2). **(R 336.2802, R 336.2810)**

6. The permittee shall not operate the EUEAF unless the lime injection system for DVBAGHOUSE-01 that is used to precoat the bags is installed and operating properly. **(R 336.1910, R 336.2802, R 336.2810)**

7. The permittee shall not operate the EUEAF unless the air-to-fuel ratio for the EAF burner is maintained to minimize NO_x emissions. **(R 336.1910, R 336.2908)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Within 180 days from the date of the official notice of completion of the modification (see FGMELTSHOP special condition SC IX.1), and once every five years thereafter, the permittee shall verify the visible emissions, PM, PM10, PM2.5, NO_x, VOC, and Lead emission rates from EUEAF by testing at owner's expense, in accordance with Department requirements. Compliance will be demonstrated by testing both stacks of the EAF baghouse simultaneously and adding both stacks together to obtain the total pound/hour mass emission rates. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1702, R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804, R 336.2810, 40 CFR 60.272a)**

2. Within 180 days from the date of the official notice of completion of the modification (see FGMELTSHOP special condition SC XI.1), and once every five years thereafter, the permittee shall verify the mercury (as Hg) emission rate from EUEAF by testing at owner's expense, in accordance with Department requirements. Compliance will be demonstrated by testing both stacks of the EAF baghouse simultaneously and adding both stacks together to obtain the total pound/hour mass emission rates. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1224, R 336.1225, R 336.1228, 40 CFR 63.10685)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations/records in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205, R 336.2803, R 336.2804, R 336.2810; R 336.2908)**

2. The permittee shall continuously monitor and record, in a satisfactory manner, the visible emissions from the EAF baghouse stacks (SVBH-01-Stack1 and SVBH-01-Stack2) of EUEAF. The permittee shall operate the COM system to meet the timelines, requirements and reporting detailed in Appendix A and shall use the COM data for determining compliance with SC I.1 for the average of the two baghouse stacks. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.2802, 40 CFR 60.273a(a))**

3. The permittee shall maintain a record of emissions, monitoring, and operating information as required to comply with the Federal Standards of Performance for New Stationary Sources as specified in 40 CFR, Part 60, Subpart AAa. All source emissions data and operating data shall be kept on file for a period of at least five years and made available to the AQD upon request. **(40 CFR Part 60, Subpart AAa, 40 CFR 60.274a)**

4. The permittee shall continuously monitor and record, in a satisfactory manner, the SO2 and CO emissions and flow from the EAF baghouse stacks (SVBH-01-Stack1 and SVBH-01-Stack2) of EUEAF. The permittee shall operate each Continuous Emission Rate Monitoring System (CERMS) to meet the timelines, requirements and reporting detailed in Appendix B and shall use the CERMS data for determining compliance with SC I.10, I.12, I.13, I.14, and I.15 for both stacks combined. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1602, R 336.1702, R 336.2802)**

5. The permittee shall keep the following records on a monthly basis in accordance with SC VI.1:
   a) The annual emission rate of CO and SO_2 based on CERMS data for a 12-month rolling time period.
   b) The annual emission rate of PM, PM10, PM2.5, NO_x, VOC, Mercury, and Lead on a 12-month rolling time period determined at the end of each calendar month, either based on hours of operation and testing, or based on production and emission factors based on testing.
   c) The emissions of CO and SO_2 as lb/ton of steel produced on a monthly average basis, by dividing the CERMS monthly mass of each pollutant by the monthly steel production. Monthly steel production values shall correspond with recordkeeping required under FGMELTSHOP.
   d) The amount of lime that is used to precoat bags in DVBAGHOUSE-01.
   e) The average air-to-fuel ratio for the EAF burner.

   The permittee shall keep the records on file at the facility, in a format acceptable to the AQD District Supervisor, and make them available to the Department upon request. **(R 336.1205 R 336.2803, R 336.2804, R 336.2810; R 336.2908)**

6. The permittee shall monitor all incoming material to determine if there are any radioactive materials mixed into the load. Monthly records of any shipments containing radioactive scrap material shall be recorded and kept on file for five years. **(40 CFR 52.21)**

7. After 180 days of permit issuance, the permittee shall conduct weekly visible emission observations at the EAF portion of the Melt Shop building, in accordance with EPA Method 22, for a minimum of ten minutes when the EAF is operating. At least two of the weekly EAF portion of the Melt Shop building visible emission observations per month shall cover a full Tapping cycle at the EAF. The permittee shall conduct the observations from a Method 9 sun compliant location where the EAF portion of the Melt Shop building is visible. If visible emissions are observed, the permittee shall immediately conduct a Method 9 opacity reading for a minimum of six minutes. If visible emissions are observed, the permittee shall investigate the cause of the emissions and implement corrective actions, if any, to stop the emissions as soon as possible. The permittee shall maintain records of the cause and corrective actions, if any; the date the cause was identified; and the date the corrective actions, if any, were implemented. Once the investigation is complete and corrective actions, if any, have been implemented, the permittee shall conduct another set of Method 22 or Method 9 readings, if applicable, to verify that the corrective actions have addressed the visible emissions. The permittee shall maintain a record of all visible emissions observations, including the start time of observations, end time of observations, whether any visible emissions were observed, and the results of any Method 9 opacity readings. **(R 336.1301, R 336.1303, R 336.2803, R 336.2804, R 336.2810, 40 CFR Part 60 Subpart AAa)**

8. The permittee shall keep on file all records required per 40 CFR 60.276a on file at the facility and make available to the AQD District Supervisor upon request. **(40 CFR Part 60 Subpart AAa, 40 CFR 60.276a)**

9. The permittee shall maintain records of all shop opacity observations made in accordance with 40 CFR 60.273a(d). Shop opacity shall be recorded for any points where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of visible emissions, only one observation of shop opacity will be required. In this case, the shop opacity observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident. All shop opacity observations in excess of 6% shall indicate a period of excess emission, and shall be reported to the administrator semi-annually, according to §60.7(c). **(40 CFR Part 60, Subpart AAa, 40 CFR 60.276a(g))**

10. The permittee has the option of monitoring each baghouse that controls emissions from EUEAF with either a COMS or a bag leak detection system. If applicable, the permittee shall maintain the following records for each bag leak detection system required under §60.273a(e):
    a) Records of the bag leak detection system output; **(40 CFR Part 60, Subpart AAa, 40 CFR 60.276a(h)(1))**
    b) Records of bag leak detection system adjustments, including the date and time of the adjustment, the initial bag leak detection system settings, and the final bag leak detection system settings; and **(40 CFR Part 60, Subpart AAa, 40 CFR 60.276a(h)(2))**

c) An identification of the date and time of all bag leak detection system alarms, the time that procedures to determine the cause of the alarm were initiated, if procedures were initiated within 1 hour of the alarm, the cause of the alarm, an explanation of the actions taken, the date and time the cause of the alarm was alleviated, and if the alarm was alleviated within 3 hours of the alarm. **(40 CFR Part 60, Subpart AAa, 40 CFR 60.276a(h)(3))**

VII. REPORTING

1. Each owner or operator shall submit a written report of exceedances of the control device opacity to the AQD District Supervisor semi-annually. For the purposes of these reports, exceedances are defined as all 6-minute periods during which the average opacity is 3 percent or greater. **(40 CFR Part 60, Subpart AAa, 40 CFR 60.276a(b))**

2. Operation at a furnace static pressure that exceeds the value established under 40 CFR 60.274a(g) and either operation of control system fan motor amperes at values exceeding ±15 percent of the value established under 40 CFR 60.274a(c) or operation at flow rates lower than those established under 40 CFR 60.274a(c) may be considered by the AQD District Supervisor to be unacceptable operation and maintenance of the affected facility. Operation at such values shall be reported to the AQD District Supervisor semiannually. **(40 CFR Part 60, Subpart AAa, 40 CFR 60.276a(c))**

3. The permittee shall conduct the demonstration of compliance with 40 CFR 60.272a(a) and furnish the AQD District Supervisor a written report of the results of the test. This report shall include the information specified in 40 CFR Part 60.276a(f)(1)-(22)). **(40 CFR Part 60, Subpart AAa, 40 CFR 60.276a(f))**

VIII. STACK/VENT RESTRICTIONS

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVBH-01-STACK1	136	120	R 336.1225, R 336.2803, R 336.2804
2. SVBH-01-STACK2	136	120	R 336.1225, R 336.2803, R 336.2804

IX. OTHER REQUIREMENTS

1. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A, “General Provisions” and Subpart YYYYY, “Area Sources: Electric Arc Furnace Steelmaking Facilities”. **(40 CFR Part 63, Subparts A and YYYYY)**

2. The permittee shall comply with all applicable provisions of the New Source Performance Standards, as specified in 40 CFR Part 60, Subpart A, “General Provisions” and Subpart AAa, “Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983”. **(40 CFR Part 60, Subparts A and AAa)**

The following conditions apply to:
EULMF

DESCRIPTION: The LMF is a complete ladle metallurgy system which includes arc reheating, alloy additions, powder injections and stirring. The LMF emissions are routed to a baghouse (DVLMFBAGHOUSE) via removable covers or decks, which are located over the ladle while the process is operating. Fugitive emissions from this process exit via the West Ladle Bay roof monitor vent.

Flexible Group ID: FGMELTSHOP, FGMACTYYYYY, FGLMFVTD

POLLUTION CONTROL EQUIPMENT: DVLMFBAGHOUSE for particulate control equipped with a lime injection system that is used primarily to control SO2 emissions.

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Visible Emissions	6%	6-minute average	EULMF Baghouse stack and West Ladle Bay Roof Monitor	SC VI.1	R 336.2810

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not operate EULMF unless the DVLMFBAGHOUSE is installed and operating properly. **(R 336.1301, R 336.1331, R 336.1910, R 336.2810)**

2. The permittee shall not transfer material to EUVTD from EULMF without a ladle cover. **(R 336.2810)**

3. The permittee shall not operate the EUVTD from EULMF unless the lime injection system for DVLMFBAGHOUSE that is used to precoat the bags is installed and operating properly. **(R 336.1910, R 336.2802, R 336.2810)**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall not operate EULMF unless the LMF process vessel roof is in operational position. Operational position is defined as the ladle being underneath the evacuation lid. **(R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1362, R 336.2810 910)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VI. MONITORING/RECORDKEEPING
Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall perform a visible emission observation for SVBHLMF-STACK a minimum of once per week during operation of the LMF. If the permittee observes any visible emissions, the permittee shall perform a Method 9 visible emissions reading. If after performing the Method 9 visible emissions reading, the permittee determines that visible emissions from the stack exceed 5% opacity, the permittee shall immediately initiate an investigation to determine the cause of the visible emissions and take prompt corrective action. Records are required only when a Method 9 visible emissions reading is performed. When records are required, the records will include the time that the visible emissions were observed, identification of the cause, the corrective action taken if any, and the time of completion of the corrective action. **(R 336.1301, R 336.1303, R 336.2810)**

2. After 180 days of permit issuance, the permittee shall conduct weekly visible emission observations at the ladle bay portion of the Melt Shop building, in accordance with EPA Method 22, for a minimum of ten minutes when the LMF is operating. The permittee shall conduct the observations from a Method 9 sun compliant location where the ladle bay portion of the Melt Shop building is visible. If visible emissions are observed, the permittee shall immediately conduct a Method 9 opacity reading for a minimum of six minutes. If visible emissions are observed, the permittee shall investigate the cause of the emissions and implement corrective actions, if any, to stop the emissions as soon as possible. The permittee shall maintain records of the cause and corrective actions, if any; the date the cause was identified; and the date the corrective actions, if any, were implemented. Once the investigation is complete and corrective actions, if any, have been implemented, the permittee shall conduct another set of Method 22 or Method 9 readings, if applicable, to verify that the corrective actions have addressed the visible emissions. The permittee shall maintain a record of all visible emissions observations, including the start time of observations, end time of observations, whether any visible emissions were observed, and the results of any Method 9 opacity readings.

3. The permittee shall keep monthly records of the amount of lime that is used to precoat bags in DVLMFBAGHOUSE. The calculations/records shall be maintained in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205, R 336.2803, R 336.2804, R 336.2810)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTIONS

The exhaust gases from the stack listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	**Maximum Exhaust Diameter/Dimensions (inches)**	**Minimum Height Above Ground (feet)**	**Underlying Applicable Requirements**
1. SVBHLMF-STACK	110	150	R 336.1225 R 336.2803, R 336.2804

IX. OTHER REQUIREMENTS

NA

The following conditions apply to:
EUVTD

DESCRIPTION: Two vacuum tank degassers (VTD) which remove entrained gases from the molten metal. Only one station can be degassed at a time. This emission unit does not include reheating. The VTD emissions are routed to the LMF baghouse (DVLMFBAGHOUSE) via removable covers or decks, which are located over the ladle while the process is operating.

Flexible Group ID: FGMELTSHOP, FGMACTYYYYY, FGLMFVTD

POLLUTION CONTROL EQUIPMENT: DVLMFBAGHOUSE

I. EMISSION LIMITS

NA

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not operate the EUVTD unless the process vessel roof is sealed, and the baghouse control system is installed and operating properly. **(R 336.1301, R 336.1331, R 336.1910, R 336.2810)**

IV. DESIGN/EQUIPMENT PARAMETERS

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTIONS

The exhaust gases from the stack listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVBHLMF-STACK	110	150	R 336.1225 R 336.2803, R 336.2804

IX. OTHER REQUIREMENTS

NA

The following conditions apply to:
EULADLEPREHEAT2

DESCRIPTION: A new 30 MMBTU/hr natural gas-fired ladle preheater will be installed in the Melt Shop Building. The emissions will be vented inside the Melt Shop exiting the building via the East Ladle Bay roof monitor vent and routed to DVLMFBAGHOUSE.

Flexible Group ID: FGMELTSHOP, FGMACTYYYYY, FGLMFVTD

POLLUTION CONTROL EQUIPMENT: DVLMFBAGHOUSE, Low NOx Burner

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NO_X	0.08 lb/MMBtu	Hourly	EULADLEPREHEAT2	SC V.1	R 336.2810, R 336.2908
2. SO_2	0.0006 lb/MMBtu	Hourly	EULADLEPREHEAT2	SC V.1	R 336.2810
3. CO	0.084 lb/MMBtu	Hourly	EULADLEPREHEAT2	SC V.1	R 336.2810
4. PM	0.0076 lb lb/MMBtu	Hourly	EULADLEPREHEAT2	SC V.1	R 336.2810
5. PM10	0.0076 lb lb/MMBtu	Hourly	EULADLEPREHEAT2	SC V.1	R 336.2810
6. PM2.5	0.0076 lb lb/MMBtu	Hourly	EULADLEPREHEAT2	SC V.1	R 336.2810

II. MATERIAL LIMITS

1. The permittee shall only burn pipe-line quality natural gas in EULADLEPREHEAT2. **(R 336.1225, R 336.1702, R 336.2803, R 336.2804, R 336.2810, R 336.2908)**

III. PROCESS/OPERATIONAL RESTRICTIONS

NA

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall not operate EULADLEPREHEAT2 unless the Low-NO_x Burner is installed and operating properly. **(R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.2810, R 336.2908)**

V. TESTING/SAMPLING
Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Within 60 days of achieving the maximum production rate, but not later than 180 days after commencement of initial startup of EULADLEPREHEAT2, the permittee shall verify NO_X, SO_2, CO, PM, PM10, and PM2.5 emissions from EULADLEPREHEAT2 by testing at owner's expense, in accordance with Department requirements. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. Verification of emission rates include the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. If the AQD and permittee both agree that actual field testing to verify emission rates are not technically feasible, then the permittee shall propose an alternative method for laboratory bench testing of EULADLEPREHEAT2. The AQD must approve this alternative bench testing method prior to the permittee testing under it. Verification of emission rates include the submittal of a complete report of the bench test within 60 days following the last date of the test. **(R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804, R336.2810, R 336.2908)**

VI. MONITORING/RECORDKEEPING
Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTIONS

The exhaust gases from the stack listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVBHLMF-STACK	110	150	R 336.1225 R 336.2803, R 336.2804

IX. OTHER REQUIREMENTS

NA

The following conditions apply to:
EUROADS&PKG-01

DESCRIPTION: Facility roadways, parking area, material storage areas, stockpile areas, permittee slag transferring and hauling operations, and material handling operations.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT: NA

I. EMISSION LIMITS

1. Visible emissions from all wheel loaders, all truck traffic, and each of the material storage piles, operated and maintained in conjunction with EUROADS&PKG-01, shall not exceed a six minute average of five (5) percent opacity. Compliance shall be demonstrated using Test Method 9D as defined in Section 324.5525(j) of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). **(R 336.1301, R 336.2803, R 336.2804, R 336.2810, Act 451 Section 325.5525(j))**

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall operate EUROADS&PKG-01 according to the procedures outlined in the approved fugitive dust plan. The permittee shall update the fugitive dust plan if it is determined to be insufficient by the AQD District Supervisor. The permittee shall provide an updated fugitive dust plan to the AQD District Supervisor for review and approval within 30 days of notification that the plan is insufficient. **(R 336.1371(5))**

2. The permittee shall wet and sweep all paved roads twice a day. Wetting of the roads and sweeping may be omitted if weather allows natural wetting at the scheduled sweeping time. **(R 336.1371(5))**

IV. DESIGN/EQUIPMENT PARAMETERS

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall perform a non-certified visible emission observation of EUROADS&PKG-01 at least once per day during yard activity, which includes the operation of vehicles on the South Road. The permittee shall initiate appropriate corrective action upon observation of visible emissions and shall keep a written record of each required observation and corrective action taken. **(R 336.1301, R 336.1303)**

2. The fugitive dust plan must include the following activities for EUROADS&PKG-01, or other activities that will result in equivalent control of fugitive emissions:[2] **(R 336.1371, R 336.1372, R 336.2810, Act 451 Section 324.5524)**
   a) Dust suppressant will be applied to unpaved areas at least twice per month, weather permitting.
   b) The posted maximum vehicle speed within the plant shall not exceed 12 miles per hour.
   c) Treatment of facility roadways, parking area, material storage areas, stockpile areas, slag transferring and hauling operations, and material handling operations.
   d) Paved areas must be wetted and swept twice a day. Wetting of the roads and sweeping may be omitted if weather allows natural wetting at the scheduled sweeping time. **(R 336.1371(5))**

VII. <u>REPORTING</u>

NA

VIII. <u>STACK/VENT RESTRICTIONS</u>

NA

IX. <u>OTHER REQUIREMENTS</u>

NA

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGMELTSHOP	The Melt Shop includes EUEAF, EULMF, EUVTD ladle preheaters (including EULADLEPREHEAT2), and other Melt Shop natural gas combustion sources and other ancillary operations taking place inside the Melt Shop.	EUEAF, EULMF, EUVTD, EULADLEPREHEAT2
FGLMFVTD	FGLMFVTD includes the LMF and the VTD operated at the facility. The emissions from these sources are captured and routed to the same baghouse (DVLMFBAGHOUSE). In addition, natural gas combustion source emissions released to the in-plant environment are captured in an enclosed roof vent section of the building and routed to the DVLMFBAGHOUSE; this includes the new ladle preheater (EULADLEPREHEAT2). All emissions from the DVLMFBAGHOUSE are exhausted through the baghouse stack (SVBHLMF-STACK).	EULMF, EUVTD, EULADLEPREHEAT2
FGMACTYYYYY	The affected source is an EAF steelmaking facility as defined by 40 CFR Part 63 Subpart YYYYY. It is considered an area source of hazardous air pollutant (HAP) emissions.	EUEAF, EULMF, EUVTD, EULADLEPREHEAT2 EUROADS&PKG-01

The following conditions apply to:
FGMELTSHOP

DESCRIPTION: The Melt Shop includes EUEAF, EULMF, EUVTD ladle preheaters (including EULADLEPREHEAT2), and other Melt Shop natural gas combustion sources and other ancillary operations taking place inside the Melt Shop. .

Emission Units: EUEAF, EULMF, EUVTD, EULADLEPREHEAT2

POLLUTION CONTROL EQUIPMENT: DVBAGHOUSE-01, DVLMFBAGHOUSE

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. GHGs as CO2e	256,694 tpy	12-month rolling time period as determined at the end of each calendar month	FGMELTSHOP	SC VI.2	R 336.2803, R 336.2804, R 336.2810
2. Visible Emissions*	6%	6-minute average	EAF and Ladle Bay portions of the Melt Shop Building	EUEAF SC VI.7 & EULMF SC VI.2	40 CFR 60.272a(a)(3)
*Emission Limit and compliance method previously specified in EUEAF and EULMF					

II. MATERIAL LIMITS

Material	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Steel Output	130 tons liquid steel per heat	Every Heat in EUEAF	FGMELTSHOP	VI.2	R 336.2810; R 336.2908
2. Steel Output	900,000 tons liquid steel per year	12-month rolling time period as determined at the end of each calendar month.	FGMELTSHOP	VI.2	R 336.2810; R 336.2908

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not operate each of the emission units in FGMELTSHOP for more than 8,200 hours per year on a 12-month rolling time period basis as determined at the end of each calendar month. **(R 336.2803, R 336.2804, R 336.2810; R 336.2908)**

2. Within 180 days after official notice of completion of the modification (see SC IX.1), the permittee shall review and update the facility Energy Efficiency Management Plan (EEMP), as necessary. Either an updated Plan or notification that the plan does not need to be updated, shall be submitted to the AQD District Supervisor. Thereinafter, the permittee shall not operate equipment covered by this permit unless the EEMP is implemented and maintained for each of the following emission units EUEAF, EULMF, EUVTD, and EULADLEPREHEAT2. At a minimum, the EEMP shall be updated to include the following:

a) Work practices to be followed to ensure optimal energy efficiency in the operation of all equipment necessary to operate the modified EUEAF, EULMF, EUVTD, and EULADLEPREHEAT2 (in addition to the existing EUBILLETREHEATWB, and EUCASTER).
b) A maintenance plan to be followed to ensure optimal energy efficiency of all equipment necessary to operate the modified EUEAF, EULMF, EUVTD, and EULADLEPREHEAT2 (in addition to the existing EUBILLETREHEATWB, and EUCASTER) in accordance with manufacturer's recommendations.

The permittee shall amend the EEMP within 180 days if any changes are deemed necessary, or upon request by the AQD District Supervisor. The permittee shall submit the EEMP and any amendments to the AQD District Supervisor for review and approval. **(R 336.2810)**

3. The permittee shall not operate an emission unit or process equipment included in this permit unless a maintenance and malfunction abatement plan (MAP) as described in Rule 911(2), for the emission unit or process equipment has been submitted to the AQD District Supervisor within 365 days of permit issuance and is implemented and maintained. If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The MAP shall address the following emission units and flexible groups:
   a) EUEAF for the CO and VOC reaction chamber, DEC, quench system, DVBAGHOUSE-01, and the oxy-fuel burners (in EUEAF)
   b) EULMF, EUVTD, and ladle bay roof monitor for DVLMFBAGHOUSE
   c) EUCASTER, defining good combustion practices for the oxy-fuel torches and requiring parameters for natural gas meter calibration.
   d) EUCASTERCOOLTWR for the drift eliminator.
   e) EUBILLETREHEATWB, for the Ultra-Low NO_x Burners.
   f) EUDUST-SILO for the silo vent fabric filter.

   If an emission unit or flexible group specified in this permit has not been installed or modified within 180 days of permit issuance, then the permittee shall revise the MAP within 90 days after completion of the initial operating period for the new or modified emission unit or flexible group. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1910, R 336.1911, R 336.2803, R 336.2804, R 336.2810)**

IV. DESIGN/EQUIPMENT PARAMETERS

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations/records in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205, R 336.2803, R 336.2804)**

2. The permittee shall monitor and record the metal production rate per heat, per month, and per 12-month rolling time period for the electric arc furnace in a format approved by the AQD District Supervisor. The permittee shall keep the records on file and make them available to the AQD District Supervisor upon request. **(R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1702, R 336.1910)**

3. The permittee shall monitor and record the hours of operation of each emission unit in FGMELTSHOP on a monthly and 12-month rolling time period basis as determined at the end of each calendar month. The permittee shall keep records on file at the facility and make them available to the AQD District Supervisor upon request. **(R 336.1225, R 336.2810; R 336.2908)**

4. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period CO_2e emission calculation records for FGMELTSHOP, as required by SC I.1. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1810)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTIONS

NA

IX. OTHER REQUIREMENTS

1. The permittee shall provide written notification, within 14 days, to the MDEQ-AQD upon completion of the modifications allowed under this permit to install (PTI 75-18). Completion of the modifications will be considered to occur following a 90-day period for startup and initial trial operation of the modified equipment. The notification shall be made to the AQD District Supervisor. **(R 336.2810; R 336.2908)**

2. The permittee shall provide 157.94 tons of NO_X offsets to the AQD prior to beginning construction of the changes approved under this permit (PTI: 75-18). **(R 336.2908)**

The following conditions apply to:
FGLMFVTD

DESCRIPTION: FGLMFVTD includes the LMF and the VTD operated at the facility. The emissions from these sources are captured and routed to the same baghouse (DVLMFBAGHOUSE). In addition, natural gas combustion source emissions released to the in-plant environment are captured in an enclosed roof vent section of the building and routed to the DVLMFBAGHOUSE; this includes the new ladle preheater (EULADLEPREHEAT2). All emissions from the DVLMFBAGHOUSE are exhausted through the baghouse stack (SVBHLMF-STACK).

Emission Units: EULMF, EUVTD, EULADLEPREHEAT2

POLLUTION CONTROL EQUIPMENT: DVLMFBAGHOUSE equipped with a lime injection system used to control the LMF, the VTD and fugitive emissions that exit the Melt Shop via the East Ladle Bay roof monitor vent.

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. PM	0.0018 gr/dscf	Hourly	FGLMFVTD	SC V.1	R 336.1331
2. PM	3.88 pph	Hourly	FGLMFVTD	SC V.1	R 336.1331, R 336.2803, R 336.2804
3. PM	15.92 tpy	12-month rolling time period as determined at the end of each calendar month.	FGLMFVTD	SC VI.2	R 336.1331, R 336.2803, R 336.2804
4. PM10	8.95 pph	Hourly	FGLMFVTD	SC V.1	R 336.2803, R 336.2804, R 336.2810
5. PM10	33.47 tpy	12-month rolling time period as determined at the end of each calendar month.	FGLMFVTD	SC VI.2	R 336.2803, R 336.2804, R 336.2810
6. PM2.5	8.95 pph	Hourly	FGLMFVTD	SC V.1	R 336.1205, R 336.2803, R 336.2804
7. PM2.5	33.47 tpy	12-month rolling time period as determined at the end of each calendar month.	FGLMFVTD	SC VI.2	R 336.1205, R 336.2803, R 336.2804
8. SO_2	13.05 pph	Hourly	FGLMFVTD	SC V.1	R 336.2803, R 336.2804, R 336.2810
9. SO_2	45.22 tpy	12-month rolling time period as determined at the end of each calendar month.	FGLMFVTD	SC VI.2	R 336.2803, R 336.2804, R 336.2810
10. CO	18.55 pph	Hourly	FGLMFVTD	SC V.1	R 336.2804, R 336.2810
11. CO	70.69 tpy	12-month rolling time period as determined at the end of each calendar month.	FGLMFVTD	SC VI.2	R 336.2804, R 336.2810
12. NO_x	10.3 pph	Hourly	FGLMFVTD	SC V.1 SC V.2	R 336.2803, R 336.2804, R 336.2810, R 336.2908

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
13. NO_x	42.23 tpy	12-month rolling time period as determined at the end of each calendar month.	FGLMFVTD	SC VI.2	R 336.2803, R 336.2804, R 336.2810, R 336.2908
14. VOC	1.63 pph	Hourly	FGLMFVTD	SC V.1	R 336.1702(a)
15. VOC	6.08 tpy	12-month rolling time period as determined at the end of each calendar month.	FGLMFVTD	SC VI.2	R 336.1702(a)
16. Lead	0.03 pph	Hourly	FGLMFVTD	SC V.1	R 336.2802(4)(d)
17. Lead	0.13 tpy	12-month rolling time period as determined at the end of each calendar month.	FGLMFVTD	SC VI.2	R 336.2802(4)(d)

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not operate FGLMFVTD unless DVLMFBAGHOUSE is installed and operating properly. **(R 336.1301, R 336.1331, R 336.1910, R 336.2810)**

IV. DESIGN/EQUIPMENT PARAMETERS

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Within 180 days from the date of the official notice of completion of the modification (see FGMELTSHOP special condition SC IX.1), and once every five years thereafter, the permittee shall verify visible emissions, PM, PM10, PM2.5, CO, NO_x, SO_2, VOC, and Lead emission rates from FGLMFVTD by testing at owner's expense, in accordance with Department requirements. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1702, R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804, R 336.2810; R 336.2908, 40 CFR 60.272a)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations/records in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205, R 336.2803, R 336.2804)**

2. The permittee shall maintain a record of the emission rate of PM, PM10, PM2.5, CO, SO_2, NO_x, VOC and Lead on a monthly and 12-month rolling time period determined at the end of each calendar month. The permittee shall keep the records on file at the facility, in a format acceptable to the AQD District Supervisor, and make them available to the Department upon request. **(R 336.1205 R 336.2803, R 336.2804, R 336.2810; R 336.2908)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTIONS

The exhaust gases from the stack listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVBHLMF-STACK	110	150	R 336.1225 R 336.2803, R 336.2804

IX. OTHER REQUIREMENTS

NA

The following conditions apply Source-Wide to:
FGMACT-YYYYY

DESCRIPTION: The affected source is an EAF steelmaking facility as defined by 40 CFR Part 63 Subpart YYYYY. It is considered an area source of hazardous air pollutant (HAP) emissions.
Emission Units: EUEAF, EULMF, EUVTD, EULADLEPREHEAT2 EUROADS&PKG-01

POLLUTION CONTROL EQUIPMENT: NA

I. EMISSION LIMITS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. PM**	0.0052 gr/dscf	Hourly	EAF control device	SC V.1	40 CFR 63.10686(b)(1)
2. Visible Emissions**	6%	6-minute average	EUEAF*	SC V.2	40 CFR 63.10686(b)(2)
* Emissions include only emissions from an EAF **These emission limits and associated compliance method were previously included in EUEAF					

II. MATERIAL LIMITS

1. For metallic scrap utilized in the EAF at the facility, the permittee must comply with the requirements in either paragraph (a)(1) or (2) of 40 CFR 63.10685. The permittee may have certain scrap at the facility subject to paragraph (a)(1) and other scrap subject to paragraph (a)(2) provided the scrap remains segregated until charge make-up. **(40 CFR 63.10685)**
   a) For metallic scrap utilized in the EAF at the facility under 40 CFR 63.10685 (a)(1) (*Pollution Prevention Plan*), the scrap utilized shall meet the following requirements:**(40 CFR 63.10685)**
      i) Scrap materials must be depleted (to the extent practicable) of undrained used oil filters, chlorinated plastics, and free organic liquids at the time of charging to the furnace. **(40 CFR 63.10685(a)(1)(i))**
      ii) Scrap shall be depleted (to the extent practicable) of lead-containing components (such as batteries, battery cables, and wheel weights) from the scrap, except for scrap used to produce leaded steel. **(40 CFR 63.10685(a)(1)(ii)**
      iii) The requirements of 40 CFR 63.10685 (a)(1) do not apply to the routine recycling of baghouse bags or other internal process or maintenance materials in the furnace. **(40 CFR 63.10685(a)(1)(iv)**
   b) For metallic scrap utilized in the EAF at the facility under 40 CFR 63.10685 (a)(2) (*Restricted metallic scrap*), the scrap utilized shall meet the following requirements:
      i) For the production of steel other than leaded steel, the permittee must not charge to a furnace metallic scrap that contains scrap from motor vehicle bodies, engine blocks, oil filters, oily turnings, machine shop borings, transformers or capacitors containing polychlorinated biphenyls, lead-containing components, chlorinated plastics, or free organic liquids (40 CFR 63.10685(a)(2).
      ii) For the production of leaded steel, the permittee must not charge to the furnace metallic scrap that contains scrap from motor vehicle bodies, engine blocks, oil filters, oily turnings, machine shop borings, transformers or capacitors containing polychlorinated biphenyls, chlorinated plastics, or free organic liquids. This restriction does not apply to any post-consumer engine blocks, post-consumer oil filters, or oily turnings that are processed or cleaned to the extent practicable such that the materials do not include lead components, chlorinated plastics, or free organic liquids. This restriction does not apply to motor vehicle scrap that is charged to recover the chromium or nickel content if you meet the requirements in paragraph (b)(3) of section 40 CFR 63.10685. **(40 CFR 63.10685(a)(2))**

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall implement and maintain an approved *Pollution Prevention Plan* by the applicable compliance date specified in 40 CFR 63.10680. The *Pollution Prevention Plan* shall be kept on site and include the following, as applicable:
   a) Control (to the extent practicable) of chlorinated plastics, lead, and free organic liquids (40 CFR 63.10685(a)(1)(i-iv) and/or restricted metallic scrap provisions of **40 CFR 63.10685(a)(2).**
   b) Provisions to meet the mercury requirements as specified in 40 CFR 63.10685(b).

   The permittee shall revise the plan within 60 days after a change occurs. The permittee shall submit the scrap pollution prevention plan to the permitting authority for approval. The permittee shall operate according to the plan as submitted during the review and approval process, operate according to the approved plan at all times after approval, and address any deficiency identified by the permitting authority within 60 days following disapproval of a plan. The permittee may request approval to revise the plan and may operate according to the revised plan unless and until the revision is disapproved by the permitting authority. The permittee shall keep a copy of the plan onsite and must provide training on the plan's requirements to all plant personnel with materials acquisition or inspection duties. **(40 CFR 63.10685)**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall not operate any EAF at the steelmaking facility unless a capture and collection system is properly installed, maintained, and operated. Collection from an EAF must include charging, melting and tapping operations. **(40 CFR 63.10686(a))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Within 180 days after the applicable compliance date specified in 40 CFR 63.10681, the permittee shall conduct a performance test to demonstrate initial compliance with PM emission limits for each EAF. The permittee shall conduct the performance test as specified in §63.7 and 40 CFR 60.275a, and 40 CFR 63.10686(d)(1)(i)-(vi). No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(40 CFR 63.10686(d)(1))**

2. The permittee shall conduct each opacity test for melt-shop fugitive emissions according to the requirements in §63.6(h) and Method 9 of Appendix A-4 of 40 CFR part 60. When emissions from an EAF vessel are combined with emissions from emission sources not subject to this subpart, compliance with the melt shop opacity limit shall be based on emissions from only the emission sources subject to this subpart. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(40 CFR 63.10686(d)(2))**

3. During any performance test, the permittee shall monitor and record the information specified in 40 CFR 60.274a(h) for all heats covered by the test. **(40 CFR 63.10686(d)(3)))**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall keep records, on a monthly basis, as required by 40 CFR 63.10685(c), concerning the Pollution Prevention Plan, or records that the scrap does not contain motor vehicle scarp, as applicable. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(40 CFR 63.10685(c)(1)(i) & (2))**

2. The permittee shall comply with the requirements of the General Provisions (40 CFR part 63, subpart A) according to Table 1 in 40 CFR Part 63 Subpart YYYYY. **(40 CFR 63.10690(a))**

3. The notification of compliance status required by §63.9(h) shall include each applicable certification of compliance, signed by a responsible official, according to §63.10690(b)(1)-(6). **(40 CFR 63.10690(b))**

VII. REPORTING

1. If the permittee is subject to the requirements for a site-specific plan for mercury under 40 CFR 63.10685 (b)(1) the permittee shall submit semiannual reports of the number of mercury switches removed or the weight of mercury recovered from the switches and properly managed, the estimated number of vehicles processed, an estimate of the percent of mercury switches recovered, and a certification that the recovered mercury switches were recycled at RCRA-permitted facilities. The semiannual reports shall include a certification that the permittee has conducted inspections or taken other means of corroboration as required under 40 CFR 63.10685 (b)(1)(ii)(C). This information may be included in the semiannual compliance reports required under SC VII.2. **(40 CFR 63.10685(c)(1)(ii))**

2. The permittee shall submit semiannual compliance reports regarding the control of contaminants from scrap according to the requirements in §63.10(e). The report must clearly identify any deviation from the requirements in §63.10685 (a) and (b) and the corrective action taken. The permittee shall identify which compliance option in paragraph (b) applies to each scrap provider, contract, or shipment. **(40 CFR 63.10685(c)(3))**

VIII. STACK/VENT RESTRICTIONS

NA

IX. OTHER REQUIREMENTS

1. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart YYYYY for Area Sources: Electric Arc Furnace Steel Making Facilities by the initial compliance date. **(40 CFR Part 63 Subparts A and YYYYY)**

APPENDIX A
Continuous Opacity Monitoring System (COMS) Requirements

For an existing COMS: If the permittee has satisfied the installation and performance specification requirements, Items 1 – 4 do not apply.

1. Within 30 calendar days after commencement of trial operation, the permittee shall submit two copies of a Monitoring Plan to the AQD, for review and approval. The Monitoring Plan shall include drawings or specifications showing proposed locations and descriptions of the required COMS.

2. Within 150 calendar days after commencement of trial operation, the permittee shall submit two copies of a complete test plan for the COMS to the AQD for approval.

3. Within 180 calendar days after commencement of trial operation, the permittee shall complete the installation and testing of the COMS.

4. Within 60 days of completion of testing, the permittee shall submit to the AQD two copies of the final report demonstrating the COMS complies with the requirements of Performance Specification (PS) 1.

5. The span value shall be 2.0 times the lowest emission standard or as specified in the federal regulations.

6. The COMS shall be installed, calibrated, maintained, and operated in accordance with the procedures set forth in 40 CFR 60.13 and PS 1 of Appendix B, 40 CFR Part 60.

7. The permittee shall perform an annual audit of the COMS using the procedures set forth in USEPA Publication 450/4-92-010, “Performance Audits Procedures for Opacity Monitors”, or a procedure acceptable to AQD. The results of the annual audit shall be submitted to the AQD within 30 days after the end of the next calendar quarter in which the audit results are received.

8. In accordance with 40 CFR 60.7(c) and (d), the permittee shall submit two copies of an excess emission report (EER) and summary report in an acceptable format to Air Quality Division, within 30 days following the end of each calendar quarter. The Summary Report shall follow the format of Figure 1 in 40 CFR 60.7(d). The EER shall include the following information:
   a) A report of each exceedance above limit. This includes the date, time, magnitude, cause and corrective actions of all occurrences during the reporting period.
   b) A report of all periods of COMS downtime and corrective action.
   c) A report of the total operating time of the FGMELTSHOP during the reporting period.
   d) If no exceedances or COMS downtime occurred during the reporting period, the permittee shall report that fact.

   All monitoring data shall be kept on file for a period of five (5) years and made available to the AQD upon request.

APPENDIX B
CO and SO2 Monitoring
Continuous Emission Rate Monitoring System (CERMS)
Requirements

For an existing CERMS: If the permittee has satisfied the installation and testing requirements, Items 1 – 4 do not apply.

1. Within 30 calendar days after the commencement of trial operation, the permittee shall submit two copies of a Monitoring Plan to the AQD, for review and approval. The Monitoring Plan shall include drawings or specifications showing proposed locations and descriptions of the required CERMS.

2. Within 150 calendar days after commencement of trial operation, the permittee shall submit two copies of a complete test plan for the CERMS to the AQD for approval.

3. Within 180 calendar days after commencement of trial operation, the permittee shall complete the installation and testing of the CERMS.

4. Within 60 days of completion of testing, the permittee shall submit to the AQD two copies of the final report demonstrating the CERMS complies with the requirements of the corresponding Performance Specifications (PS) in the following table.

Pollutant	Applicable PS
CO	4
SO2	2
CERMS	6

5. The span value shall be 2.0 times the lowest emission standard or as specified in the federal regulations.

6. The CERMS shall be installed, calibrated, maintained, and operated in accordance with the procedures set forth in 40 CFR 60.13 and PS 6 of Appendix B to 40 CFR Part 60.
7. Each calendar quarter, the permittee shall perform the Quality Assurance Procedures of the CERMS set forth in Appendix F of 40 CFR Part 60. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD in the format of the data assessment report (Figure 1, Appendix F).

8. In accordance with 40 CFR 60.7(c) and (d), the permittee shall submit two copies of an excess emission report (EER) and summary report in an acceptable format to the AQD, within 30 days following the end of each calendar quarter. The Summary Report shall follow the format of Figure 1 in 40 CFR 60.7(d). The EER shall include the following information:
   a) A report of each exceedance above the limits specified in special conditions of this permit. This includes the date, time, magnitude, cause and corrective actions of all occurrences during the reporting period.
   b) A report of all periods of CERMS downtime and corrective action.
   c) A report of the total operating time of the FGMELTSHOP during the reporting period.
   d) A report of any periods that the CERMS exceeds the instrument range.
   e) If no exceedances or CERMS downtime occurred during the reporting period, the permittee shall report that fact.

The permittee shall keep all monitoring data on file for a period of five years and make them available to the AQD upon request.

Kessler, Joseph R <joseph.r.kessler@wv.gov>

RE: [External Email]WV PSD Application Notification (R14-0039 - Nucor Steel West Virginia LLC)

1 message

Prosperi, Alexia - FS, MILWAUKEE, WI <Alexia.Prosperi@usda.gov> Fri, Feb 4, 2022 at 1:59 PM
To: "joseph.r.kessler@wv.gov" <joseph.r.kessler@wv.gov>, "laura.m.crowder@wv.gov" <laura.m.crowder@wv.gov>, "jon.d.mcclung@wv.gov" <jon.d.mcclung@wv.gov>, "beverly.d.mckeone@wv.gov" <beverly.d.mckeone@wv.gov>
Cc: "Perron, Ralph -FS" <ralph.perron@usda.gov>, "Cochran, Shawn -FS" <shawn.cochran@usda.gov>

Hi Joseph

Thank you for sending this application. Based on your calculations, the Nucor Steel West Virginia LLC project screens out of the need to do a Class I area analysis for FS lands.

Please let me know if you have any questions. Have a nice weekend,

Alexia

Alexia Prosperi
Air Resource Specialist

Forest Service

Eastern Region

p: 414-308-8669
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From: Kessler, Joseph R <joseph.r.kessler@wv.gov>
Sent: Monday, January 24, 2022 12:40 PM
To: Andrea_Stacy <andrea_stacy@nps.gov>; Holly Salazer <holly_salazer@nps.gov>; John_Notar@nps.gov <John_Notar@nps.gov>; Kirsten King <kirsten_king@nps.gov>; Pitrolo, Melanie -FS <melanie.pitrolo@usda.gov>; Perron, Ralph -FS <ralph.perron@usda.gov>; Pitrolo, Melanie -FS <melanie.pitrolo@usda.gov>
Cc: Joseph R Kessler <joseph.r.kessler@wv.gov>; Jon D McClung <jon.d.mcclung@wv.gov>; Beverly D McKeone

<beverly.d.mckeone@wv.gov>; Laura M Crowder <laura.m.crowder@wv.gov>
Subject: [External Email]WV PSD Application Notification (R14-0039 - Nucor Steel West Virginia LLC)

[External Email]
If this message comes from an **unexpected sender** or references a **vague/unexpected topic;**
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Please send any concerns or suspicious messages to: Spam.Abuse@usda.gov

Attached is the **FLM Notification Form** for the following PSD Permit Application submitted on January 21, 2022:

Permit Number:	**R14-0039**
Applicant:	**Nucor Steel West Virginia LLC**
Facility:	**West Virginia Steel Mill**
Location:	**Apple Grove, Mason County, WV**
Facility ID Number:	**053-00085**

The WV DAQ is providing notification that a PSD application has been filed for the proposed construction of a major source in Mason County, WV. The proposed facility is a 3,000,000 ton/year sheet steel mill. The application was submitted on January 21, 2022 and has not yet been deemed complete. The modeling protocol has been approved but the results of the modeling analysis have not yet been submitted. The highest calculated Q/D (based on Otter Creek NWA) is 8.77 (refer to page 197 of the application for Q/D calculation table).

The permit application is available online at: https://dep.wv.gov/daq/permitting/Documents/NucorSteel/R14-0039%20Permit%20Application.pdf

The modeling protocol is available online at: https://dep.wv.gov/daq/permitting/Documents/NucorSteel/FINAL%20Nucor%20Steel%20WV%20Modeling%20Protocol%202022-0112.pdf

Feel free to contact me if you have any questions,

Thank You,

--

Joe Kessler, PE

Engineer

West Virginia Division of Air Quality

601-57th St., SE

Charleston, WV 25304

Phone: (304) 926-0499 x41271

Joseph.r.kessler@wv.gov

Kessler, Joseph R <joseph.r.kessler@wv.gov>

WV PSD Application Notification (R14-0039 - Nucor Steel West Virginia LLC)

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Mon, Jan 24, 2022 at 12:40 PM
To: Andrea_Stacy <andrea_stacy@nps.gov>, Holly Salazer <holly_salazer@nps.gov>, John Notar <john_notar@nps.gov>, Kirsten King <kirsten_king@nps.gov>, Melanie Pitrolo <mpitrolo@fs.fed.us>, "Perron, Ralph -FS" <ralph.perron@usda.gov>, melanie.pitrolo@usda.gov
Cc: Joseph R Kessler <joseph.r.kessler@wv.gov>, Jon D McClung <jon.d.mcclung@wv.gov>, Beverly D McKeone <beverly.d.mckeone@wv.gov>, Laura M Crowder <laura.m.crowder@wv.gov>

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Permit Number:	**R14-0039**
Applicant:	**Nucor Steel West Virginia LLC**
Facility:	**West Virginia Steel Mill**
Location:	**Apple Grove, Mason County, WV**
Facility ID Number:	**053-00085**

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The permit application is available online at: https://dep.wv.gov/daq/permitting/Documents/NucorSteel/R14-0039%20Permit%20Application.pdf

The modeling protocol is available online at: https://dep.wv.gov/daq/permitting/Documents/NucorSteel/FINAL%20Nucor%20Steel%20WV%20Modeling%20Protocol%202022-0112.pdf

Feel free to contact me if you have any questions,

Thank You,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

Nucor FLM Information Form.docx
40K

Request for Applicability of Class I Area Modeling Analysis
Southern Region, U.S. Forest Service

Facility Name (Company Name)	Nucor Steel West Virginia LLC
New Facility or Modification?	New Facility
Source Type/BART Applicability	West Virginia Steel Mill
Project Location (County/State/ Lat. & Long. in decimal degrees)	Mason/WV/38.65536/-82.16853

Application Contacts

Applicant		***Consultant***		***Air Agency Permit Engineer***	
Company	Nucor Corporation	Company	Trinity Consultants	Agency	WVDAQ
Contact	Mr. Sean Alteri	Contact	Mr. William Bruscino	Contact	Mr. Joe Kessler
Address	1915 Rexford Road, Charlotte, NC 28211	Address	110 Polaris Pkwy, Suite 200 Westerville, OH 43082	Address	601 57th Street, SE Charleston, WV 25304
Phone #	(704) 264-8828	Phone #	(614) 433-0733	Phone #	(304) 926-0499 x41271
Email	Sean.alteri@nucor.com	Email	bbruscino@trinityconsultants.com	Email	joseph.r.kessler@wv.gov

Briefly Describe the Proposed Project

Construction of a new 3,000,000 ton/year sheet steel mill.

Proposed Emissions and BACT

Criteria Pollutant	***Emissions***		***Emission Factor (AP-42, Stack Test, Other?)***	***Proposed BACT***
	Maximum hourly (lb/hr)	***Proposed Annual (tons/yr)***		
Nitrogen Oxides	190.88	849.28	Various	LNB, OxyFuel Burners.
Sulfur Dioxide	82.63	361.92	Various	Use of PNG, Good Process Operations
Particulate Matter	163.76	718.27	Various	Wet Scrubbers, FF/Baghouses, Fugitive Emissions Mitigation
Sulfuric Acid Mist	n/a	n/a	n/a	n/a

Proximity to U.S. Forest Service Class I Areas

Class I Area	Dolly Sods NWA	Otter Creek NWA	Shenandoah NP	James River Face NWA
Distance from Facility (km)	240	220	302	318

For Additional Information or Questions, Contact Pleas McNeel
404-638-4813 or pmcneel@fs.fed.us

Kessler, Joseph R <joseph.r.kessler@wv.gov>

WV PSD Application Notification (R14-0039 - Nucor Steel West Virginia LLC)

1 message

Kessler, Joseph R <joseph.r.kessler@wv.gov> Mon, Jan 24, 2022 at 12:55 PM
To: supplee.gwendolyn@epa.gov
Cc: Joseph R Kessler <joseph.r.kessler@wv.gov>, Beverly D McKeone <beverly.d.mckeone@wv.gov>, Jon D McClung <jon.d.mcclung@wv.gov>, Laura M Crowder <laura.m.crowder@wv.gov>

Permit Number: R14-0039
Applicant: Nucor Steel West Virginia LLC
Facility: West Virginia Steel Mill
Location: Apple Grove, Mason County, WV
Facility ID Number: 053-00085

The WV DAQ is providing notification to EPA Region 3 that a PSD application has been filed for the proposed construction of a new major stationary source (sheet steel mill) in Mason County, WV. The application was submitted on January 21, 2022 and has not yet been deemed complete.

The permit application is available online at: https://dep.wv.gov/daq/permitting/Documents/NucorSteel/R14-0039%20Permit%20Application.pdf

Let me know if you have any questions or comments.

Thank You,

--
Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x41271
Joseph.r.kessler@wv.gov

Kessler, Joseph R <joseph.r.kessler@wv.gov>

WV DAQ Permit Application Status for Nucor Steel West Virginia LLC; Nucor Steel West Virginia

1 message

Mink, Stephanie R <stephanie.r.mink@wv.gov> Mon, Jan 24, 2022 at 9:19 AM
To: john.farris@nucor.com, sean.alteri@nucor.com, BBruscino@trinityconsultants.com
Cc: Beverly D McKeone <beverly.d.mckeone@wv.gov>, Joseph R Kessler <joseph.r.kessler@wv.gov>, Kimberly A Scott <kimberly.a.scott@wv.gov>, Catherine L Harless <Catherine.L.Harless@wv.gov>, Barbara A Miles <barbara.a.miles@wv.gov>

Application Status

Nucor Steel West Virginia LLC; Nucor Steel West Virginia

Facility ID No. 053-00085

Application No. R14-0039

Mr. Farris:

Your application for a Construction Permit for the Nucor Steel West Virginia facility was received by this division on January 21, 2022, and was assigned to Joe Kessler. The following items were not included in the initial application submittal:

Copy of Class I legal advertisement affidavit.

Application fee of $14,500.00.

- *Credit card payments may be made by contacting the Accounts Receivable section at 304-926-0499 x 41195. DEP accepts Visa and MasterCard only.*
- *Checks may be sent by mail. You must include the Facility ID Number and Application Number on the check as an identifier. A check may be mailed to:*
  WVDEP - DAQ - Permitting
  ATTN: NSR Permitting Secretary
  601 57th Street, SE
  Charleston, WV 25304

These items are necessary for the assigned permit writer to continue the 30-day completeness review.

Within 30 days, you should receive notification from Joe Kessler stating the status of the permit application and, if complete, given an estimated time frame for the agency's final action on the permit.

Any determination of completeness shall not relieve the permit applicant of the requirement to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit decision.

Should you have any questions, please contact the assigned engineer, Joe Kessler, at 304-926-0499, extension 41271.

--

Stephanie Mink

Secretary 2

West Virginia Department of Environmental Protection

Division of Air Quality, Title V Permitting

601 57th Street SE

Charleston, WV 25304

Phone: 304-926-0499 x41281

Kessler, Joseph R <joseph.r.kessler@wv.gov>

Re: Nucor West Virginia Modeling Protocol

1 message

McClung, Jon D <jon.d.mcclung@wv.gov> Thu, Jan 13, 2022 at 3:06 PM
To: "Alteri, Sean [Corp]" <sean.alteri@nucor.com>
Cc: "Joseph.r.kessler@wv.gov" <Joseph.r.kessler@wv.gov>, "Miracle, David [Corp]" <david.miracle@nucor.com>, Bill Bruscino <BBruscino@trinityconsultants.com>, David R Fewell <david.r.fewell@wv.gov>, Beverly D McKeone <beverly.d.mckeone@wv.gov>, Rex E Compston <rex.e.compston@wv.gov>

Mr. Alteri,
Attached is the letter of approval for Nucor's air quality modeling protocol for the proposed facility in Mason County, WV.
Please contact me with any questions or concerns.
Best regards,
Jon McClung.

On Thu, Jan 13, 2022 at 5:28 AM Alteri, Sean [Corp] <sean.alteri@nucor.com> wrote:

> Good morning,
>
> Attached, please find the air dispersion modeling protocol for the Nucor West Virginia sheet mill project. If you have questions or comments, please do not hesitate to contact us at your convenience.
>
> Thank you,
>
> Sean
>
> **Sean Alteri**
>
> Environmental Manager
>
> **Nucor Corporate**
>
> 1915 Rexford Road • Charlotte, NC 28211
>
> **Phone:** 704.264.8828
>
> **Cell:** 980.244.9459
>
> Sean.Alteri@Nucor.com

NUCOR Protocol Approval 1 13 2022.pdf
111K

NUCOR®

NUCOR CORPORATION
1915 Rexford Road
Charlotte, NC 28211
704.366.7000

January 13, 2022

Mr. Jon McClung
West Virginia DEP
DAQ – Planning Division
601 57th Street SE
Charleston, WV 25304

RE: Nucor West Virginia – Air Dispersion Modeling Protocol

Dear Mr. McClung:

On January 12, 2022, Nucor Corporation ("Nucor") announced the construction of a new sheet mill facility to be located in Mason County, West Virginia. Nucor determines that air dispersion modeling will be required to obtain authorization to construct in accordance with West Virginia Department of Environmental Protection (WVDEP) permitting requirements under Title 45 of the West Virginia Code of State Rules (45 CSR) Section 14. Therefore, Nucor is submitting an air dispersion modeling protocol outlining the proposed methodologies that will be used to conduct the required modeling for your review and approval.

If you have any questions or comments regarding the air dispersion modeling protocol, please do not hesitate to call Mr. William Bruscino with Trinity Consultants at (225) 274-5147 or me at (980) 244-9459.

Sincerely,

Sean Alteri

Sean Alteri,
Environmental Manager

Kessler, Joseph R <joseph.r.kessler@wv.gov>

Nucor West Virginia Modeling Protocol

1 message

Alteri, Sean [Corp] <sean.alteri@nucor.com> Thu, Jan 13, 2022 at 5:28 AM
To: "Jon.d.mcclung@wv.gov" <Jon.d.mcclung@wv.gov>, "Joseph.r.kessler@wv.gov" <Joseph.r.kessler@wv.gov>
Cc: "Miracle, David [Corp]" <david.miracle@nucor.com>, Bill Bruscino <BBruscino@trinityconsultants.com>

Good morning,

Attached, please find the air dispersion modeling protocol for the Nucor West Virginia sheet mill project. If you have questions or comments, please do not hesitate to contact us at your convenience.

Thank you,

Sean

Sean Alteri

Environmental Manager

Nucor Corporate

1915 Rexford Road • Charlotte, NC 28211

Phone: 704.264.8828

Cell: 980.244.9459

Sean.Alteri@Nucor.com

2 attachments

Nucor Steel WV Modeling Protocol Cover Letter.pdf
239K

FINAL Nucor Steel WV Modeling Protocol 2022-0112.pdf
1445K

NUCOR CORPORATION
1915 Rexford Road
Charlotte, NC 28211
704.366.7000

January 13, 2022

Mr. Jon McClung
West Virginia DEP
DAQ – Planning Division
601 57th Street SE
Charleston, WV 25304

RE: Nucor West Virginia – Air Dispersion Modeling Protocol

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Sincerely,

Sean Alteri

Sean Alteri,
Environmental Manager

AIR DISPERSION MODELING PROTOCOL
Proposed West Virginia Steel Mill

Nucor Corporation

Prepared By:

TRINITY CONSULTANTS
110 Polaris Parkway, Suite 200
Westerville, OH 43082
614-433-0733

January 2022

Project 213601.0130

Trinity Consultants

TABLE OF CONTENTS

1. INTRODUCTION

Nucor Corporation ("Nucor") is currently evaluating the potential construction of a new facility in West Virginia. Nucor is proposing to construct a new steel mill in the city of Apple Grove, West Virginia. Estimated potential emissions are anticipated to exceed the PSD major thresholds for particulate matter (PM), particulate matter with an aerodynamic diameter of 10 microns (PM_{10}), particulate matter with an aerodynamic diameter of 2.5 microns ($PM_{2.5}$), volatile organic compounds (VOC), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen oxides (NO_X), and greenhouse gases (GHGs). The West Virginia Department of Environmental Protection (WVDEP) has codified the federal PSD permitting requirements in Title 45 of the West Virginia Code of State Rules (45 CSR) Section 14 and has full authority to implement this program through its United States Environmental Protection Agency (U.S. EPA) authorized State Implementation Plan (SIP).

This modeling protocol outlines the methodologies that will be used to conduct the air dispersion modeling analysis required under PSD permitting for the proposed project consistent with 45 CSR 14-10. Air dispersion modeling is relied upon to demonstrate that the proposed project complies with the applicable NAAQS and PSD Class II Increments for the pollutant(s) subject to PSD review.[1]

With the submittal of the final New Source Review 45CSR14 (R14) application for this project, Nucor will provide electronic files associated with the PSD air dispersion modeling analysis of the proposed facility. Nucor will include those files associated with importing terrain elevations, building downwash, meteorological data, and AERMOD. Nucor will also provide to WVDEP a PSD air dispersion modeling report that includes plots indicating the location of the facility fence line and facility layout.

1.1 Background

The proposed location for the new mill is located in Mason County, which is designated by U.S. EPA as "unclassifiable" and/or "attainment" for the National Ambient Air Quality Standards (NAAQS) for ozone, CO, SO_2, PM_{10}, $PM_{2.5}$, and NO_2.[2] To demonstrate compliance with the NAAQS, Nucor is proposing to conduct air quality dispersion modeling for these pollutants. Note that since there are no NAAQS standards for PM, VOC, and GHGs, modeling of these pollutants are not required.

Figure 1-1 provides a general map of the facility location, showing roads and general boundaries of towns and other nearby municipalities. As can be seen from this figure, the land use near the facility is generally rural.

This overall protocol primarily relates to the requirements for Class II air quality areas. The area immediately surrounding the proposed Nucor facility and within the general ambient air quality airshed in which nearfield modeling is conducted (within 50 km) are designated as Class II areas. With regard to Class II impacts, this protocol describes the modeling that will be performed for each PSD triggering pollutant.

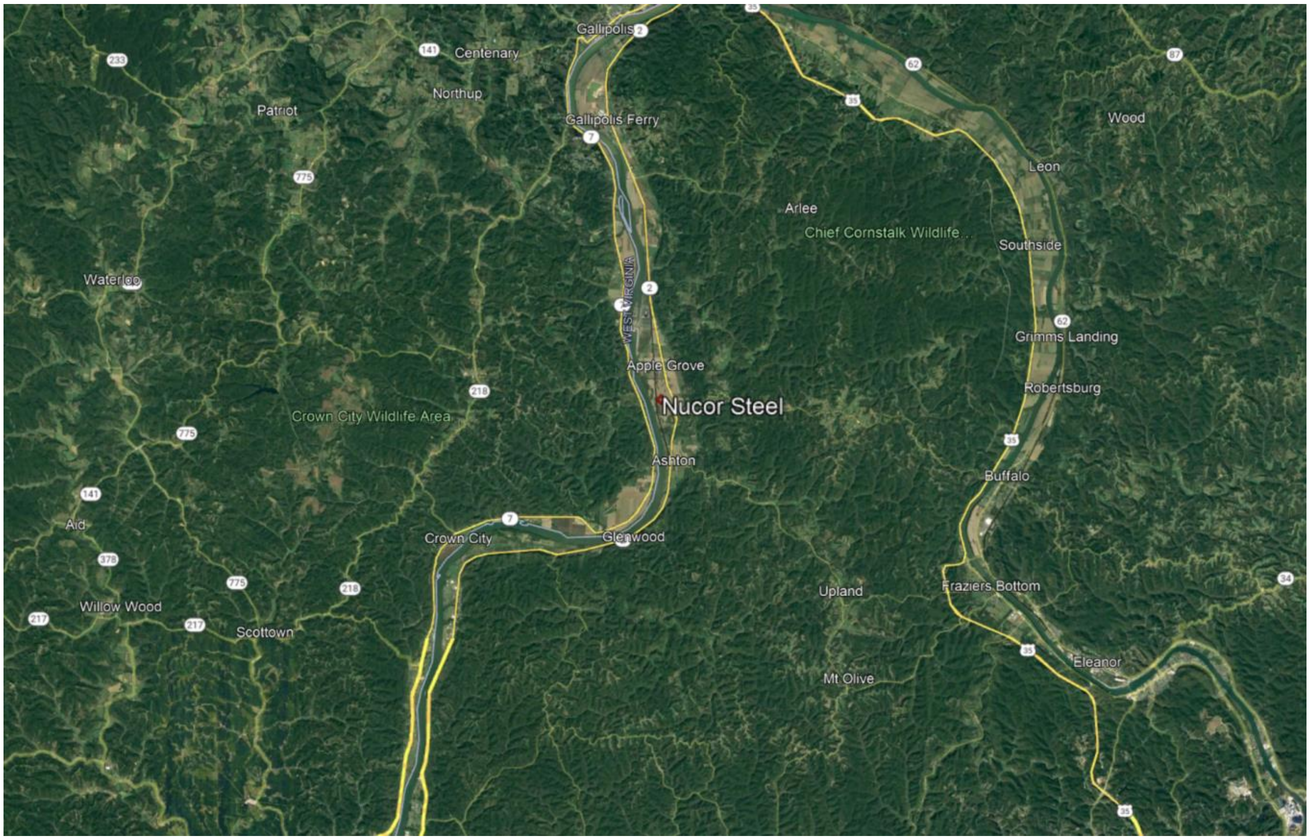
With respect to potential air quality impacts on Class I areas, Otter Creek Wilderness area is the closest Class I area to the proposed facility, located over 200 km from the site. Because the distance from the facility to the Class I area exceeds 50 km, Nucor plans to use screening methodologies to demonstrate the

[1] If a PSD Class I Increment analysis is required, a modeling protocol will be submitted under separate cover to WVDEP and the Federal Land Managers (FLMs) for the respective Class I areas.

[2] 40 CFR §81.349.

proposed project will not result in adverse impacts at Class I areas. A more robust regional modeling approach will be followed if required by the results of the screening analysis.

Figure 1-1. Area Map Showing Nucor's Proposed Apple Grove, WV Facility Location



2. CLASS II DISPERSION MODELING REQUIREMENTS

Because sources and emissions in the proposed project are subject to the ambient air quality assessment requirements of the PSD program, modeling is required to meet specific objectives. Modeling will be used to demonstrate that emissions of CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ pollutants after the proposed project is completed will not:

1) cause or significantly contribute to a violation of the NAAQS,

2) cause or significantly contribute to ambient concentrations that are greater than allowable PSD Increments, or

3) cause any other additional adverse impacts to the surrounding area (i.e., impairment to visibility, soils and vegetation and air quality impacts from general commercial, residential, industrial, and other growth associated with the facility expansion).

To facilitate this analysis (and allow it to be commensurate with the requirements to which the WVDEP adheres), dispersion modeling methodologies will be followed that are consistent with EPA procedures specified in the *Guideline on Air Quality Models (Guideline)*.[3] The purpose of this protocol is to provide an overview of the proposed techniques and models to be used and review the modeling objectives for each required element of the PSD air quality analysis.

Nucor will complete all dispersion modeling and air impact assessments required under the regulations for PSD. This will include all Class II area modeling analyses as required. The Class I area modeling analysis that is proposed is expected to demonstrate that more detailed regional scale modeling will not be needed and that only screening modeling will need to be considered. Class I area screening techniques to be implemented include the use of the so-called Q/D analysis for the Air Quality Related Value (AQRV) demonstrations, and an AERMOD analysis with receptors positioned at the extent of the nearfield analysis (50 km) for the Class I PSD Increment demonstration. In the event that more robust Class I modeling is required, a detailed Class I modeling approach will be submitted for approval.

For the Class II analysis the various stages of modeling that will be performed will be dependent on compliance at each step. To allow the WVDEP to evaluate the various levels of proposed modeling methodologies, this protocol outlines each stage of modeling in the sequence as if each would be used. The modeling steps will include the following steps if required:

- Step 1 - Determine if ambient air quality impacts of the proposed new sources are greater than or less than the Significant Impact Levels (SIL) on a per pollutant and per averaging time basis. Table 2-1 shows the applicable SILs and other important criteria pollutant thresholds for CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$. Please note that Nucor does not anticipate modeling any alternative operating or start-up/shutdown scenarios.

[3] 40 CFR 51, Appendix W, *Guideline on Air Quality Models*, and 45 CSR 14-10

Table 2-1. Significant Impact Levels, NAAQS, PSD Class II Increments, and Significant Monitoring Concentrations for Applicable Criteria Air Pollutants

Pollutant	Averaging Period	PSD SIL (µg/m^3)	Primary NAAQS (µg/m^3)	Secondary NAAQS (µg/m^3)	Class II PSD Increment[1] (µg/m^3)	Significant Monitoring Concentration (µg/m^3)
CO	1-hour	2,000	40,000 (35 ppm)[2]	--	--	--
	8-hour	500	10,000 (9 ppm)[2]	--	--	575
SO_2	1-hour	7.8	196 (75 ppb)	--	--	--
	3-hour	25	--	1,300 (500 ppb)	512	--
	24-hour	5	--	--	91	13
	Annual	1	--	--	20	--
NO_2	1-hour	7.5[3]	188 (100 ppb)[4]	--	--	--
	Annual	1	100 (53 ppb)[5]	100 (53 ppb)	25	14
PM_{10}	24-hour	5	150[6]	150	30	10
	Annual	--	--[7]	--	17[7]	--
$PM_{2.5}$	24-hour	1.2[8]	35[9]	35	9	4[8]
	Annual	0.2[8]	12[10]	15[10]	4	--

1. All short-term PSD Increments are not to be exceeded more than once per year.
2. Only a primary standard, not to be exceeded more than once per year.
3. No 1-hour NO_2 SIL has been promulgated by EPA. An interim SIL of 7.5 µg/m^3 (4 ppb) was selected based on the EPA Office of Air Quality Planning and Standards Memorandum from Ms. Anna Marie Wood to Regional Air Division Directors titled *General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level* (June 28, 2010).[4]
4. Only a primary standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average concentrations.
5. Annual arithmetic average.
6. Not to be exceeded more than three times in 3 consecutive years.
7. The EPA revoked the annual PM_{10} NAAQS in 2006, but the annual PM_{10} Class II PSD Increment remains in effect.
8. EPA Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program, April 2018
9. The 3-year average of the 98th percentile 24-hour average concentrations.
10. EPA published a final rule (78 FR 3086), with an effective date of March 18, 2013, that reduced the primary annual $PM_{2.5}$ NAAQS from 15 µg/m^3 to 12 µg/m^3 and retained the secondary annual $PM_{2.5}$ NAAQS at 15 µg/m^3. Both the primary and secondary standards are expressed as the 3-year average of the annual arithmetic average concentration.

- Step 2 - Perform NAAQS dispersion modeling if air modeling impacts are greater than the SILs (in Step 1) to estimate the NAAQS impacts of the new project sources and regional inventory sources on a combined basis. The screening distance for assessing nearby regional inventory sources will be based on the distances to project's maximum concentrations and the expected decrease in concentrations as a function of distance (what EPA terms the gradient of impact). Background concentrations from nearby representative ambient monitors will also be added to the total impacts of all sources.

[4] https://www.epa.gov/sites/default/files/2015-07/documents/appwno2.pdf

- Step 3 - Perform PSD increment modeling if air modeling impacts are greater than the SILs (in Step 1) to estimate the PSD increment impacts of the new project sources as well as any regional inventory sources. The screening distance for assessing regional PSD increment consuming or expanding sources will also be based on the distances to Nucor's maximum concentrations and the expected area with the highest concentration gradient from Nucor's modeled sources.

- Step 4 – Prepare an "additional air impacts" analysis. This analysis will use the results of the Significance Analysis modeling in Step 1 to compare ambient impacts to the secondary NAAQS. Incremental air quality impacts due to growth in the local infrastructure that may result from added employees and attendant industries will be qualitatively evaluated. Finally, Class II area visibility impacts will be evaluated on a screening basis using EPA's VISCREEN model.[5]

- Step 5 – Address the ozone and secondary $PM_{2.5}$ ambient impact analysis requirements by conducting a quantitative assessment of potential ozone impacts from the proposed project. The quantitative assessment will rely solely on the approach outlined in EPA's *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool*, published April 2019.[6]

The remainder of this protocol provides the tools and methods that will be employed to conduct the Class II dispersion modeling along with a short overview of the Class I screening methodology.

2.1 Model Selection

For Class II area modeling, a number of modeling guidelines are available to facilitate and provide detail on the methodologies required for conducting dispersion modeling for the proposed Nucor plants. In general, the air dispersion modeling analyses to be conducted will be in accordance with applicable EPA guidance documents, including the following:

- EPA's *Guideline on Air Quality Models,* 40 CFR Part 51, Appendix W (Published, January 17, 2017), which West Virginia cites by reference in Section 10 of 45 CSR 14.[7]
- EPA 's AERMOD Implementation Guide (April 2021)[8]
- EPA's User's Guide for the AMS/EPA Regulatory Model – AERMOD (April 2021)[9]
- EPA's New Source Review Workshop Manual (Draft, October 1990)[10]

Given these guidance documents and typical modeling practices, Nucor will use the EPA-recommended AERMOD Model in its most recent Version 21112 released in April 2021. AERMOD is a refined, steady-state (both emissions and meteorology over a one hour time step), multiple source, dispersion model and was

[5] Note that CO and GHGs are not visibility affecting pollutants; therefore, the Class II area visibility analysis will only address project emissions increase for NO_X and PM.

[6] https://www.epa.gov/sites/default/files/2019-05/documents/merps2019.pdf

[7] 40 CFR 51, Appendix W, Guideline on Air Quality Models

[8] EPA, *AERMOD Implementation Guide*, April 2021, available at https://www3.epa.gov/ttn/scram/models/aermod/aermod_implementation_guide.pdf

[9] *User's Guide for the AMS/EPA Regulatory Model (AERMOD)*, EPA-454/B-21-001, EPA, OAQPS, Research Triangle Park, NC, April 2021.

[10] EPA, *New Source Review Workshop Manual*, Draft October 1990, available at http://www.epa.gov/ttn/nsr/gen/wkshpman.pdf

promulgated by EPA in December 2005 as the preferred model to use for industrial sources in this type of air quality analysis.[11] AERMOD will be used to model each stack, horizontal vent, and any other type of source at the facility. Nucor plans to apply AERMOD using the regulatory default options in all cases.

2.2 Tiered NO_2 Dispersion Modeling Methodology

In the "Models for Nitrogen Dioxide" section of the *Guideline* (Section 4.2.3.4), U.S. EPA recommends a tiered screening approach for estimating annual NO_2 impacts from point sources in PSD modeling analyses. Use of the tiered approach to NO_2 modeling for the 1-hour and annual NO_2 standard (SIL, NAAQS, and PSD Increment) will be considered. The approach used in each of the three tiers is described briefly below.

1. Under the initial and most conservative Tier 1 screening level, all NO_X emitted is modeled as NO_2 which assumes total conversion of NO (main chemical form of NO_X) to NO_2.
2. For the Tier 2 screening level, U.S. EPA recommends multiplying the Tier 1 results by the Ambient Ratio Method 2 (ARM2), which provides estimates of representative equilibrium ratios of NO_2/NO_X based on ambient levels of NO_2 and NO_X derived from national data from the EPA's Air Quality System (AQS). The ARM2 function, which is a default option within the latest version of AERMOD, will be used to complete this multiplication. The default minimum ambient NO_2/NO_X ratio of 0.5 and maximum ambient ratio of 0.9 will be used for this methodology.
3. Since the impact of an individual NO_X source on ambient NO_2 depends on the chemical environment into which the source's plume is emitted, modeling techniques that account for this atmospheric chemistry such as the Ozone Limiting Method (OLM) or the Plume Volume Molar Ratio Method (PVMRM) can be considered under the most accurate and refined Tier 3 approach identified by U.S. EPA. Additional model inputs required for the use of OLM or PVMRM could include source-specific in-stack NO_2/NO_X ratios, ambient equilibrium NO_2/NO_X ratios, and background ozone concentrations.

Nucor intends to use a Tier 2 NO_2 modeling approach using the regulatory-approved EPA default settings. Nucor reserves the right to modify this methodology at a future date and will submit a revised modeling protocol for WVDEP approval prior to final modeling should a Tier 3 approach be required.

2.3 Rural/Urban Option Selection in AERMOD

For any dispersion modeling exercise, the "urban" or "rural" determination of the area surrounding the subject source is important in determining the applicable atmospheric boundary layer characteristics that affect a model's calculation of ambient concentrations. Thus, a determination will need to be made of whether the area around the facility is urban or rural.

The first method discussed in Section 5.1 of the *AERMOD Implementation Guide* (also referring therein to Section 7.2.3c of the Guideline on Air Quality Models, Appendix W) is called the "land use" technique because it examines the various land use within 3 km of a source and quantifies the percentage of area in various land use categories. If greater than 50% of the land use in the prescribed area is considered urban, then the urban option should be used in AERMOD. However, EPA cautions against the use of the "land use" technique for sources close to a body of water because the water body may result in a predominately rural land use classification despite being located in an urban area. If necessary, the second recommended urban/rural classification method in Appendix W Section 7.2.1.1.b is the Population Density Procedure. This technique evaluates the total population density within 3-kilometers of a source. If the population density is

[11] 40 CFR 51, Appendix W–*Guideline on Air Quality Models*, Appendix A.1– AMS/EPA Regulatory Model (AERMOD).

greater than 750 people per square kilometer, then EPA recommends the use of urban dispersion coefficients.

Based on aerial imagery of the area surrounding the proposed facility location in Apple Grove, nearby land use is overwhelmingly rural. Nucor plans to confirm this conclusion using the aforementioned techniques recommend by EPA, the results of which will be provided in the modeling report.

2.4 Building Downwash

The *Guideline* requires the evaluation of the potential for physical structures to affect the dispersion of emissions from stack sources. The exhaust from stacks that are located within specified distances of buildings may be subject to "aerodynamic building downwash" under certain meteorological conditions. This determination is made by comparing actual stack height to the Good Engineering Practice (GEP) stack height. The modeled emission units will be evaluated in terms of their proximity to nearby structures.

In accordance with recent AERMOD updates, an emission point is assumed to be subject to the effects of downwash at all release heights even if the stack height is above the U.S. EPA formula height, which is defined by the following formula:

$$H_{GEP} = H + 1.5L, \text{ where:}$$

where,

H_{GEP}	=	GEP stack height,
H	=	structure height, and
L	=	lesser dimension of the structure (height or maximum projected width).

This equation is limited to stacks located within 5L of a structure. Stacks located at a distance greater than 5L are not subject to the wake effects of the structure.

Direction-specific equivalent building dimensions used as input to the AERMOD model to simulate the impacts of downwash will be calculated using the U.S. EPA-sanctioned Building Profile Input Program (BPIP-PRIME), version 04274 and used in the AERMOD Model.[12] BPIP-PRIME is designed to incorporate the concepts and procedures expressed in the GEP Technical Support document, the Building Downwash Guidance document, and other related documents and has been adapted to incorporate the PRIME downwash algorithms.[13]

A GEP analysis of all modeled point sources in relation to each building will be performed to evaluate which building has the greatest influence on the dispersion of each stack's emissions. The GEP height for each stack calculated using the dominant structure's height and maximum projected width will also be determined. According to U.S. EPA dispersion modeling guidance, stacks with actual heights greater than either 65 meters or the calculated GEP height, whichever is greater, generally cannot take credit for their full stack height in a PSD modeling analysis. All modeled source stacks are less than 65 meters tall and

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[12] Earth Tech, Inc., Addendum to the ISC3 User's Guide, The PRIME Plume Rise and Building Downwash Model, November 1997, http://www.epa.gov/scram001/7thconf/iscprime/useguide.pdf.

[13] U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, *Guidelines for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised),* Research Triangle Park, North Carolina, EPA 450/4-80-023R, June 1985.

therefore meet the requirements of GEP and credit for the entire actual height of each stack is used in this modeling analysis.

2.5 Elevated Terrain

Terrain elevations will be considered in the modeling analysis. The elevations of receptors, buildings, and sources will refine the modeling impacts between the sources at one elevation and receptor locations at various other elevations at the fence line and beyond. This will be accomplished through the use of the AERMOD terrain preprocessor called AERMAP (latest version 18081), which generates base elevations above mean sea level of sources, buildings, and/or receptors as specified by the user. For all receptors, AERMAP will determine the base elevation of each and an effective hill height scale that determines the magnitude of each source plume-elevated terrain feature interaction. AERMOD uses both of these receptor-related values to calculate the effect of terrain on each plume. Base elevations for select sources and buildings, terrain elevations for receptors, and other regional source base elevations (if required in the NAAQS modeling analysis) input to the model will be read and interpolated from 1 arc second (approximately 30 meter resolution) National Elevation Dataset (NED) data obtained from the U.S. Geological Survey (USGS).[14] The NED data will extend well beyond the extent of the modeled receptor grids to properly calculate the receptor elevations and hill-height scales.

2.6 Meteorological Data

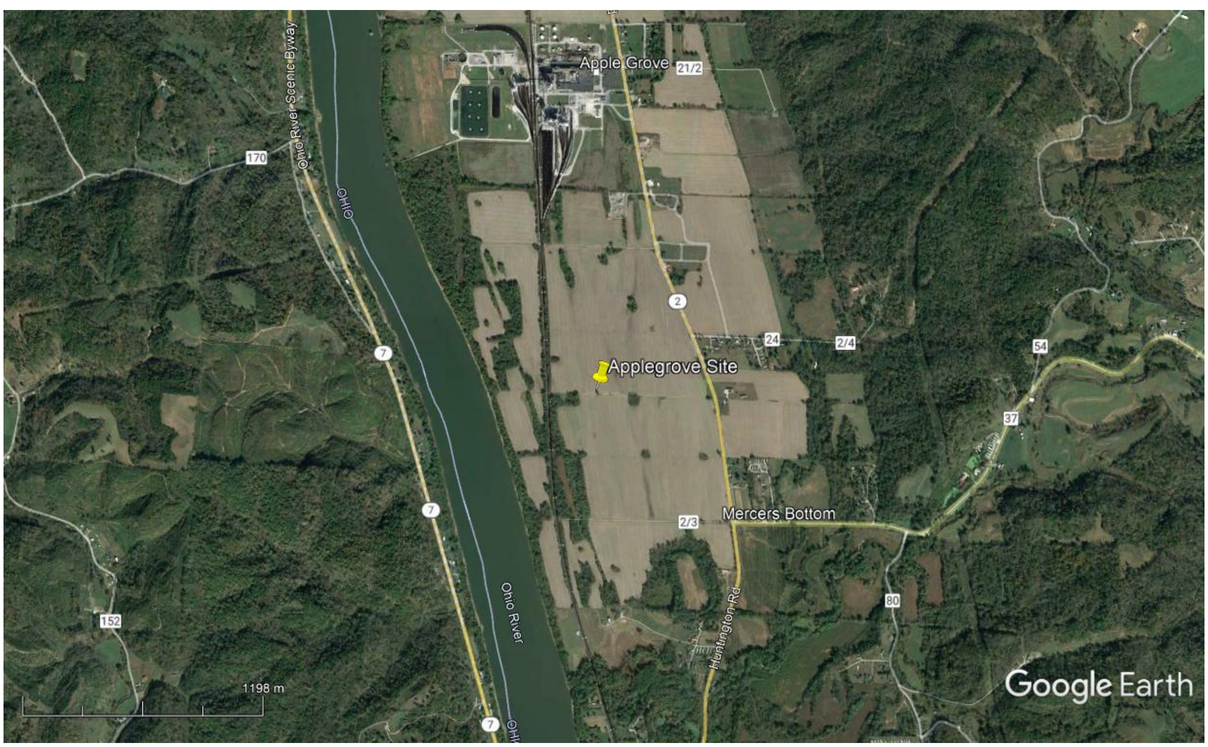
For performing the Class II modeling in AERMOD, meteorological data must be preprocessed to put it into a format that AERMOD can use. This will be accomplished using the AERMET processor (Version 21112) along with nearby sets of National Weather Service (NWS) data from surface and upper air stations. The AERSURFACE program (Version 20060) was used to generate the three critical parameters used in AERMET, namely, albedo, Bowen Ratio (ratio of sensible heat to latent heat), and the surface roughness. Values for those land use parameters were tabulated for both the meteorological data site and proposed project site to confirm that the airport NWS stations are reasonably representative of the project site.

For the proposed Apple Grove location, the closest surface meteorological data station is the Huntington Tri-State Airport (KHTS, WBAN #3860) located about 46 kilometers to the southeast. Given the location of the project site, there are very few representative meteorological data options available. Figures 2-1 and 2-2 present aerial images of the immediate area surrounding the airport station and project locations, respectively.

[14] U.S. Geological Survey, USGS 3D Elevation Program (3DEP), accessed April 6, 2021 at https://apps.nationalmap.gov/downloader/#/

Figure 2-1. Aerial Image of Huntington Airport

Figure 2-2. Aerial Image of Apple Grove Site Location



As shown, both sites are located in rural areas in rolling terrain. Table 2-2 presents a comparison of the albedo, Bowen ratio and surface roughness for each location.

Table 2-2. Comparison of Land Use Parameters – Huntington vs. Apple Grove

	Huntington Airport			Nucor Applegrove			Percent Diff. [(Facility-NWS)/Facility][1]		
Sector (degrees)	Albedo (unitless)	Bowen Ratio (unitless)	Surface Roughness (m)	Albedo (unitless)	Bowen Ratio (unitless)	Surface Roughness (m)	Albedo (%)	Bowen Ratio (%)	Surface Roughness (%)
0-30	0.163	0.693	0.148	0.160	0.633	0.111	-1.56%	-9.49%	-33.86%
30-60	0.163	0.693	0.274	0.160	0.633	0.112	-1.56%	-9.49%	-145.19%
60-90	0.163	0.693	0.143	0.160	0.633	0.103	-1.56%	-9.49%	-39.27%
90-120	0.163	0.693	0.127	0.160	0.633	0.109	-1.56%	-9.49%	-16.06%
120-150	0.163	0.693	0.450	0.160	0.633	0.114	-1.56%	-9.49%	-295.60%
150-180	0.163	0.693	0.358	0.160	0.633	0.121	-1.56%	-9.49%	-194.85%
180-210	0.163	0.693	0.155	0.160	0.633	0.107	-1.56%	-9.49%	-45.54%
210-240	0.163	0.693	0.232	0.160	0.633	0.027	-1.56%	-9.49%	-767.29%
240-270	0.163	0.693	0.263	0.160	0.633	0.023	-1.56%	-9.49%	-1029.03%
270-300	0.163	0.693	0.148	0.160	0.633	0.028	-1.56%	-9.49%	-423.89%
300-330	0.163	0.693	0.072	0.160	0.633	0.148	-1.56%	-9.49%	51.02%
330-360	0.163	0.693	0.096	0.160	0.633	0.109	-1.56%	-9.49%	11.90%
All	**0.163**	**0.693**	**0.205**	**0.160**	**0.632**	**0.093**	**-1.56%**	**-9.49%**	**-121.97%**

[1] Percent Difference [(Facility-NWS)/Facility] compares the average of the overall albedo, Bowen ratio, and surface roughness values for the Huntington Airport to the proposed Apple Grove site.

The albedo and Bowen ratio are very comparable at both sites. There are some sectors where the surface roughness varies between the two locations, which is almost always the case when comparing greenfield industrial sites to airports. The Huntington airport has forested areas within the 1-km surface roughness evaluation radius which is driving the average values up. In the case of the project site, the surface roughness based on the 2016 NLCD data is an underestimate since the as-built site will have numerous buildings and roughness elements. Once constructed, the site will have surface roughness even more similar to Huntington airport.

In order to evaluate the potential impact of post-construction land use changes, Nucor used the ARCVIEW GIS program to modify the land use cells in the 2016 NLCD to reflect as-built land use types. The latest version of AERSURFACE utilizes three (3) types of land use files (land cover, impervious surface, and tree canopy). Nucor revised these files to reflect the post-construction land use parameters and then ran AERSURFACE again, using the modified land use files. Table 2-3 presents the surface characteristic comparison after construction of the proposed mill.

Table 2-3. Comparison of Land Use Parameters – Huntington vs. Modified Apple Grove

Sector (degrees)	Huntington Airport Albedo (unitless)	Huntington Airport Bowen Ratio (unitless)	Huntington Airport Surface Roughness (m)	Nucor Applegrove Albedo (unitless)	Nucor Applegrove Bowen Ratio (unitless)	Nucor Applegrove Surface Roughness (m)	Percent Diff. [(Facility-NWS)/Facility][1] Albedo (%)	Percent Diff. Bowen Ratio (%)	Percent Diff. Surface Roughness (%)
0-30	0.163	0.693	0.148	0.160	0.635	0.261	-1.56%	-9.06%	43.25%
30-60	0.163	0.693	0.274	0.160	0.635	0.162	-1.56%	-9.06%	-69.14%
60-90	0.163	0.693	0.143	0.160	0.635	0.139	-1.56%	-9.06%	-3.07%
90-120	0.163	0.693	0.127	0.160	0.635	0.151	-1.56%	-9.06%	16.23%
120-150	0.163	0.693	0.450	0.160	0.635	0.188	-1.56%	-9.06%	-139.36%
150-180	0.163	0.693	0.358	0.160	0.635	0.223	-1.56%	-9.06%	-60.31%
180-210	0.163	0.693	0.155	0.160	0.635	0.126	-1.56%	-9.06%	-22.77%
210-240	0.163	0.693	0.232	0.160	0.635	0.031	-1.56%	-9.06%	-654.47%
240-270	0.163	0.693	0.263	0.160	0.635	0.026	-1.56%	-9.06%	-909.62%
270-300	0.163	0.693	0.148	0.160	0.635	0.036	-1.56%	-9.06%	-308.28%
300-330	0.163	0.693	0.072	0.160	0.635	0.204	-1.56%	-9.06%	64.50%
330-360	0.163	0.693	0.096	0.160	0.635	0.234	-1.56%	-9.06%	58.91%
All	**0.163**	**0.693**	**0.205**	**0.160**	**0.635**	**0.148**	**-1.56%**	**-9.06%**	**-38.42%**

[1] Percent Difference [(Facility-NWS)/Facility] compares the average of the overall albedo, Bowen ratio, and surface roughness values for the Huntington Airport to the proposed Apple Grove site.

As shown in Table 2-3, the land use characteristics at the airport and facility will be much more comparable when considering the changes due to construction, with the surface roughness values differing by less than 40% on average. Based on the above land use comparisons, Nucor believes the meteorological conditions at Huntington Tri-State Airport are representative of those expected at the proposed Apple Grove site location.

To further supplement these land use comparisons, Nucor will conduct a sensitivity analysis as referenced in Section 3.1.1 of the *AERMOD Implementation Guide*. The analysis will include two sets of meteorological data for the site, the first incorporating the land use parameters for the proposed site and the second using the land use parameters for the representative airport location. Using these sets of meteorological data, Nucor will model representative emission sources (i.e., a volume source, a point source, an elevated point source) from the proposed facility for both short term and long-term averaging periods. Nucor will compare these results to determine the significance of the differences in concentrations resulting from differences in the surface characteristics between the proposed site location and the nearby airport. Nucor will validate the sensitivity analysis with WVDEP prior to conducting significance modeling and the results will be provided in the final modeling report.

The most recent, readily available full five years of meteorological data for both sites is 2016-2020. These years will be used in the air quality modeling analysis. The latest version of AERMET (version 21112) will be used to incorporate 1-minute ASOS wind data using EPA's AERMINUTE (version 15272) meteorological data preprocessor. Standard surface NWS data will be obtained from the index of published data sets available from the National Climatic Data Center (NCDC) for the appropriate years[15]. The proposed project site will utilize upper air data from Pittsburgh International Airport (KPIT, WBAN #94823). Those upper air data will be obtained from the National Oceanic and Atmospheric Administration NOAA/ESRL Radiosonde Database[16]

[15] ftp://ftp.ncdc.noaa.gov/pub/data/noaa/

[16] http://www.esrl.noaa.gov/raobs/

and the one-minute/five-minute wind speed and wind direction data for the same surface station from NCDC[17].

Because the meteorology generated by AERMET relies on the land surface in the vicinity of the NWS surface site, land cover/land use data (National Land Cover Data, NLCD) will be determined from that available from the United States Geological Survey through the MRLC Consortium viewer platform[18]. The AERSURFACE program (Version 20060) will be used to generate the three critical parameters used in AERMET, namely, albedo, Bowen Ratio (ratio of sensible heat to latent heat), and the surface roughness parameter. These will be based on wet, dry, and average moisture conditions as determined by comparing the seasonal rainfall amounts to the 30-year averages and using the upper and lower 30th percentiles of average rainfall based on 1991-2020 data for the nearest recording NWS site.

A minimum threshold wind speed of 0.5 m/s (the lowest wind speed that will be allowed in the generated meteorological data set) will be implemented in AERMET, as suggested in Section 4.6.2.2 of the latest *AERMET User's Guide*.[19] All hours with wind speeds below this value will be treated as "calm" in AERMOD.

2.7 Coordinate System

In all modeling analyses conducted by Nucor, the location of emission sources, structures, and receptors will be represented in the Universal Transverse Mercator (UTM) coordinate system. The UTM grid divides the world into coordinates that are measured in north meters (measured from the equator) and east meters (measured from the central 500 km meridian of each UTM zone, where the world is divided into 36 north-south zones). The datum for the Nucor modeling analysis is based on North American Datum 1983 (NAD 83). UTM coordinates for this analysis all reside within UTM Zone 17 which will serve as the reference point for all data as well as all regional receptors and sources.

2.8 Receptor Grids

For the Class II air dispersion modeling analyses, ground-level concentrations will be calculated from the fence line out to either 10 km for the 1-hour CO, 8-hour CO, 1-hour SO2, 3-hour SO2, 24-hour SO2, annual SO2, annual NO_2, annual PM_{10}, 24-hour PM_{10}, annual $PM_{2.5}$ and 24-hour $PM_{2.5}$ analyses or 50 km for the 1-hour NO_2 analyses using a series of nested receptor grids. These receptors will be used in the Significance analysis, in the PSD increment modeling, and in the overall NAAQS modeling. The following nested grids will be used to determine the extent of significance:

- **Fence Line Grid:** "Fence line" grid consisting of evenly-spaced receptors 50 meters apart placed along the main property boundary of the facility,
- **Fine Cartesian Grid:** A "fine" grid containing 100-meter spaced receptors extending approximately 3 km from the center of the property and beyond the fence line,
- **Medium Cartesian Grid:** A "medium" grid containing 500-meter spaced receptors extending from 3 km to 10 km from the center of the facility, exclusive of receptors on the fine grid,

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[17] ftp://ftp.ncdc.noaa.gov/pub/data/asos-onemin

[18] http://www.mrlc.gov/viewerjs/

[19] EPA, *User's Guide for the AERMOD Meteorological Preprocessor (AERMET)*, EPA-454/B-21-004, U.S. Environmental Protection Agency, Research Triangle Park, NC, April 2021.

- **Coarse Cartesian Grid:** A "coarse grid" containing 1,000-meter spaced receptors extending from 10 km to 30 km from the center of the facility, exclusive of receptors on the fine and medium grids, and

- **Very Coarse Cartesian Grid:** A "very coarse grid" containing 2,500-meter spaced receptors extending from 30 km to 50 km from the center of the facility, exclusive of receptors on the fine, medium, and coarse grids.

This configuration and extent will capture the area of maximum modeled concentrations. If maximum modeled concentrations are located in an area with less than 100-meter receptor density, then the receptor density will be increased accordingly. Similarly, if maximum impacts are identified near the extents of the receptor grid, then the receptor grid will be expanded to ensure the maximum modeled concentrations are appropriately captured. Concentration plots depicting the maximum modeled concentrations and surrounding impacts will be provided in the final modeling report to provide confidence that the maximum impact is identified.

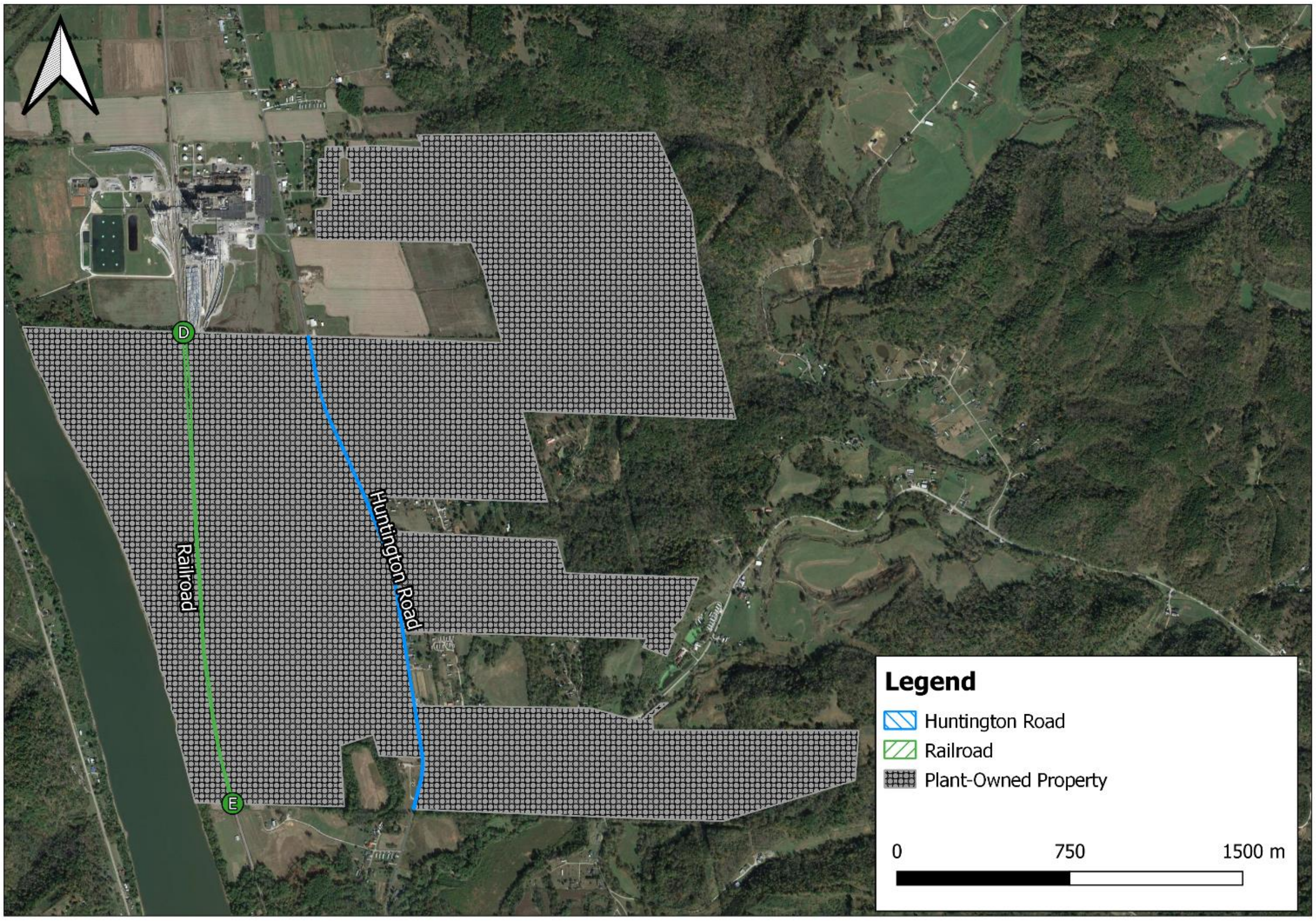
The full NAAQS and PSD increment analyses will be conducted using only receptor locations at which impacts calculated for the facility sources exceed the SIL for the respective pollutant and averaging time. As compliance with the PSD increment analysis and NAAQS is only required in areas regulated as "ambient air," in developing the receptor grid for the modeling analysis, Nucor will exclude all company owned property to which general public access is restricted because it is fenced or access is otherwise restricted, and thus, will not be considered "ambient air."

Figure 2-3 displays the property boundaries for the Apple Grove site. At the Apple Grove site, a main railroad line (entry/exit points labeled "D" and "E") passes through the center of the property. Please note that this figure has been provided for demonstration purposes as Nucor has not finalized the design of the facility. The quantity and location of access points (including Nucor employee access) is expected to change and will be included in the final modeling report.

Nucor notes that railroad tracks and rights-of-way are private property and access by the general public is considered trespassing per W. Va. Code § 61-3B-3. This rule states, "It is an unlawful trespass for any person to knowingly, and without being authorized, licensed or invited, to enter or remain on any property, other than a structure or conveyance, as to which notice against entering or remaining is either given by actual communication to such person or by posting, fencing or cultivation."

For the proposed facility location, Nucor will restrict general public access via physical fencing, signage at all entry and exit points, remote monitoring (e.g., 24-hour video surveillance), and on-site security staffing. Remote monitoring will provide Nucor constant surveillance of all facility access points and dedicated security staff will respond immediately to any potential trespassing incidents. Furthermore, Nucor intends to establish routine security patrols to allow passageway to authorized personnel while monitoring and further deterring unauthorized general public access at all entry and exit points. Through these security measures, Nucor will preclude general public access and minimize all transient access to the proposed facility property. Therefore, Nucor will exclude receptors from the industrial plant roadways and main line railroads that cross the facility property.

Figure 2-3. Property Boundaries of Nucor's Proposed Apple Grove, WV Property



2.9 Emission Sources and Regional Source Inventories

Dispersion modeling for the significance analysis will be conducted for all new sources using hourly or annual potential CO, SO_2, PM_{10}, $PM_{2.5}$, and NO_X emission rates, where applicable, based on the averaging period of the underlying NAAQS or PSD Increment standard. As per PSD modeling requirements, for any off-site air concentration impact calculated that is greater than the SIL for a given pollutant, the radius of the significant impact area (SIA) will be determined based on the extent to where the farthest receptor is located at which the SIL is exceeded. Thus, the SIA will encompass a circle centered on the facility with a radius extending out to either (1) the farthest location where the emissions of a pollutant causes a significant ambient [i.e., modeled impact above the SIL on a high-first-high (HFH) basis] or (2) a maximum distance of 50 km, whichever is less.[20] Under EPA's previous guidance in Section IV.C.1 of the draft *New Source Review Manual* applicable to "deterministic" NAAQS, all sources within the SIA no matter how small or distant would be included in the regional inventory, and the remaining sources outside of the SIA but within 50 km would be assumed to potentially contribute to ground-level concentrations within the SIA and

[20] This is the maximum extent of the applicability of the AERMOD Model as per the *Guideline on Air Quality Models*.

would be evaluated for possible inclusion in the NAAQS analysis.[21] An applicant would determine the SIA for each pollutant and averaging period and would use these calculations to determine which regional sources needed to be included in the NAAQS analysis. Sources in the raw inventories provided by state agencies would first be screened to remove sources located outside of the radius of impact (ROI) [i.e., the significant impact area (SIA) plus 50 km]. The remaining sources within the ROI would then be screened based on an emissions (Q) over distance (d) screening technique such as the "20D" procedure to identify small and distant sources that could be excluded from the NAAQS analysis because they were not anticipated to impact receptors in the SIA.[22] For deterministic NAAQS like the annual NO_2 standard, this procedure is generally still valid and will be used if modeled impacts from the Significance Analysis exceed the SIL.

For short-term probabilistic NAAQS like the 1-hour NO_2 standard, this procedure often produces an inordinately large number of regional inventory sources due to larger SIA distances caused by peak hourly impacts during certain low frequency meteorological events. Recognizing the limitations of the NSR Manual procedure developed at a time when no probabilistic 1-hour NAAQS were in effect, EPA now recommends a different regional inventory screening procedure focusing primarily on the concentration gradient of the source and professional judgement by the dispersion modeler. As indicated in Appendix W, EPA states that "the number of nearby sources to be explicitly modeled in the air quality analysis is expected to be few except in unusual situations [and] in most cases, the few nearby sources will be located within the first 10 to 20 km from the source(s) under consideration." As such, Nucor will employ a subjective screening analysis in addition to the quantitative methods described above. Justification for inclusion or exclusion of specific regional sources will be included in the final modeling report.

As needed, CO, SO_2, NO_2, PM_{10} and $PM_{2.5}$ regional source inventories will be compiled for the NAAQS and PSD Increment analyses. Source locations, stack parameters, annual operating hours, and potential emissions data will be obtained from WVDEP, Ohio EPA (OEPA), Pennsylvania DEP (PADEP), and/or file reviews of specific facilities.

The first screening step in the regional inventory screening process will be to apply the objective procedure outlined in the NSR Manual which EPA still considers to "generally be acceptable as the basis for permitting decisions, contingent on an appropriate accounting for the monitored contribution."[23] All sources within the SIA for the specific averaging period will be retained for further consideration in the remaining screening steps of the analysis, and any sources beyond the SIA but within this ROI will be screened using the "20D" procedure. Under this Q/d-based screening procedure, sources outside the SIA will be excluded from the inventories for short-term averaging periods if the entire facility's emissions (tpy) are less than 20 times the distance (km) from the facility to Nucor, and sources outside the SIA will be excluded from the inventories for annual averaging periods if the entire facility's emissions (tpy) are less than 20 times the distance (km) from the facility to the nearest edge of the SIA. In addition, the locations of the included and excluded regional sources based on the results of the "20D" screening analysis will be plotted in maps presented as part of an appendix to the modeling report. These plots will be reviewed to determine if any sources eliminated by the "20D" rule were in close enough proximity to one another that they could be considered a "cluster." The combined Q/d value for each identified cluster will be calculated using GIS software. If the aggregate Q/d for a cluster exceeds 20, the sources within the cluster excluded from the inventory on the

[21] EPA, *New Source Review Workshop Manual*, Draft October 1990, available at http://www.epa.gov/ttn/nsr/gen/wkshpman.pdf

[22] 57 FR 8079, March 6, 1992.

[23] U.S. EPA Memorandum from Tyler Fox, *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-Hour NO_2 National Ambient Air Quality Standard*, March 1, 2011.

basis of their individual facility Q/d value will be further evaluated for possible inclusion in the NAAQS/PSD Increment analyses. For each step in the regional inventory screening process, Excel spreadsheets and associated regional inventory summary tables will be included as an appendix to the modeling report to provide documentation of each emission unit removed from the inventory and each unit retained for inclusion in the NAAQS and PSD Increment analyses.

After completing the screening analysis, the remaining inventory sources will then be evaluated to determine whether any refinements to the data set are warranted or if the source could be removed from the inventory based on site-specific considerations. The two main problems expected to be encountered in finalizing the model input parameters for the remaining inventory sources are: 1) missing/non-representative stack parameters, and 2) overestimated potential emission rates due to overlapping process designations in the emissions inventory premised on continuous annual operation in multiple operating modes (i.e., one process ID for a boiler designating 8,760 hr/yr of operation at the maximum burner rating when firing natural gas and a second process ID designating 8,760 hr/yr of fuel oil firing). Missing/non-representative stack parameters for point sources will be filled based on the best available data for the source in question. To aid in the WVDEP's review of the model input parameters assigned to regional sources, all of the assumptions and resources used for filling or correcting stack parameters will be documented through highlighting and embedded comments in the regional inventory spreadsheets. These modified parameters will be further documented through footnotes to the regional inventory model input parameter summary tables. Nucor will work with WVDEP to validate these model input parameters and finalize any required regional inventories.

If a modeled exceedance is observed on property of a nearby source, then the so called "Mitsubishi Method" may be employed to demonstrate compliance at those on-property receptor locations.[24] Specifically, Nucor and the nearby sources will be modeled to obtain total concentrations at all receptor locations. Where a receptor is located on a nearby source's non-ambient air property, the contribution from that specific nearby source may be subtracted from the total concentrations.

2.10 Ambient Monitoring Requirements

Under current U.S. EPA policies, the maximum impacts attributable to the emissions increases from a project must be assessed against monitoring de minimis levels to determine whether pre-construction monitoring should be considered. A pre-construction air quality analysis using continuous monitoring data can be required for pollutants subject to PSD review per 40 CFR § 52.21(m). The monitoring *de minimis* levels are provided in 40 CFR § 52.21(i)(5)(i) and are listed in Table 2.1. If either the predicted modeled impact from the proposed project or the existing ambient concentration is less than the monitoring *de minimis* concentration, the permitting agency has the discretionary authority to exempt an applicant from pre-construction ambient monitoring.

When not exempt, an applicant may provide existing data representative of ambient air quality in the affected area or, if such data are not available, collect background air quality data. However, this requirement can be waived if representative background data have been collected and are available. To satisfy the PSD pre-construction monitoring requirements, Nucor proposes that existing monitoring data provide reasonable estimates of the background pollutant concentrations for the pollutants of concern. The representativeness of existing monitoring data is outlined further in Section 2.11. For this reason, Nucor believes that pre-construction monitoring will not be required for this project.

[24] U.S. EPA Memorandum from Robert D. Bauman (Chief SO2/Particulate Matter Programs Branch) to Gerald Fontenot (Chief Air Programs Branch, Region VI), *Ambient Air,* October 17, 1989

2.11 Background Concentrations

Ambient background monitoring concentrations are necessary for any required full NAAQS analysis for the facility. Nearby ambient background monitoring stations were reviewed, and nominations for candidate monitors for SO_2, NO_2, PM_{10}, $PM_{2.5}$, and ozone concentrations will be made on the basis of monitor sites with data for the required pollutants, proximity, and representativeness (based on similar land use and geographical setting). Based on the high magnitude of the 1-hour and 8-hour SIL for CO, Nucor does not anticipate triggering a full NAAQS analysis for CO, and thus, selection of a representative CO monitoring location is not presented in this Modeling Protocol. The following stations were chosen as appropriately representative ambient background monitoring stations for the pollutants indicated. The monitors selected are:

- Apple Grove, WV Proposed Facility Location
  - $PM_{2.5}$/Ozone – Huntington Site (AQS Site ID 54-011-0007)
  - PM_{10} – Ironton Site (AQS Site ID 39-087-0012)
  - SO_2/NO_2 – Ashland Site (AQS Site ID 21-019-0017)

For Apple Grove, the Huntington site was chosen for Ozone and $PM_{2.5}$ consideration due to its proximity, about 35 km southwest, and similar geographic location to the proposed facility. It is the closest monitor to the Apple Grove facility. For PM_{10} consideration, the Ironton monitor was chosen, as again it is the closest monitor to the facility, about 45 km southwest, and has a similar geographic location adjacent to the Ohio River.

For SO_2 consideration, the nearest monitors to the proposed site are located in Cheshire, OH and Point Pleasant, WV, approximately 33 km north of the site and within the vicinity of the Gavin Power Plant. Considering the Gavin Power Plant is expected to be included in the regional inventory for the site, using the Cheshire or Point Pleasant monitors would result in "double-counting" of nearby source impacts. The next closest SO_2 monitor is in Ashland, KY approximately 46 km southwest of the proposed Apple Grove site. The location of this monitor would not be subject to the same nearby source influences described above and is expected to provide a more representative estimate of SO_2 background. For NO_2 consideration, the Ashland, KY monitor is the closest NO_2 monitor to the proposed site, approximately 46 km southwest. Therefore, Nucor is proposing to use the Ashland monitoring station for both NO_2 and SO_2 background concentrations.

For pollutants where diurnal and seasonal patterns of monitored concentrations are frequently present (i.e., 1-hour NO_2, 1-hour SO_2, and 24-hour $PM_{2.5}$), Nucor will first evaluate the design values for each pollutant and averaging period for use in the modeling. Should those values be overly conservative, Nucor intends to rely upon refined background concentrations in accordance with EPA guidance. For these pollutants, more refined "second tier" background concentrations are expected to be used. Concentration values that vary by season and hour of day are intended for use for 1-hour NO_2 and SO_2 and concentrations values that vary by season are intended for use for 24-hr $PM_{2.5}$. The temporarily varying concentration values will be developed based on recommendations in current EPA guidance.[25,26]

[25] https://www.epa.gov/sites/default/files/2015-07/documents/appwno2_2.pdf

[26] https://www.epa.gov/system/files/documents/2021-09/revised_draft_guidance_for_o3_pm25_permit_modeling.pdf

3. CLASS I AREA DISPERSION MODELING ANALYSIS

There are two Class I areas within 300 km of the proposed facility, Otter Creek Wilderness and Dolly Sods Wilderness. Shenandoah National Park and James River Face Wilderness are located outside the 300 km screening range. The closest Class I area is Otter Creek Wilderness, approximately 200 km from the proposed location (east of Apple Grove). Class I areas are federally protected areas for which more stringent air quality standards apply to protect unique natural, cultural, recreational, and/or historic values. The Federal Land Managers (FLM) of these Class I areas have the authority to protect AQRV and to consider, in consultation with the permitting authority, whether a proposed major emitting facility will have an adverse impact on such values. AQRVs for which PSD modeling is typically conducted include visibility and surface deposition of sulfur and nitrogen.

Table 3-1. Class I Q/D Analysis

Class I Area	Distance to Apple Grove	FLAG 2010 Q/D (Apple Grove)[1]
Otter Creek Wilderness	220	8.6
Dolly Sods Wilderness	240	7.8
Shenandoah National Park	302	6.2
James River Face Wilderness	318	5.9

[1] Emissions are based on SO_2, NO_X, and PM_{10} emissions from similar facilities with a scaling factor to represent the proposed mill.

Based on preliminary estimates of project emission increases for pollutants that would be considered in the AQRV analysis, the ratio (Q/D) of the project emissions changes to the distance of the nearest Class I area, is approximately 8.6 for Apple Grove. The new source contributions to the emissions increases are based on the maximum hourly potential emission rates extrapolated to an annual basis assuming continuous operation, and thus, are consistent with FLM guidance for establishing the Q/d ratio based on the maximum daily emission rate extrapolated to an annual basis rather than the annual potential emission rates which may consider inherent constraints on annual production of fuel usage. The FLM's AQRV Work Group (FLAG) guidance states that a Q/D value of ten (10) or less indicates that AQRV analyses will generally not be required.[27] Therefore, it is unlikely the proposed project would lead to adverse impacts at any of the Class I areas listed in Table 3-1. Based on these initial calculations, Nucor presumes that the FLMs for all Class I areas within 300 km of the facility will not require a full AQRV analysis for this project. To confirm this assumption, Nucor will provide the final Q/D analysis and contact the FLMs in consultation with the WVDEP to seek formal concurrence that a Class I area AQRV analysis is not warranted.

In addition to the AQRV analysis, Nucor is required to assess PSD Increment consumption at the affected Class I areas. Nucor proposes to perform this evaluation using a screening methodology that is commonly applied. This methodology relies on the same Significance analysis model input parameters applied for the Class II area assessments. Modeling in AERMOD will be performed by placing an arc of receptors at a

[27] National Park Service, U.S. Department of the Interior, Federal Land Mangers' Air Quality Related Values Work Group (FLAG), Phase I Report–Revised (2010), National Resource Report NPS/NRPC/NRR_2010/232, October 2010.

distance of 50 km in the direction each Class I area within 300 km, to demonstrate that impacts are below the Class I SILs. This Class I increment screening procedure was originally proposed by EPA Region 4 and has been used in several recent PSD applications to fulfill the Class I increment modeling requirements. The Class I SILs for the pollutants expected to exceed their respective SERs and for which there is a SIL are presented in Table 3-1. Nucor assumes the $PM_{2.5}$ Class I Area SIL contained in EPA's "Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program" (April 2018) will be accepted for this PSD air quality analysis.

Table 3-1. Class I PSD SILs

Pollutant	Averaging Period	Class I SIL ($\mu g/m^3$)
NO_2	1-Hour	NA
	Annual	0.10
PM_{10}	24-Hour	0.32
	Annual	0.16
$PM_{2.5}$	24-Hour	0.27
	Annual	0.05
SO_2	1-Hour	NA
	3-hour	1.00
	24-Hour	0.20
	Annual	0.10

If the impacts within the 50 km arc in the direction of Class I areas exceed the SIL for a particular pollutant/averaging period, Nucor will proceed with full scale long-range transport modeling using EPA's recommended CALPUFF model for that pollutant/averaging period. Based on preliminary Class I Significance Analysis results, Nucor expects modeled concentrations to fall well below the applicable Class SILs, and thus no further refined modeling is expected to be required and a separate Class I modeling protocol for long range transport modeling will not be necessary.

4. ADDITIONAL IMPACTS ANALYSIS

Three additional impacts analyses will be performed as part of the PSD permitting action. These are: 1) a growth analysis, 2) a soil and vegetation analysis, and 3) a visibility analysis.

4.1 Growth Analysis

The purpose of the growth analysis is to quantify project associated growth; that is, to predict how much new growth is likely to occur in order to support the source or modification under review, and then to estimate the air quality impacts from this growth. Accordingly, Nucor will include a discussion of impacts resulting from residential and commercial growth driven by the proposed project in the PSD permit application.

4.2 Soils and Vegetation Analysis

The EPA developed the secondary NAAQS to protect certain air quality related values (i.e., soil and vegetation) that may not be sufficiently protected by the primary NAAQS. The secondary NAAQS, shown in Table 2-1 represent levels that provide protection for public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. As a general rule, if ambient concentrations from a PSD project are found to be less than the secondary NAAQS, emissions from that project will not result in harmful effects to either soil or vegetation.[28] Therefore, maximum impacts from the NAAQS analysis will be assessed against applicable secondary standards, to determine impacts to soils, vegetation, and endangered species.

4.3 Visibility Analysis

To provide a demonstration that local visibility impairment will not result from the project, Nucor will utilize the EPA VISCREEN model following the guidelines published in the *Workbook for Plume Visual Impact Screening and Analysis* to assess potential plume impairment.[29] The primary variables that affect whether a plume is visible or not at a certain location are (1) quantity of emissions, (2) types of emissions, (3) relative location of source and observer, and (4) the background visibility range. The VISCREEN model is designed to determine whether a plume from a facility may be visible from a given vantage point. Nucor will determine the nearest potentially sensitive Class II areas for consideration in the VISCREEN modeling and include this analysis in the final modeling report. Nucor has determined the nearest potentially sensitive Class II area for consideration in the VISCREEN modeling is Tu-Endie-Wei State Park located about 20 km north of the Apple Grove facility. Level-1 screening techniques are expected to adequately demonstrate plume impairment values below screening thresholds. Regardless, Level-2 and subsequently Level-3 screening techniques will be applied if necessary.

[28] U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, New Source Review Workshop Manual, Research Triangle Park, North Carolina, October 1990.

[29] EPA, *Workbook for Plume Visual Impact Screening and Analysis*, EPA-450/4-88-015, 1988.

5. OZONE AMBIENT IMPACT ANALYSIS

The latest revisions to the *Guideline*, which was recently published in the Federal Register on January 17, 2017, recommend the use of Model Emissions Rate for Precursors (MERPs)[30] to evaluate a proposed project's impact on ozone levels in the surrounding airshed. The *Guideline* establishes a two-tiered demonstration approach for addressing single-source impacts on ozone. Tier 1 demonstrations involve use of technically credible relationships between emissions and ambient impacts based on existing modeling studies deemed sufficient for evaluating a project source's impacts. Tier 2 demonstrations involve case-specific application of chemical transport modeling (e.g., with an Eulerian grid or Lagrangian model). MERPs are a type of Tier 1 demonstration that represent a level of increased precursor emissions that is not expected to contribute to significant levels of ozone. In other words, project emissions are compared against MERP values to determine whether the project emissions would have a significant impact on ozone levels. To derive a MERP value, a model predicted relationship between precursor emissions from hypothetical sources and their downwind maximum impacts is combined with a critical air quality threshold using a predefined equation. Nucor will use pre-established MERPs values based on prior photochemical grid modeling as the primary indicator that the project is not expected to cause or contribute to a violation of the ozone NAAQS.

Initially, Nucor plans to rely upon the lowest MERPs values (most conservative) for the Ohio Valley climate zone from Table 4-1 of EPA's 2019 MERPs guidance. As an alternative, Nucor may use location-specific MERPs from EPA's MERPs Qlik website.[31] If location-specific MERPs value are used, Nucor will provide additional justification for the specific location and source parameters (i.e., emission rate and release height) chosen for use.

[30] *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program*, available via: https://www.epa.gov/sites/default/files/2019-05/documents/merps2019.pdf

[31] https://www.epa.gov/scram/merps-view-qlik

6. SECONDARY $PM_{2.5}$ IMPACT ASSESSMENT

$PM_{2.5}$ precursor pollutants (e.g., NO_X, SO_2) can undergo photochemical reactions with ambient gases such as NH_3 or VOC resulting in the formation of secondary $PM_{2.5}$ downwind of a stationary industrial source. The creation of $PM_{2.5}$ by secondary mechanisms increases the total concentration by adding to the direct emissions of $PM_{2.5}$ from a facility. Two of the largest constituents of secondarily-formed $PM_{2.5}$ are sulfates (SO_4) and nitrates (NO_3), both of which are formed from their respective precursor pollutants (SO_2 for SO_4 and NO_X for NO_3).

The current guideline model for Class II Area air dispersion modeling, AERMOD, does not account for many of the complex atmospheric physical and chemical mechanisms that influence $PM_{2.5}$ formation. For example, when run in the regulatory default mode, AERMOD does not account for the size or mass of particulate emissions and, therefore, does not account for the difference in gravitational settling and deposition rates that occur for different particle sizes. No chemical transformation schemes are implemented in AERMOD which could predict secondary $PM_{2.5}$ formation from atmospheric processes.

Based on the MERP guidance offered by EPA, Nucor will prepare a site-specific secondary $PM_{2.5}$ impact assessment to comprehensively demonstrate precursor emissions from the proposed project will not cause or contribute to a violation of the $PM_{2.5}$ NAAQS or PSD increment standards.

Initially, Nucor plans to rely upon the lowest MERPs values (most conservative) for the Ohio Valley climate zone from Table 4-1 of EPA's 2019 MERPs guidance. As an alternative, Nucor may use location-specific MERPs from EPA's MERPs Qlik website.[32] If location-specific MERPs value are used, Nucor will provide additional justification for the specific location and source parameters (i.e., emission rate and release height) chosen for use.

[32] https://www.epa.gov/scram/merps-view-qlik