UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

January 7, 2011

Ms. Tegan Treadaway, Administrator
Office of Environmental Services
Louisiana Department of Environmental Quality
P.O. Box 4313
Baton Rouge, LA 70821-4313

RE: Louisiana Department of Environmental Quality's (LDEQ's) Proposed Title V Operating Permit Numbers 2560-00281-V1 and 3086-V0; and Prevention of Significant Deterioration (PSD) Permit Number PSD-LA-751; Consolidated Environmental Management Inc., Nucor Steel Louisiana; Convent, St. James Parish, Louisiana

Dear Ms. Treadaway:

The Environmental Protection Agency (EPA) Region 6 appreciates the opportunity to provide comments on the proposed operating permits and PSD permit for Nucor Steel Louisiana, and the ongoing dialogue between our offices over the last 6 weeks. The draft permits were evaluated to ensure consistency with the Louisiana State Implementation Plan (SIP) and Federal Clean Air Act (CAA) requirements. We look forward to working closely with Louisiana regarding these permits in the weeks to come.

In general, we encourage the Louisiana Department of Environmental Quality (LDEQ) to perform an independent evaluation of the permit application and to respond to all comments from the public to ensure that any final action is consistent with applicable Federal and State requirements. We recognize that this is the first permit in Louisiana, and among the first in the country, to implement Greenhouse Gas Best Available Control Technology, and our comments are meant to assist LDEQ with this determination. We are looking forward to receiving a copy of the Response to Comments Summary and proposed Title V permits for our statutory 45-day review period before the permits are issued as final. We are committed to working with LDEQ and Nucor to address these issues in a satisfactory and timely manner. We would welcome the opportunity to meet with LDEQ and Nucor to discuss any additional information and/or other approaches that LDEQ and Nucor may want to provide for us to consider in addressing each of these comments.

Please contact me at (214) 665-6435, or Shannon Snyder of my staff at (214) 665-3134, if you have further questions. Thank you for your cooperation.

Sincerely yours,

Jeffrey Robinson
Chief
Air Permits Section

Enclosure

Enclosure

A. General Comments Concerning the Proposals:

EPA Region 6 is encouraged that Nucor is taking a proactive approach in these permit proposals to decrease the amount of emissions, specifically emissions of CO_2 and NOx, from the Nucor facility. Using an inherently lower emitting process such as the Direct Reduced Iron (DRI) process, and opting to install Selective Catalytic Reduction (SCR) on units such as the coke ovens and sinter plants is breaking new ground in the realm of air pollution control, and is of great benefit to air quality and the environment.

1. Our comments are based on LDEQ's approach to treat the Pig Iron and DRI Plants as separate permitting actions, though as part of the same major stationary source. We are providing comments on the LDEQ's proposed action not to consider these two projects subject to one permitting action. Our comments today should not be construed as an indication as to whether we will grant or deny on a particular issue raised in a Title V petition. Our comments on modeling issues are based on LDEQ's approach and additional modeling concerns will be raised if it is determined that the DRI and Pig Iron Plants should be handled as one PSD permitting action.

2. On October 22, 2010 Nucor submitted their DRI GHG BACT Analysis, and as part of this analysis, included their rationale for why the DRI and pig iron products and processes "cannot be compared directly for the purposes of determining BACT." However, LDEQ needs to provide an adequate record to substantiate why the Nucor Steel Louisiana projects (pig iron and DRI) should or should not be subject to one permitting action. Please provide in the Response to Comments Summary LDEQ's rationale for why the Nucor Steel Louisiana projects (pig iron and DRI) should be considered as separate projects for the purposes of PSD permitting rather than one single new source or one aggregated project subject to one PSD permit. Please explain how your rationale comports with the State's approved SIP, current Federal regulations and policy, court decisions, and EPA petition orders. In particular, LDEQ may find it useful to consider the summary of EPA's historic approach to aggregation (or circumvention) contained in 72 Fed. Reg. 19567, 19570 - 71 (April 15, 2010) (section III(C)(2)(a)), and the memoranda and determinations cited in that discussion.

B. Pig Iron Title V Modification:

1. The proposed permit modification does not contain a $PM_{2.5}$ potential to emit, even though it was included in the initial Title V permit No. 2560-00281-V0 issued May 24, 2010. The permit modification application submitted by Nucor states that "current USEPA guidance recommends that PM_{10} should be used as a surrogate

for $PM_{2.5}$ in the PSD program, which has been done in this application. Accordingly, discussion of PM_{10} should be regarded as also addressing $PM_{2.5}$." LDEQ should provide a rationale as to why PM_{10} is an appropriate surrogate for $PM_{2.5}$ in this case. Please clarify this issue in the proposed permit and permitting record.

2. The SOB and Title V Permit "Facility Background and Process Description" states the facility will be comprised of 2 blast furnaces, 2 coke oven batteries, and 280 coke ovens at a permitted capacity of 6 million tonnes of iron per year. Yet the proposed modification is supposed to eliminate one blast furnace, and associated emissions units. It is EPA's understanding that removing one of the blast furnaces will reduce the capacity by half (3 million tonnes per year), but the permit modification does not state this. The Process Description in the draft permit and SOB reads like the Process Description in the initial Title V Pig Iron Permit. Furthermore, the application states the production capacity at the coke ovens and sinter plant will not be changed. Please clarify in the proposed permit and the record how many blast furnaces, coke batteries, and coke ovens are being permitted in this modification, and what the permitted capacity is (i.e. a practically enforceable production limit).

3. It is not clear that the Nucor Pig Iron Permit No. PSD-LA-740 is being modified to include the changes that are being made as part of the Title V modification. The new emission limits for SCR control, emission decreases from the units being transferred to the DRI plant permit, and units being removed from the design of the Pig Iron Plant permit, require the PSD-LA-740 permit to be modified such that the applicable requirements in the modified PSD permit are transferred to the Title V permit. How does LDEQ plan to address this concern?

4. We are encouraged that Nucor is proposing to employ Selective Catalytic Reduction (SCR) as a NOx control technique at the Pig Iron Plant. EPA believes that this technology is among the most effective for reducing nitrogen oxide emissions from a wide variety of industrial combustion facilities. We are concerned; however, that Nucor stated in their pig iron modification application that SCR is technically infeasible on some of the units, yet the reductions attained from the installation of SCR are being relied upon to show that both the Pig Iron and DRI plant permits do not cause or contribute to a violation of the 1-hour NO_2 National Ambient Air Quality Standard (NAAQS). Pages 2-5 through 2-6 of the permit application discuss why SCR is being considered. "Nucor searched for other potential ways to reduce emissions in order to bring the modeled predictions of NOx below the [Significant Impact Level] SIL level." It goes on to say "To date, SCR controls have never been applied to coke ovens, sinter plants, or blast furnace gas combustion, either solely or in conjunction with flue gas desulfurization technology as in the MEROS unit test. Nucor believes the application of SCR technology remains technically infeasible for these sources. Nucor is submitting with this permit modification application emissions calculations which reflect the experimental application of SCR to the Coke Oven

Main Flue Stacks and the Sinter Plant. While the technical feasibility of these SCR applications is highly suspect, Nucor has decided to take these steps in order to maintain the viability of the NSLA project." If SCR proves not to be technically feasible, then LDEQ must evaluate what further emission reductions can occur or other control technologies that can be utilized to maintain the emission limits that were used to demonstrate that the plant will not cause or contribute to a violation of the NAAQS. Additionally, a practically enforceable condition in the permits should be included to require Nucor to go through the PSD permitting process and modify their Title V permit if SCR is not technically feasible. At this time, it appears Nucor is implying that the pollution control technology proposed for these permits is technically infeasible but on the other hand they are relying on this technology to achieve reductions to support the issuance of these permits and the potential viability of the project.

5. The Permit Shield in the SOB does not clearly explain why a shield is needed for the coke battery coal charging operations (COK-101 and 201) for 40 CFR 63.303(b)(2). LDEQ's Permit Shield language should list explicitly the requirements that are not applicable, include an explanation of why the requirement does not apply, identify the version of the applicable requirement being shielded, and should only apply to the requirements and units eligible for the shield. In the public record, LDEQ should include its rationale for granting the permit shield.

6. EPA recommends an enforceable permit condition requiring all emission units subject to performance testing for NOx to either incorporate continuous emission monitoring, or conduct annual stack testing that requires NOx, NO, and NO_2 emission data be obtained. If annual stack testing is required, the collection of NO and NO_2 data can be collected at the same time that NOx is collected, so no additional cost is anticipated. The NO and NO_2 data will prove valuable for future modeling of this source for the 1- hour NO_2 standard.

C. DRI Title V and PSD Permits:

1. Under the Maximum Allowable Emission Rates Table (MAERT), #8 states that all terms and conditions of the initial pig iron TV permit (2560-00281-V0) are also terms and conditions of the DRI PSD permit. LDEQ has stated in the record the DRI plants would be wholly independent of the Pig Iron Plant, but it seems that the language in #8 indicates the permits will share certain conditions and requirements. For the public record, please clarify what requirement #8 in the MAERT actually means. EPA Region 6 realizes certain emission units are being transferred from the Pig Iron Plant to the DRI plant in an effort to make these processes separate and independent. For the public record, LDEQ needs to provide its legal basis and rationale as to how Title V requirements can be transferred and become conditions of a PSD permit. LDEQ should use the State's approved SIP, current Federal regulations and policy, and other authorities as

relevant to support its response to these comments. On the basis that the DRI plant is a totally independent project, the PSD must contain all the emission limits for every emission unit in the DRI plant and the PSD analysis. The modeling must also use these maximum emission limits. LDEQ should confirm that this is the process that was used for drafting the PSD permit for the DRI plant.

2. The original October 2010 application states that Nucor is requesting authorization to construct a reformer-based DRI plant, but is also seeking authority to construct, in the alternative, a reformer-less HYL process unit (inherently less polluting process/experimental). We did not see this other process discussed in the draft PSD permit, Title V permit, or SOB. Please clarify for the record if this is something Nucor reconsidered before the permit went to public notice, or if these permits are authorizing this alternative process. Please clarify whether this inherently less polluting process was considered in the Best Available Control Technology (BACT) determination. If not, LDEQ should provide its rationale why that process was not evaluated in the BACT determination, especially since Nucor included this process in its application.

3. The PSD permit does not contain CO, NOx, and SO2 BACT determinations for Upper Seal Gas Vents (DRI-106 and 206), Furnace Dedusting (DRI-107 and 207), and Product Storage Silo (DRI-112 and 212). LDEQ must provide its rationale in the public record why a BACT determination was not done for these pollutants on those units.

4. The draft Title V and PSD permits do not include a $PM_{2.5}$ potential to emit, and LDEQ's record should justify why PM_{10} is an adequate surrogate for $PM_{2.5}$ in this case. Additionally, the $PM_{2.5}$ BACT requirements from the PSD permit have not been included in the Title V permit. LDEQ needs to ensure all the requirements of the BACT determination are carried forward to the Title V permit. Additionally, LDEQ needs to ensure the BACT determination requirements are supported by appropriate monitoring, recordkeeping and reporting in the Title V permit to ensure these requirements are practically enforceable.

5. The PSD permit states BACT for DRI-101, 201, 102, 202, 105, and 205 is a fabric filter baghouse achieving 99.5% control of $PM_{2.5}/PM_{10}$, but this is not carried forward into the Specific Requirements of the Title V permit. LDEQ needs to ensure that all BACT requirements from the PSD permit are carried forward into the Title V permit Specific Requirements to ensure adequate monitoring, recordkeeping, and reporting.

6. The DRI plant was modeled using maximum short term emissions for $PM_{2.5}$, PM_{10}, SO_2, and NOx based on maximum production. LDEQ needs to ensure there are enforceable permit conditions limiting these emissions by having federally enforceable production capacity rates.

Greenhouse Gas (GHG) BACT Determination: Before providing specific comments, we acknowledge that this is the first GHG analysis conducted by Louisiana and intend the issues we raise to be constructive in building the record for this permit. In addition, we note that the proposal to utilize DRI technology is very much in the spirit of reducing greenhouse gas emissions.

7. LDEQ's draft PSD permit contains a proposed CO_2e BACT limit of "good combustion practices" for the Package Boiler and the Reformer/Main Flue Gas Stack based on an efficiency limit, as opposed to establishing a mass- or CO_2e-based limit, based on the proposed BACT review for Nucor's emissions of GHGs. When determining a PSD permit limit, a permitting authority must establish a numeric emissions limitation that reflects the maximum degree of reduction achievable for each pollutant subject to BACT (e.g., GHG) through the application of the selected technology or technique. However, as EPA has expressed in its GHG Permitting Guidance[1], a permit may contain an operational standard, in lieu of a numerical BACT emissions limit, if the permit record demonstrates that a numerical emissions limit for the pollutant under review is infeasible, and if the standard is practically enforceable. Neither the draft permit for Nucor nor the administrative record provides a basis for why establishing a numerical BACT emissions limit is infeasible. In general, a large, non-fugitive source of emissions should be able to directly measure emissions, as we further note in comment 15. In the event that there are compelling reasons that make a numerical limit infeasible, LDEQ should provide that demonstration in the record for this permit.

8. The draft PSD permit contains a proposed CO_2e BACT limit of "acid gas separation system" for the Acid Gas Absorption Vent but contains no BACT analysis explaining how that control technology was selected. In addition, the permit does not contain a numerical GHG emission limit based on application of that control. As explained above, the permit must contain a numerical BACT limit or explain why establishing a numerical emissions limit for the pollutant under review is infeasible. LDEQ should include in the permit and/or the administrative record a basis for establishing an acid gas separation system as CO_2e BACT, and provide a numerical BACT emissions limit (or explain why one is infeasible).

9. The draft PSD permit does not provide baseline GHG emissions rates from the Direct Reduced Iron (DRI) plant in the administrative record for this permitting action. Establishing baseline emissions is a typical first step for a PSD pollutant applicability analysis. In this case, LDEQ has determined that the emissions from the DRI plant are above the thresholds for PSD permits, but the permit does not quantify such emissions in the administrative record for the permit application. LDEQ should provide the total GHG estimated emissions for the DRI plant as the basis of the decision for applicability under the GHG tailoring rule (75 FR 31514,

[1]GHG website: http://www.epa.gov/nsr/ghgdocs/epa-hq-oar-2010-0841-0001.pdf

June 3, 2010). Baseline emissions are necessary in order to determine (1) major modification applicability for this new plant in the future, when there are changes to the existing design during the construction or operational phases of this plant, and (2) if the proposed conditions and restrictions which limit emissions from a new source achieve the "best available" control of those emissions. LDEQ should provide an estimate of baseline GHG emissions in the permit record or clearly indicate why at this time it is infeasible to provide such emissions.

10. The preliminary determination in the air permit evaluates BACT for CO_2 emissions; however, this information is missing from the BACT table in the permit. GHG BACT and these analyses have been provided by the applicant[2] and, therefore, should be appropriately addressed in this table. Further, LDEQ should explain in the record why BACT was not addressed for other GHG-emitting pieces of equipment that are part of the DRI process.

11. NUCOR's BACT determination for the DRI process considered the acid gas absorption system that will produce pure CO_2 capable of Carbon Capture and Storage (CCS). However, the draft permit does not evaluate CCS, which the EPA's GHG permitting guidance notes on pp.33-34 is an available technology for industrial facilities with high-purity CO_2 streams , which includes iron and steel production. LDEQ should provide a basis for why CCS is not considered an available technology, and if it is considered available but not technically feasible (as Nucor's 10/22/10 letter suggests), please provide a basis for such determination. See GHG permitting guidance at pp. 36-38.

12. LDEQ in the BACT analyses for GHG considers limits on the natural gas fuel usage as "no more than" 13 MMBtu per tonne of DRI produced. However, as noted above, the BACT limit established in the permit must be practically enforceable. In this case, the fuel gas specification needs to be contained in the permit to be practically enforceable as the BACT for the DRI plant. For determining the CO_2e emission limit, the production rates are being monitored in the Specific Requirements, but this should also be federally enforceable. Please include the production rates in the permit as a federally enforceable condition.

13. Regarding the proposed efficiency limit for the DRI process, the permit does not express the type of DRI process that Nucor intends to construct and employ, and Nucor's letter of 10/22/10 notes that they are "in the process of evaluating specific designs…" We understand that the Midrex process represents the majority of DRI production capacity worldwide, followed by the Mexican HYL-III process. Assuming Nucor plans to install the Midrex technology, as of 2006 Midrex quoted efficiency levels in the range of 2.3 to 3.0 gigacal/t DRI.[3] In

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[2] Letter dated October 10, 2010 to LDEQ from NUCOR regarding the DRI facility.

[3] John T. Kopfle, "The New Iron Age Direct Reduction's Role in the World Steel Industry Part Two: Direct Reduction - An Idea Whose Time Has Come." Excerpt from p. 7: "The first MIDREX Plants had a natural gas consumption of over 3 Gcal per ton of DRI. Due to increased heat recovery, some plants now achieve

converting the units, 2.3 to 3.0 gcal/ton becomes 9.1 to 12 MMBtu/ton DRI, or 10.1 to 13.1 MMBTU/tonne. Assuming the Midrex technology will be employed, Nucor's statement that "no more than 13 MMBTU/tonne" appears accurate, and we encourage LDEQ to explore the latest DRI technologies and establish an efficiency limit that allows for the maximum degree of reduction of GHG emissions from the chosen process.

14. BACT for the reformers has been evaluated without providing the control effectiveness of each control. In evaluating the effectiveness, the GHG emission controls, the amount of the pollutant emitted per product produced should be specified where feasible. LDEQ has only specified energy integration in MMBtu/tonne of DRI iron produced. As explained above, if a numerical emission limit (e.g., ton of CO2 per tonne of DRI produced) is infeasible, LDEQ should explain why it is infeasible to express the BACT limit as a numerical limit on the amount of GHG emissions.

15. LDEQ should provide a rationale in the record why CO_2 analyzers are not being used to determine emissions limits for the DRI plant. Additionally, the term "good combustion practices" is used for CO and GHG BACT control, but it does not have adequate monitoring for CO_2 control, which is necessary in determining the compliance with the combustion standard.[4]

16. Consistent with the comments above, LDEQ should include the CO_2e BACT limits for the Package Boiler, the Reformer/Main Flue Gas Stack, and the Acid Gas Absorption Vent in the Specific Conditions section of the permit. Numerical limits and/or operation standards (including "good combustion practices" for CO and VOC) are provided in this section, but similar limits for CO_2e are not included in this section.

17. Please clarify in Specific Requirements Nos. 81 and 236 that BACT is for GHG or CO_{2e}. Also, please indicate monitoring for BACT on CO_2e for the Package Boilers in the Specific Requirements.

D. Air Quality Impact Analysis:

1. Nucor did not submit a modeling protocol for the DRI permit to be reviewed prior to submitting modeling. There are several items in our comments below that could have been addressed in a modeling protocol review and may have negated the requirement to deal with these issues as part of the public comment period.

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levels of under 2.3 Gcal/t. State-of the art MIDREX Plants can incorporate up to four stages of heat recovery."
http://www.midrex.com/uploads/documents/New%20Iron%20Age%20pt2.pdf.

[4] See Administrator's order to the CITGO and Premcor petitions at:
http://www.epa.gov/region07/air/title5/petitiondb/petitions/citgo_corpuschristi_west_petition2007.pdf
http://www.epa.gov/region07/air/title5/petitiondb/petitions/premcor_portarthur_petition2007.pdf

We recommend that any future permitting at this facility include sufficient time to allow for development and approval of a modeling protocol prior to performing ambient impact analyses.

2. PM2.5 - We note that Nucor did a cumulative analysis for PM2.5, but only included receptors that were within the radius of significance of the DRI process. We note that previous modeling for the Pig Iron process included numerous receptors that were 3-5 km away (many around the Motiva facility) with exceedances predicted. Nucor previously verified that they were not contributing significantly to those exceedances. However, for the proposed permit modifications (Pig Iron process), Nucor did not verify or justify that its revised impacts were not significant for those previously modeled exceedances after the proposed modifications (which include some emission reductions, increased stack heights, and changes in emission characterizations).

3. SO2 – We note that Nucor modeled the DRI activities against the 1-hr standard and showed impacts that were below the interim SIL, so no cumulative analysis was conducted for SO2. We note that previous modeling for the Pig Iron process included numerous receptors that were 3-5 km away (many around the Motiva facility) with exceedances predicted for the 3-hour and 24-hour SO2 Standards. Nucor previously verified that they were not contributing significantly to these exceedances. However, for the proposed permit modifications (Pig Iron process), Nucor did not verify or justify that it's revised impacts were not significant for those previously modeled exceedances after the proposed modifications (which include some emission reductions, increased stack heights, and changes in emission characterizations).

4. There is a concern regarding a statement Nucor made in its permit application. "Nucor determined that AERMOD cumulative modeling predicts order of magnitude exceedances of the 1-hour NO2 NAAQS even without contributing sources from the Nucor [Nucor Steel Louisiana] NSLA and DRI facilities." We also note that LDEQ will likely need to conduct additional modeling in this area in investigating and resolving previously modeled violations of ambient standards (i.e. PM10, PM2.5, and 3-hour and 24-hour SO2 standards) around nearby facilities based on previous modeling for the Pig Iron process. As the air quality planning and permitting authority in Louisiana, LDEQ has a responsibility to prevent significant deterioration of air quality and attain ambient standards including the PM10, PM2.5, SO2, and 1-hour NO2 NAAQS [40 CFR 51.166(a)(1)-(3)]. How does LDEQ plan to address these issues?

5. We also note that LDEQ will likely need to perform 1-hour SO2 modeling in this area in the near future as part of its SO2 maintenance plans and we encourage LDEQ to conduct some modeling to determine whether Nucor's combined emissions (DRI and Pig Iron process) will not need to be reduced in the future as part of the maintenance plan.

6. NO2 - Nucor is installing SCR on both Pig Iron and DRI NOx emission units. They modeled the Pig Iron and DRI emission units together and modeled just below (7.46 vs.7.48 ug/m3) the interim SIL using a 75% ARM adjustment. EPA's current guidance is that conversion ratio of 90% (the current general default equilibrium ratio used in NO2 analyses) is what these type of analyses should start with, and that some justification is necessary to use lower levels, including a level as low as the 75% conversion ratio (especially for significance modeling). EPA has indicated that a potential justification, if a source wishes to use the ARM ratio (75% conversion ratio), could be that highest modeled values are from night-time meteorology and therefore conservative. Nucor indicated that App. W, allows for the use of ARM without providing any additional justification. EPA stated in our June 29, 2010 NO2 modeling guidance that justification should be provided if an applicant wishes to use the lower conversion rate.

   We note that some of the emission units have an 83% NOx control efficiency. One solution may be to further lower NO2 modeled impacts would be to tighten the SCR limits to 90% or greater on some units to get below the interim SIL level with a 90% conversion ratio. Another option could be that Nucor revise their analysis with a PVMRM based modeling analyses. This would necessitate development of a modeling protocol to conduct this additional analysis. A PVMRM analysis may be able to show the Nucor facility (Pig Iron and DRI sources) impacts are below the NO2 interim SIL. We will continue to work with LDEQ as you substantiate the record and address these comments.

7. CLASS I - Nucor did not appear to appropriately address Class I SIL/increment to determine if a full Class I increment analysis should have been performed. Nucor relied upon guidance from the National Park Service (NPS) that used a Q/D ratio to determine if visibility or AQRV's should be analyzed. EPA does not approve of the use of the NPS guidance for screening out of conducting a Class I increment analyses. Previous CALPUFF modeling databases could be used to demonstrate that Nucor's (DRI process) impacts are below the EPA proposed Class I SIL level for the PSD triggered pollutants.

8. Ozone impact analysis: We note that it does not appear that the ozone impact analyses has been updated for the 75 ppb 8-hour standard. The DRI process trigger PSD for the ozone precursor, NOx. Nucor previously conducted photochemical modeling in 2008 for the proposed emissions from the Pig Iron process and the 85 ppb 8-hour ozone standard. EPA recommends that Nucor/LDEQ evaluate the modeling outputs from the previous analyses and compare them with the new NOx emission rates to yield some analysis on the impact of Nucor's emissions on ozone levels for the 75 ppb standard.