

**VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY**

Blue Ridge Regional Office

INTRA-AGENCY MEMORANDUM

|  |  |  |           |                            |
|--|--|--|-----------|----------------------------|
| <b>Permit Writer</b>                                 | Berkeley   |  |           |                            |
| <b>Memo To</b>                                       | Air Permit File  | <b>Date</b>  | 10-7-14   |                            |
| <b>Facility Name</b>                                 | The Goodyear Tire & Rubber Company   |  |           |                            |
| <b>Registration Number</b>                           | 30106 – CEDS 25  |  |           |                            |
| <b>County-Plant I.D.</b>                             | 590-00013  |  |           |                            |
| <b>UTM Coordinates (Zone 17)</b>                     | 645.29   | <b>Easting (km)</b>  | 4045.69   | <b>Northing (km)</b>       |
| <b>Elevation (feet)</b>                              | 600  |  |           |                            |
| <b>Distance to Nearest Class I Area (select one)</b> | 172.4  | <b>SNP (km)</b>  | 112.3     | <b>JRF (km)</b>            |
| <b>FLM Notification (Y/N)</b>                        | Y  | <b>Required if less than 10K (minor), 100K (state major)</b> |           |                            |
| <b>NET Classification (A, SM, B)</b>                 | A  | <b>Before permit action</b>                                  | No Change | <b>After permit action</b> |
| <b>Title V Major Pollutants</b>                      | SO <sub>2</sub> ,<br>NO <sub>x</sub> ,<br>PM-10,<br>VOC,<br>HAPS, &<br>GHG | <b>Before permit action</b>                                  | No Change | <b>After permit action</b> |
| <b>PSD Major Source (Y/N)</b>                        | Y  | <b>Before permit action</b>                                  | No Change | <b>After permit action</b> |
| <b>PSD Major Pollutants</b>                          | SO <sub>2</sub> &<br>VOC   | <b>Before permit action</b>                                  | No Change | <b>After permit action</b> |

**I. Introduction**

The Goodyear Tire and Rubber Company owns and operates a truck and aircraft tire manufacturing facility located in Danville, Virginia (Goodyear-Danville). The tire manufacturing process begins with mixing of raw materials (including synthetic and natural rubber, carbon black, sulfur, accelerators, and process oils). Mixed rubber is then extruded (formed into predetermined shapes such as tread, or sidewall) or calendered (applied to a substrate to form specific gauge rubber sheets). Individual tire components are transferred to tire building stations where they are assembled into tires. Depending on the tackiness of the rubber prior to assembly and the type of tire being constructed, solvent may be applied at the tire building stations. Assembled ("green") tires are then cured in steam-heated curing presses. Depending on the tire, balance pads may be applied to the inside of the tire.

On 12/4/13, BRRO received an application dated 12/2/13 for the Low Rolling Resistance project at Goodyear-Danville. This project will not change the aircraft tire manufacturing operations collocated at Danville.

The Goodyear facility was previously permitted under a Title V permit and five NSR permits. The current Title V permit covers the entire Danville facility and has an effective date of 11/27/07. The principle NSR permit is a PSD Permit issued on 9/4/02 (hereafter referred to as

the 2002 (PSD) permit) covering a large portion of the plant (i.e., Mixing, Curing, and Finishing equipment, and including plant-wide limits). The facility also has four more narrowly focused NSR permits:

- a permit dated 5/28/81 (as amended 4/11/89 and 9/6/00) which allows the burning of used oil in their Keeler Boiler (EU038),
- a permit dated 6/15/05 for construction and operation of a truck tire reclaim grinder (RG-1),
- a permit dated 2/6/08 for the construction and operation of a new quad-feed cold extruder, and
- a permit dated 6/12/08 for the modification of both the mixing area (i.e., replace the mixing chamber on Banbury 5) and curing area (i.e., increase the number of press cavities from 425 to 446).

## II. Emission Unit(s) / Process Description(s)

Upon completion of the proposed two-phase project, the current project will replace the function of (2) currently permitted Banbury mixers; BM2 (EU002) and BM3 (EU003) with (3) new Banbury mixers; BM110 (EU0110), BM111 (EU0111), and BM112 (EU0112). In Phase 1, BM3 and ancillary equipment<sup>1</sup> will be decommissioned and BM110 will be installed. In Phase 2, BM2 and ancillary equipment<sup>2</sup> will be decommissioned, and BM111 and BM112 will be installed.

Reportedly the goal of the current project is to allow Goodyear-Danville to produce silica-based (truck tire) treads. Characteristically, these treads have a lower rolling resistance (LRR) than their traditional counterparts for improved fuel economy. In order to ensure that the silica in the given rubber compound formulation becomes an integral part of the rubber matrix on a molecular level, “coupling agents” (CA) are added to the recipes for the relevant rubber formulations. Generally, there are two classes of coupling agents; “high temperature coupling agents” (HTCA = recipe mixing temperatures greater than 300<sup>o</sup>F) and “low temperature coupling agents” (LTCA = recipe mixing temperatures from 250<sup>o</sup>F to 300<sup>o</sup>F).

As discussed below, based on the resulting changes in emissions, the LRR project is subject to PSD review for VOC and the source has proposed an RTO as BACT for this pollutant. For all other regulated NSR pollutants except PM<sub>2.5</sub>, based on 9VAC5-80-1605 (PSD applicability, Step 1), neither phase nor the total project is not subject to PSD review since none of the emission increases is “significant” as defined in 9VAC5-80-1615C. For PM<sub>2.5</sub>, based on the PSD Step 2 process, the Net Emissions Increase of PM<sub>2.5</sub> for the project is less than “significant.”

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<sup>1</sup> The most notable ancillary equipment to be removed in Phase 1 is the pelletizer associated with BM3. This pelletizing function is not being replaced.

<sup>2</sup> Similarly, the most notable ancillary equipment to be removed in Phase 2 is the pelletizer associated with BM2. This pelletizing function is not being replaced and at the completion of Phase 2 there will no longer be any pelletized rubber produced at Danville.

In accordance with the 2002 PSD permit, before the LRR project, a portion of the truck tires manufactured at Goodyear-Danville already included both high temperature and low temperature coupling agents. The permitting strategy in the 2002 permit addressed the then current 9 Banbury mixers in the mixing area (BM1 thru BM9) as a group. Therefore, since some members of that group are being removed as part of the LRR project, the current permit includes a two phased reduction in scope of the 2002 applicable requirements and this is being processed as a concurrent significant amendment (i.e., coincident with Phase 1 of the LRR project, the 2002 mixing area fleet is reduced to 8 mixers (BM1, 2 & 4 thru 9) and coincident with Phase 2 of the LRR project, the 2002 mixing area fleet is reduced further to 7 mixers (BM1 & 4 thru 9)). Goodyear has indicated that, among other factors, the implementation of Phase 2 is contingent on the market success of the LRR truck tires produced via Phase 1. Therefore, the current permit is developed using the following structure:

- Section I = Phase 1 of Low Rolling Resistance Project applicable requirements
- Section II = Phase 2 of Low Rolling Resistance Project applicable requirements
- Section III = Significant Amendment of 9/4/2002 permit applicable requirements with two versions of each amended condition (e.g., Condition 40.A and 40.B; Version “A” applies during Phase 1 of the LRR project and version “B” applies during Phase 2)
- Section IV = General Conditions.

Emissions for the LRR project are principally VOC, and PM10/PM2.5. Small amounts of CO, SO<sub>2</sub>, NO<sub>x</sub>, lead, and CO<sub>2e</sub> are also emitted due to natural gas combustion in the RTO and associated emissions increases from the site’s boiler plant. Emissions calculations are shown Attachment 1 to this analysis.

### **III. Regulatory Review**

#### **A. 9 VAC 5 Chapter 80, Part II, Article 6 – Minor New Source Review**

The provisions of Article 6<sup>3</sup> apply throughout Virginia to (i) the construction of any new stationary source, (ii) the construction of any project (which includes the affected emissions units), and (iii) the reduction of any stack outlet elevation at any stationary source. The application is for a change that meets the definition of “project” contained in 9VAC5-80-1110 C. To be exempt from permitting, the regulations provide that a project must be exempt under both the provisions of 9VAC5-80-1105 B through D as a group and the provisions of 9VAC5-80-1105 E and F. The project has no affected emissions units listed in 9VAC5-80-1105 B.

In determining if a project is exempt under 9VAC5-80-1105 D, a calculation of the uncontrolled emission rate (UER) increase from the project is required. The project’s increase is the sum of the UER increases from each affected emissions unit not listed in 9VAC5-80-1105 B. An emissions unit’s increase is the difference between the new UER after the project (NUE) and the current UER (CUE) for that emissions unit and cannot be less than zero.

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<sup>3</sup> Language is paraphrased from 9VAC5-80-1100.

As discussed in Section **Error! Reference source not found.III.B** below, VOC from the LRR project is subject to permitting under Article 8, Major New Source Review. In accordance with 9VAC5-80-1100 H, the provisions of Article 6 are applicable to sources "...to the extent that such sources and their emissions are not subject to the provisions of the major new source review program." Therefore, VOC are not subject to Article 6 review.

As shown in Attachment 1 to this analysis and summarized in the Table 1 below<sup>4</sup>, the project's increase for PM10 and PM2.5 exceeds the respective permitting threshold; therefore, the project is subject to the permitting requirements of Article 6 for these pollutants.

Table 1: Article 6 Applicability

|                   | CUE (TPY) | NUE (TPY) | Increase (TPY) | Exemption (TPY) |
|-------------------|-----------|-----------|----------------|-----------------|
| SO <sub>2</sub>   | 0         | 0.0       | 0.0            | 10              |
| PM10 <sup>5</sup> | 0         | 34.4      | 34.4           | 10              |
| PM2.5             | 0         | 34.4      | 34.4           | 6               |
| CO                | 0         | 5.3       | 5.3            | 100             |
| NOx               | 0         | 6.4       | 6.4            | 10              |

As described in Section III.E, the affected emissions units are in a source category subject to a standard promulgated pursuant to 40 CFR 63 (Subpart XXXX). Therefore, the project is exempt from the state toxics rule (9 VAC 5-60 Article 5).

**B. 9VAC5 Chapter 80, Part II, Article 8 - PSD Major New Source Review and Article 9 – Nonattainment Area Major New Source Review**

**Background:**

VOC from rubber compound mixing may be characterized by two components; (1) traditional VOC (i.e., carbon compounds as defined in 9VAC5-10-20) and (2) VOC as ethanol. The emissions of traditional VOC are calculated based on Rubber Manufacturer Association (RMA) emission factors<sup>6</sup> and rubber throughputs.

VOC as Ethanol: Since approximately 2000, the tire manufacturing industry has acknowledged that while neither silica nor coupling agents alone contain VOC, a chemical reaction between the ethoxy groups in the CA and moisture on the surface of the silica can result in formation and liberation of ethanol. This reaction is temperature dependent, and, based on chemical balance, a maximum of 4 mols of ethanol are

<sup>4</sup> See Potential-BM10 Worksheet for PM10, and PM2.5 from Banbury mixer emissions without fabric filter reduction. See RTO-1 Worksheet for other pollutants (from natural gas combustion in RTO).

<sup>5</sup> NUE BM10 only; PTE BM10 (with fabric filter) = 0.34 tpy; PTE BM10 = PTE BM11 = PTE BM12; and PM2.5 = PM10.

<sup>6</sup> These RMA factors are the basis of the AP-42, Chapter 4.12 emission factors and are based on industry test data for the 6 rubber compound types used to produce the various components of a tire (e.g., treads, sidewalls, belts, etc)

available for emission. Goodyear testing indicates the temperature dependence may be characterized in 3 temperature bands as follows:

- At temperatures greater than 300<sup>o</sup>F<sup>7</sup>, 3 of the 4 theoretical maximum mols are formed;
- Between 250<sup>o</sup>F and 300<sup>o</sup>F, 1 of the 4 mols is formed: and
- Below 250<sup>o</sup>F, ethanol is not expected to form

Of the maximum 4 mols, ethanol not formed at mixing is expected to be formed and emitted at curing where bulk temperatures in tire curing presses routinely exceed 300<sup>o</sup>F.

As discussed in Section IV below, based on the PSD BACT review, Goodyear-Danville is proposing an RTO to control VOC<sup>8</sup> from the new Banbury mixers. The draft permit requires that the RTO be operated when ethanol emissions are expected from the mixing<sup>9</sup>. Based on permit limits for similarly designed Banbury mixers<sup>10</sup> the attached emission calculates are based on an RTO control efficiency 98% and a capture efficiency of 84%<sup>11</sup>.

**Applicability:**

As designated in 9VAC5-20-205, Danville is a PSD area for all pollutants. Goodyear-Danville is a PSD major source. A major modification for a PSD source is defined in 9VAC5-80-1615 as “any physical change in or change in the method of operation of a major stationary source that would result in a significant emissions increase of a regulated NSR pollutant, and a significant net emissions increase of that pollutant from the major stationary source.” A project is a major modification for a regulated NSR pollutant if it satisfies all of the following:

1. the project occurs at an existing major source;
2. the project causes a significant emissions increase (SEI); and
3. the project causes a significant net emissions increase (SNEI).

Step 1 of determining if a major modification will occur is to sum all of the emission increases associated with the project for each pollutant. If the result for a pollutant is less than the significant emissions rate, then there is not a significant increase and a major modification has not occurred for that pollutant. For pollutants that exceed the significant emissions rate, another step is required to determine if a significant net emissions increase has occurred.

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<sup>7</sup> Up to temperatures of approximately 330<sup>o</sup>F (i.e., the maximum RMA recipe mix temperature for rubber compounds 1 thru 6)

<sup>8</sup> Both traditional VOC and VOC as ethanol

<sup>9</sup> Uncontrolled VOC as ethanol (> 500 tpy per mixer) is expected when mixing HTCA and LTCA. Uncontrolled, traditional VOC emissions based on RMA factors are approximately 6 tons/yr.

<sup>10</sup> 370 liter mixers with twin screw roller die discharge at Goodyear’s Lawton, Oklahoma facility

<sup>11</sup> Lawton capture and control values are supported by site-specific testing.

Step 2 involves summing all of the emission increases associated with the project, and summing all of the other creditable increases and decreases in actual emissions made at the facility during the contemporaneous time period. If the result is greater than the significant emission rate, then a major modification would occur and the project is subject to PSD permitting.

As described in Section II above, the LRR project is being proposed in two distinct phases, and there is some question about viability of Phase 2. Therefore, PSD applicability is considered at two points in time; (1) at the completion of Phase 1, and (2) at the completion of the project (i.e., Phase 1 + Phase 2). Each determination is based on the calculations as shown in Attachment 1 to this analysis and summarized in the following tables.

Table 2: Article 8 Applicability (Phase 1 complete) Step 1

|                   | Increase (TPY) | SER* (TPY) | Subject to Review? (Y/n) |
|-------------------|----------------|------------|--------------------------|
| SO <sub>2</sub>   | 0.7            | 40         | n                        |
| PM                | 5.2            | 25         | n                        |
| PM10              | 5.2            | 15         | n                        |
| PM2.5             | 5.2            | 10         | n                        |
| CO                | 10.9           | 100        | n                        |
| NOx               | 24.6           | 40         | n                        |
| VOC <sup>12</sup> | 1258.2         | 40         | <b>Y</b>                 |
| Lead              | 4.9e-4         | 0.6        | n                        |
| CO2e              | 15,702         | 75,000     | n                        |

\* SER = Significant Emissions Rate

Table 3: Article 8 Applicability (Phase 1 complete) Step 2

|     | Increase (TPY)<br>A | Contempo* (TPY)<br>B | Net* (TPY)<br>C = A-B | SER* (TPY) | Subject to Review? (Y/n) |
|-----|---------------------|----------------------|-----------------------|------------|--------------------------|
| VOC | 1258.2              | 13.6                 | 1271.8                | 40         | <b>Y</b>                 |

\* SER = Significant Emissions Rate

\* Contempo = sum of contemporaneous increases and decreases

\* Net = Significant Emissions Rate

<sup>12</sup> Goodyear-Danville has chosen to show the project total increase in VOC as ethanol from the curing area as part of their Phase 1 emission calculations. This is conservative for permit applicability purposes.

Table 4: Article 8 Applicability (Phase 2 complete) Step 1

|                   | Increase (TPY) | SER* (TPY) | Subject to Review? (Y/n) |
|-------------------|----------------|------------|--------------------------|
| SO <sub>2</sub>   | 0.7            | 40         | n                        |
| PM                | 13.6           | 25         | n                        |
| PM10              | 13.6           | 15         | n                        |
| PM2.5             | 13.6           | 10         | <b>Y</b>                 |
| CO                | 10.9           | 100        | n                        |
| NO <sub>x</sub>   | 24.6           | 40         | n                        |
| VOC               | 1445.5         | 40         | <b>Y</b>                 |
| Lead              | 1.3e-3         | 0.6        | n                        |
| CO <sub>2</sub> e | 15,702         | 75,000     | n                        |

\* SER = Significant Emissions Rate

Table 5: Article 8 Applicability (Phase 2 complete), Step 2

|       | Increase (TPY)<br>A | Contempo* (TPY)<br>B | Net* (TPY)<br>C = A-B | SER* (TPY) | Subject to Review? (Y/n) |
|-------|---------------------|----------------------|-----------------------|------------|--------------------------|
| PM2.5 | 13.6                | -19.1                | -5.5                  | 10         | n                        |
| VOC   | 1445.5              | 11.0                 | 1456.5                | 40         | <b>Y</b>                 |

\* SER = Significant Emissions Rate

\* Contempo = sum of contemporaneous increases and decreases

\* Net = Net Emissions Rate

As shown, VOC emissions are subject to PSD review at both the completion of Phase 1 and at the completion of the LRR project.

PM2.5 emissions after Step 1 of Phase 2 would be subject to review, principally due to the increase in carbon black handling required by the two new mixers in this phase. However, when the contemporaneous changes in Step 2 of Phase 2 are considered, PM2.5 nets out of PSD review. A consequence of this outcome is that since the contemporaneous period is defined in part as ending when the last emissions unit approved as part of a project begins to emit, conceivably, future increases in PM2.5 emissions at the Goodyear-Danville facility could change the outcome of the netting demonstration. Therefore, the draft permit includes a condition that requires that, until the end of the contemporaneous period, the permittee must submit a revised netting calculation anytime there is an increase in PM2.5 at the site.

Greenhouse Gases (9 VAC 5 Chapters 80 and 85)

As discussed previously in this section, the project is a major modification subject to PSD review. Therefore, greenhouse gases (GHG) is a pollutant that must be considered for regulation as a “regulated NSR pollutant” for the purpose of BACT. GHG is subject to

BACT for a major modification if the project causes an increase in CO<sub>2</sub> equivalents<sup>13</sup> (CO<sub>2</sub>e) of at least 75,000 tons per year. The calculation for the increase caused by the project follows the SEI and SNEI calculations for other pollutants. First, the project must cause an emissions increase of 75,000 tons or more. Second, the project must cause a net emissions increase at least 75,000 tons. As shown in the tables above GHG (i.e., CO<sub>2</sub>e) is not subject to review.

C. 9 VAC 5 Chapter 50, Part II, Article 5 - NSPS

Not applicable. Per 40 CFR 60.540, NSPS Subpart BBB applies to four named types of cementing operations (i.e., undertread, sidewall, tread end, and bead), green tire spraying, and three named Michelin operations. None of these operations are part of the mixing process area at Goodyear-Danville.

D. 9 VAC 5 Chapter 60, Part II, Article 1 - NESHAPS

Not applicable. Goodyear's Danville facility does not include any emissions units subject to one of the source types covered by 40 CFR 61.

E. 9 VAC 5 Chapter 60, Part II, Article 2 - MACT

Goodyear's Danville facility is subject to the Tire MACT (Subpart XXXX) and the applicable requirements are in the current Title V permit dated 11/27/07. The LRR project represents additional sources of emissions subject to XXXX. (See also Section X)

F. State-Only Enforceable Under 9 VAC 5-80-1120 F

Not applicable. No conditions in the current draft are derived from the odor or toxic regulations.

#### IV. Best Available Control Technology Review (BACT) (9VAC5-50-280 and 9VAC5-50-260)

A. Article 8 BACT

The Article 8 control technology review regulations require a PSD major modification to apply Best Available Control Technology (BACT) for each regulated NSR pollutant for which a project would result in a major modification at the source, and this requirement applies to each emissions unit at which a net emission increase in that pollutant would occur as a result of a physical change or change in the method of operation in the unit. As shown in section **Error! Reference source not found.III.B** above, the only pollutant for the LRR project at Goodyear-Danville results in a major modification is VOC.

The permit application included the top-down BACT analysis for VOC as required by the EPA guidance document "New Source Review Workshop Manual: Prevention of Significant Deterioration and Nonattainment Area Permitting" (NSR manual).

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<sup>13</sup> CO<sub>2</sub>e is the emission rate of each GHG species multiplied by its respective global warming potential (GWP) from 40CFR Part 98.

Step 1: Identify all control technologies:

The permit application identified Regenerative Thermal Oxidation/Regenerative Catalytic Oxidation (RTO/RCO), and Condensers as possible add-on emissions controls for VOC and Good Design/Operation (GD/O) as the base case for the mixers. DEQ's independent review of the RACT/BACT/LEAR Clearinghouse (RBLC) concurs that oxidation and GD/O are available options for these units.

Step 2: Eliminate technically infeasible options

In their permit application Goodyear-Danville did not eliminate any of their identified control technologies as infeasible.

Step 3: Rank remaining control technologies by effectiveness

Goodyear-Danville ranked this group of control technologies as follows:

|                        |           |
|------------------------|-----------|
| RTO <sup>14</sup> /RCO | 98%       |
| Condenser              | 75%       |
| GD/O                   | base case |

Steps 4 and 5: Evaluate most effective controls and document

Consistent with the procedures in the NSR manual, Goodyear-Danville selected "...the top control alternative (and therefore) need not provide cost...information..."<sup>15</sup> Therefore, Goodyear-Danville proposed an RTO at 98% as BACT for VOC from mixing. DEQ concurs.

However, obviously an air pollution control device only reduces those emissions that are captured and routed to it. Therefore, DEQ requested that Goodyear-Danville consider an installation that could provide 100% capture. In their response, based on EPA's Fact Sheet for Permanent Total Enclosures (PTE) (EPA-452-F-03-033), Goodyear argues that a PTE is infeasible principally due to required OSHA standards.<sup>16</sup> Next, the application notes that based on current RBLC data, Goodyear is the only tire manufacturer currently employing RTOs to control this emission stream<sup>17</sup>. Documented capture efficiencies at other Goodyear facilities range from 63%<sup>18</sup> to the 84% value at Goodyear-Lawton. Reasoning that because the Banbury mixers at Goodyear-Danville will be "...identical in configuration to those utilized in Lawton..." and that "...the ventilation system for the Danville site will utilize a nearly identical control strategy..." it is considered reasonable that this capture efficiency be considered BACT for the capture portion of the air pollution reduction system.

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<sup>14</sup> The maximum RTO control efficiency listed in RBLC is 95% but Goodyear-Lawton has demonstrated compliance with the permit specified control efficiency of 98%

<sup>15</sup> NSR manual, Pg B.8

<sup>16</sup> DEQ-BRRO concurs with this interpretation of the EPA fact sheet.

<sup>17</sup> DEQ-BRRO concurs

<sup>18</sup> The current permit application on page 3-2 indicates this capture efficiency at Goodyear-Fayetteville is based on engineering analysis

B. Article 6 BACT

Article 6 BACT applicability is pollutant-by-pollutant based on the permitting applicability thresholds. Each affected emissions unit emitting a pollutant that is subject to permitting shall apply BACT for that pollutant (9VAC5-50-260 C). As shown in Table 1 above, PM10 and PM2.5 are not exempt from Article 6 permitting and therefore are subject to BACT review. Goodyear-Danville is installing fabric filters, which are considered BACT, to control these particulate emissions.

C. Reassessment of BACT for both Article 6 and Article 8

For phased construction projects, both Articles 6 and 8<sup>19</sup> essentially require BACT be reviewed (and modified as appropriate) within 18 months prior to the commencement of construction of each independent phase of construction. Section II in the draft permit includes this applicable requirement for phase 2 of the LRR project.

**V. Combination of Permit Program Requirements**

This combined permit document has the implementing program regulatory citation for each condition, has the most recent effective date of each condition, and notes that each condition is state and federally enforceable unless marked SOE (9VAC5-80-1915D.1-3 and 9VAC5-80-1255D.1-3).

A. Sections I, II and IV

All conditions in Section I (LRR phase 1) and Section II (LRR phase 2) have the effective date as the signature of the permit. This also applies to the first two conditions in Section IV since these are tied directly to the LRR phases.

B. Section III

As discussed in Sections II and **Error! Reference source not found.XI.B** of this analysis, Section III of the permit addresses the significant permit amendment that reduces the scope of the 2002 permit; timed to be concurrent with the two LRR phases.

**VI. Summary of Actual Emissions Increase**

Actual emissions increases and net increases by phase are shown in Tables 2 through 5 in Section III.B above.

**VII. Dispersion Modeling**

A. Regulated Pollutants

Article 8 includes a preconstruction air quality analysis requirement for modifications for each pollutant which results in a significant net emissions increase. The only regulated NSR pollutant above its applicable PSD significant emission rate is VOC. There are no air dispersion modeling requirements for the LRR project since EPA has not yet provided appropriate tools to model VOCs for ozone NAAQS compliance. In the absence of modeling

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<sup>19</sup> at 9VAC5-80-260D and 9VAC5-80-1705D, respectively

results that could be used to estimate project impacts on surrounding air quality, a qualitative approach can be used to assess the need for additional monitoring.

Principally since Danville is in a geographic area that is considered “NO<sub>x</sub>-limited” in regard to ozone formation, the process of operating a monitoring network and collecting ambient data for up to one year prior to the submittal of a complete PSD application for the Danville facility is considered unnecessary.<sup>20</sup> There is an existing air quality monitor located in Caswell County, NC. Given the proximity and topographic similarities between the facility and monitor, along with the availability of very recent, complete data, the Cherry Grove monitor is considered representative of the air quality at the Danville site. For these reasons, the preconstruction monitoring requirement is considered satisfied.

#### B. Toxic Pollutants

Not applicable. Goodyear Danville is subject to the Rubber Tire Manufacturing MACT (40 CFR 63 Subpart XXXX). A facility subject to a MACT is exempted from review under the State Toxics regulations. Modeling is not required for a project that is exempt from the state toxics rule.

### VIII. Boilerplate Deviations

Permit Sections I, II and IV are developed using the current versions of the Skeleton NSR boilerplate and the Generic NSR boilerplate.

Permit Section III amends the language of the 2002 PSD permit as generally described in Section V.B above. See also, Section XI.B below.

### IX. Compliance Demonstration

#### A. VOC/ethanol

1. The following records are required in the draft permit to quantify the amount of ethanol available to be emitted:
  - a. MSDS for each coupling agent and sulfur donor used<sup>21</sup> (e.g., to determine the lb ETHANOL / lb CA)<sup>22</sup>,
  - b. lb CA / lb RUBBER<sup>22</sup>, and
  - c. lb CA / year<sup>22</sup>
2. The following records are required in the draft permit to verify the RTO control efficiency:
  - a. Initial stack tests (for both Phase 1 and Phase 2 equipment arrangements), and
  - b. On-going records of RTO combustion chamber temperature
3. The following records are required in the draft permit to verify the annual emissions:
  - a. lb RUBBER / year by mixer

<sup>20</sup> The subdivision (i.e., VII.A Regulated Pollutants), and in particular this sentence, is paraphrased from the revised Ambient Air Monitoring section of the permit application (dated 9/12/14). That section of the application was developed with DEQ CO guidance and review.

<sup>21</sup> For the 2002 permit amendments, MSDSs are also required. See also Section XI

<sup>22</sup> The language of the Phase 1 and Phase 2 recordkeeping parrots the recordkeeping required by the 2002 permit; adding the units of measure.

- b. Calculations of emissions by mixer, and
  - c. Calculations of emissions related to operation of each mixer
- B. PM10/PM2.5 - Stack tests may be requested to demonstrate compliance.
- C. Timing of Phases - The following notifications are required by phase:
- 1. Commencement of construction by mixer, and
  - 2. Startup dates of new mixers and shutdown dates of old mixers

**X. Title V Review - 9 VAC 5 Chapter 80, Part II, Article 1**

Goodyear-Danville has a Title V permit with an effective date 11/27/07. In accordance with 9VAC5-80-80 where an existing Title V permit would prohibit such operation, the owner must obtain a permit revision before commencing operation. Since the current Title V permit limits the VOC emissions to less than the allowable emission rates in the current draft permit, Goodyear-Danville must apply for and receive a revised Title V permit before commencing operation of LRR project equipment.

**XI. Other Considerations**

- A. Sulfur donors – As developed, the 2002 PSD permit considered two types of “coupling agents,” HTCA and LTCA. However, historically, the single raw material called “LTCA” has been used for two different functions (i.e., (1) the cross-linking reaction that ensures silica becomes part of the rubber matrix on a molecular level (i.e., “coupling agent mode”) and (2) increasing the sulfur concentration in the rubber compound for enhanced mechanical properties (i.e., “sulfur donor mode”). While reportedly sulfur donor mode is seldom implemented due to cost<sup>23</sup>, when sulfur donor mode is selected the rubber compounds have mix temperatures of less than 250<sup>0</sup>F. While as discussed above in Section III.B above, ethanol emissions during mixing of these compounds is negligible, all 4 mols of ethanol remain available for evolution when that rubber reaches curing. Therefore, the condition in the 2002 permit that limits Plant-wide Emissions ethanol related to the non-LRR project mixers has the variable SD added in order to account for the use of “LTCA” in the sulfur donor mode.

For the LRR project’s new BMs, RTO operation is only required when ethanol emissions are expected (i.e., when HTCA or LTCA (coupling agent mode) are being processed. It is noted that, as stated in the amendment dated 9/12/14 to the permit application, Goodyear does not anticipate an increased use of sulfur donor rubber compounds as a direct result of the installation of the new mixers.

- B. Changes made in the 2002 permit conditions
- (1) List the emissions units, by identification numbers/codes, and reduce the quantity as appropriate by phase for equipment that was previously permitted as a group.
  - (2) Reduce the allowable emissions for those “groups” as follows,

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<sup>23</sup> Goodyear has stated that simple sulfur compound addition can be accomplished in much more cost effectively ways than thru the application of the specifically purchased coupling agent formulations.

Condition 8<sup>24</sup> (44): Condition 8 set a limit on the annual pelletized rubber produced in BM2 and BM3 combined. As described in the current permit application, Condition 44A limits BM2 to the Phase 1 requested value; and Condition 44B eliminates pelletized rubber production at Goodyear-Danville.

Condition 11 (47): In order to support the then former PSD BACT determination, Condition 11 limited VOC from each of the 9 mixers to 21 tons/yr (i.e., 189 tons/yr). Condition 47A, reduces the number of mixers to 8 (i.e., 168 tons/yr); and Condition 47B reduces the number of mixers to 7 (i.e., 147 tons/yr).

Condition 13 (49): Condition 13 limited plant-wide ethanol emissions from the 9 mixers to 449 tons/yr (i.e., (a) mixers 4 and 7 at 1 ton/yr each, (b) the remaining 7 mixers at 21 tons/yr each (i.e., subtotal from mixing = 149 tons/yr), and (c) curing at 300 tons/yr total.)<sup>25</sup>. Condition 49A reduces this plant-wide to 385.7 tons/yr<sup>26</sup> after Phase 1 is complete; and Condition 49B reduces this plant-wide to 322.4 tons/yr<sup>27</sup> when the project is complete.

- (3) Update the regulatory citations.
- (4) Include additional specification as required (e.g., explicit temperature range for LTCA).
- (5) Remove construction-related notifications associated with the initial 2002 project.

## **XII. Public Participation**

### **A. Public Information Briefing**

1. In accordance with 9VAC5-80-1775, on 1/21/14 in the Danville Register & Bee, Goodyear notified the public of the required public information briefing. That was held on 3/3/14. Due to inclement weather, BRRO participated in that meeting via conference call.

### **B. Public Hearing TBD**

### **C. Documents Concerning Public Comment Period TBD**

## **XIII. Notifications of Other Government Agencies**

### **A. Local Zoning**

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<sup>24</sup> This Condition number (i.e., 8) is as listed in the 9/4/02 permit; the following condition number (i.e., 44) is the revised applicable requirement in the current draft permit. *Typical*

<sup>25</sup> See Permit application dated February 2000 - Public Access version, Tab 5 (Emission Quantification), Table 5-1 (Banbury Mixer Ethanol Emission Limits) and Section 5.2.3 (Curing Ethanol-Emissions Limit)

<sup>26</sup> (i.e., [(2)(1tpy) + (6)(21tpy)] + [(2)(1tpy) + (6)(21tpy)] ÷ {(2)(1tpy) + (7)(21tpy)} x 300 tpy) = 385.7 tpy

<sup>27</sup> (i.e., [(2)(1tpy) + (5)(21tpy)] + [(2)(1tpy) + (5)(21tpy)] ÷ {(2)(1tpy) + (7)(21tpy)} x 300 tpy) = 322.4 tpy

Because the proposed LRR project constitutes a major modified source subject to air permitting regulations, a local governing body notification form is required in accordance with Department policy and section 10.1-1321.1 of the Code of Virginia. On 12/20/13, the City of Danville, Division Director of Planning - Zoning Administrator certified that the proposed facility is fully consistent with all applicable local ordinances.

**B. Federal agencies**

**1. EPA**

In accordance with 9 VAC 5-80-1765, there are specific notification requirements to advise EPA of sources impacting federal class I areas. Accordingly, a copy of the permit application and the initial letter of determination are being provided to EPA. EPA will be provided with a copy of the draft permit and will be notified of the public comment period and the final determination on permit issuance.

**2. Federal Land Managers**

The facility to be modified is located approximately 112 km from the James River Face Wilderness Area (USFS) and 172 km from the SNP (NPS). In accordance with agreements between DEQ, the SNP, and the Jefferson National Forest, FLMs request review of all PSD permits within the state, regardless of distance from the designated Class I areas<sup>28</sup>. On 5/29/13, the US Forest Service, the National Park Service and the Fish and Wildlife Service were notified of the LRR project application. Each Service responded that they did not need a “pre-application” conference call for the project as described nor were they requesting any further analysis in regard to it.

**XIV. Recommendations**

It is recommended that the current draft be made available for public comment.

**Attachments**

Attachment 1: PSD Emission Calculations with BACT (082514) THB R2

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<sup>28</sup> Distances to Class I areas outside of Virginia: Linville Gorge Wilderness Area (USFS), 240 km; Dolly Sods Wilderness Area (USFS), 270 km; Otter Creek Wilderness Area (USFS), 273 km; and Swanquarter Wilderness (FWS) Area, 297 km away