

**WASHINGTON STATE DEPARTMENT OF ECOLOGY  
POST OFFICE BOX 47600  
OLYMPIA, WASHINGTON 98504-7600**

<b>IN THE MATTER OF:</b>	]	<b>NO. PSD 06-02, Amendment 1</b>
	]	
<b>WestRock CP, LLC</b>	]	<b>PROPOSED APPROVAL</b>
<b>801 Portland Avenue</b>	]	<b>OF PSD APPLICATION</b>
<b>Tacoma, Washington 98421</b>	]	

This approval is issued to the WestRock CP, LLC Tacoma Mill pursuant to the regulations set forth in the Washington Administrative Code (WAC) 173-400-700 through 750. Tacoma Mill ownership was acquired from the Simpson Tacoma Kraft Company (Simpson) by RockTenn CP, LLC in May 2014, and, on September 1, 2015, RockTenn CP, LLC became WestRock CP, LLC. The source will be herein referred to as the Tacoma Mill. Based upon the complete application submitted by Simpson dated September 2006, the application for amendment dated March 24, 2010, a revised application dated August 2010 and received August 20, 2010, additional information dated August 7, 2014, and the technical analysis performed by the Washington State Department of Ecology (Ecology), Ecology now finds the following.

**FINDINGS**

1. On May 27, 2007, the Tacoma Mill was permitted to install a steam turbine generator driven by steam produced from No. 4 Recovery Boiler and No. 7 Power Boiler. This project allowed the Tacoma Mill to cogenerate and distribute electrical power.
2. On March 24, 2010, the Tacoma Mill applied to correct and change the original permit's nitrogen oxides (NO<sub>x</sub>) Best Available Control Technology (BACT) limit from 0.20 to 0.30 lb/MMBtu. An incompleteness letter was issued on May 28, 2010. A revised application was received on August 20, 2010. No changes other than the NO<sub>x</sub> BACT limit with its associated annual NO<sub>x</sub> limit change were proposed.
3. The original NO<sub>x</sub> BACT limit was based on the expected performance of a new overfire air (OFA) system installed under a minor NSR permit issued shortly before the original PSD permit, but not well tested at that time. The new system did not reduce NO<sub>x</sub> emissions in the manner predicted by the vendor, resulting in this permit modification request. Additional information provided by the Tacoma Mill to EPA and Ecology in 2014 confirmed that the original permit's NO<sub>x</sub> limit was determined inappropriately using erroneous information.
4. The Tacoma Mill is located at 801 Portland Avenue in Tacoma, Washington. It is situated on a peninsula bordered by the mouth of the Puyallup River on the northeast, Inner Commencement Bay on the northwest, and the St. Paul CDF (former St. Paul Waterway) on the southwest. The mill manufactures bleached and unbleached kraft pulp and linerboard.
5. The Tacoma Mill is located within a Class II area that is in attainment for all national ambient air quality standards (NAAQS).

6. Ecology, EPA, and the Class I area Land Managers received the Tacoma Mill PSD permit modification application by March 29, 2010, and the revised application on August 20, 2010. Additional information was submitted on November 3, 2010, in a letter dated December 20, 2010, and additional information dated August 7, 2014.
7. The original project consisted of installation of:
  - A steam turbine and electrical generator rated at up to 60 MW.
  - Power distribution and overload protection equipment.
  - A building to house the turbine/generator.
  - Upgrades to the demineralizer system to produce the higher-quality boiler feedwater required for power generation.
  - A cooling tower to condense the turbine discharge steam that is not used in the process.
  - Boiler improvements to produce the higher pressure and temperature steam required for power generation. These improvements included adding tube area to the No. 7 Power Boiler superheater section, upgrading the pressure rating of the Recovery Boiler No. 4 generation bank, new pressure safety valves, and piping changes to handle higher pressure steam.
  - Upgrades to No. 7 Power Boiler to increase its Maximum Continuous Rated (MCR) steaming capacity from 300,000 lb/hr to 340,000 lb/hr. These included larger forced-draft and induced-draft fan motors, wood fuel feed system improvements, and various improvements to the ash handling, electrostatic precipitator, and other ancillary systems.
8. Because the Tacoma Mill is an existing major stationary source, any net emissions increase of a regulated pollutant greater than its Significant Emission Rate (SER) qualifies the proposed project as a major modification. As a result, the original project was subject to PSD review under WAC 173-400-700. Additionally, the original project was subject to federal PSD review because it qualified as a major modification under federal rules [40 CFR 52.21(b)(2)].
9. Potential regulated pollutants for the original project and Amendment 1 are shown in Table 1. They are NO<sub>x</sub>, carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), volatile organic carbon compounds (VOCs), particulates less than 10 microns in diameter (PM<sub>10</sub>), and particulates of any diameter (PM). Amendment 1 revises the future projected actual NO<sub>x</sub> emissions from No. 7 Power Boiler in accordance with the BACT limit correction.

**Table 1. Summary of Baseline and Projected Actual Emissions**

	<b>Original NO<sub>x</sub></b>	<b>Amendment 1 NO<sub>x</sub></b>	<b>CO</b>	<b>SO<sub>2</sub></b>	<b>PM<sub>10</sub><sup>3</sup></b>	<b>VOC</b>
<b>Short-Term Emission Rates (lb/hr)</b>						
Existing (annual average) <sup>1</sup>	65.9	65.9	81.5	84.1	12.5	5.1
Future (at MCR) <sup>2</sup>	119.1	178.6	208.4	87.5	22.6	12.0
Increase in hourly emissions	53.2	112.7	126.9	3.4	10.0	6.8
<b>Annual Emission Rates (tons)</b>						
Baseline years	2000–2001	2000–2001	2004–2005	2003–2004	1996–1997	2001–2002
Baseline emissions	289	289	357	368	55	23
Future potential emissions	522	782	913	383	99	52
Difference	233	493	556	15	44	30
PSD SER applicability trigger	40	40	100	40	15	40
PSD regulated?	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	No	<b>Yes</b>	No
1. .Estimated by dividing baseline annual emissions by 355 days of 24-hr operation. 2. Assumes 365 days/yr of operation at the boiler's Maximum Capacity Rating (MCR). 3. All PM/PM <sub>10</sub> is considered PM <sub>10</sub> for this permitting action						

10. Regulated pollutants with net emissions increases greater than their PSD SER are subject to regulation under PSD. For the original project, the PSD regulated pollutants are NO<sub>x</sub>, CO, and PM<sub>10</sub>. Amendment 1 only addresses the original permit's NO<sub>x</sub> limits.
11. The emissions of all air pollutants from the Tacoma Mill are subject to review under Chapter 173-400 WAC and Chapter 173-460 WAC. Chapter 173-400 WAC includes provision for PSD review (WAC 173-400-700). This permit considers only PSD pollutants that have a significant net emission increase due to the project when considered under PSD regulations. All other pollutants are regulated under state regulations by Ecology's Industrial Section.
12. The NSPS requirements of 40 CFR 60 Subpart Db currently apply to No. 7 Power Boiler, and were re-triggered by the boiler modifications. NSPS NO<sub>x</sub> limits are applicable because the boiler does not have a 10 percent annual capacity limit on use of natural gas in its federally enforceable NOC permit. The NOC does have a 10 percent annual capacity limit on use of oil. PM (PM<sub>10</sub>) emissions are limited to less than 0.085 lb/MMBtu. There are no NSPS requirements for CO. All emission limits are on a 30-day rolling average. Permit limits are equal to or lower than the NSPS maximums.
13. The project does not trigger any PSD permitting requirements for No. 4 Recovery Boiler.
14. BACT determinations are shown in Table 2. The NO<sub>x</sub> BACT limit was corrected from 0.20 to 0.30 lb/MMBtu by Amendment 1.

<b>Table 2. BACT Determinations</b>	
<b>Pollutant</b>	<b>No. 7 Power Boiler BACT Limit and Control Technology</b>
NO <sub>x</sub>	0.30 lb/MMBtu based on using proper combustion controls and OFA
Carbon monoxide (CO)	0.35 lb/MMBtu based on using proper combustion controls and OFA
PM and PM <sub>10</sub>	0.020 lb/MMBtu based on using an electrostatic precipitator
<b>Pollutant</b>	<b>Cooling Tower BACT Limit and Control Technology</b>
PM/PM <sub>10</sub>	Installation of a demister guaranteed to have a drift loss of less than 0.0005% of the recirculating water flow rate.

15. Allowable increases in emissions from the project will not cause or contribute to air pollution in violation of:

15.1. Any National Ambient Air Quality Standard (NAAQS). Table 3 shows NO<sub>x</sub> and CO impacts are below their respective NAAQS. For Amendment 1, a full impacts analysis was done for NO<sub>x</sub> because the project's NO<sub>x</sub> impact exceed its SER.

15.2. Any PSD increment consumption.

<b>Table 3. Maximum Predicted Criteria Pollutant Concentrations (µg/m<sup>3</sup>)</b>								
<b>Compound</b>	<b>Avg. Period</b>	<b>Project Maximum Concentration</b>	<b>SIL<sup>1</sup></b>	<b>PSD Monitoring De Minimis</b>	<b>Full Impacts Modeled Concentration</b>	<b>Background</b>	<b>Total Concentration</b>	<b>NAAQS WAAQS</b>
NO <sub>2</sub> <sup>2</sup>	1-hr	N/A <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	188
	Annual	2.9	1	14	43.3	28	71.3	100
CO	1-hr	195	2000	---	N/A <sup>4</sup>	---	---	10,000
	8-hr	97	500	575	N/A <sup>4</sup>	---	---	40,000
PM <sub>10</sub> (No. 7 PB only)	24-hr	4.8	5	10	N/A <sup>4</sup>	---	---	150
	Annual	0.24	1	---	N/A <sup>4</sup>	---	---	50
PM <sub>10</sub> (No. 7 PB & cooling tower)	24-hr	16 <sup>5</sup>	5	10	N/A <sup>4</sup>	---	---	150
	Annual	0.39	1	---	N/A <sup>4</sup>	---	---	50

- SIL per WAC 173-400-113(3).
- NO<sub>2</sub> was assumed to be 75% of the emitted NO<sub>x</sub> based on Section 6.2.3 of the EPA's Guideline on Air Quality Models (codified as Appendix W to 40 CFR Part 51).
- This amendment does not trigger any new requirements according to EPA PSD guidance, so the new 1-hr NO<sub>x</sub> standard is not triggered.
- Full impact modeling not required because SIL not exceeded.
- Ecology determined that this PM<sub>10</sub> SIL exceedance due to cooling tower drift did not trigger cumulative impact modeling requirements both because it was over water and because it could be an artifact of how the model predicts PM<sub>10</sub> drift as opposed to large water droplet drift from the cooling tower.

16. The distances and Q/D (Q=545 tpy) to the nearest five Class I areas are shown in Table 4. Federal Land Managers (FLMs) requested impacts analysis for the closest three for Amendment 1.

<b>Class I Area</b>	<b>Distance</b>	<b>Q/D Value (tpy/km)</b>
Alpine Lakes Wilderness Area	64	8.5
Glacier Peak Wilderness Area	118	4.6
Goat Rocks Wilderness Area	91	6.0
Mt. Rainier National Park	47	11.6
Olympic National Park	67	8.1

17. Allowable emissions will not cause a significant visibility impact in the surrounding Class I areas: The highest modeled impacts were 5.16 percent and 4.82 percent degradation in the Mt. Rainier National Park and Alpine Lakes Wilderness Area, respectively. The 98th percentile impact over three years at Mt. Rainier NP was 1.72 percent. FLM guidance considers this to be below the “concern” threshold.
18. The highest modeled deposition in the surrounding Class I areas is 0.0043 kilograms (kg) nitrogen and 0.0017 kg sulfur per hectare per year in the Alpine Lakes Wilderness Area. Both deposition levels are below the “concern” threshold in FLM guidance.
19. No significant effect on industrial, commercial, or residential growth in the area is anticipated as a result of this project.
20. Ecology finds all requirements for PSD have been satisfied. Approval of the PSD Amendment 1 application is granted subject to the following conditions.

## **APPROVAL CONDITIONS**

### **Emission Limits**

1. NO<sub>x</sub> emissions from No. 7 Power Boiler shall not exceed:
  - 1.1. 0.30 lb/MMBtu based on heat input value of the fuel on a 30-day rolling average.
  - 1.2. 782 tpy on a 12-month rolling total, calculated monthly.
2. CO emissions from No. 7 Power Boiler shall not exceed:
  - 2.1. 0.35 lb/MMBtu on a 30-day rolling average.
  - 2.2. 913 tpy on a 12-month rolling total, calculated monthly.
3. PM<sub>10</sub> emissions (filterable only) from Power Boiler No. 7 shall not exceed:
  - 3.1. 0.020 lb/MMBtu on a calendar day basis.
  - 3.2. 99 tpy on a 12-month rolling total, calculated monthly.
4. PM<sub>10</sub> emissions from the cooling tower shall not exceed four tpy on a 12-month rolling total, calculated monthly.

### **Initial Compliance Demonstration and Notification**

5. The Tacoma Mill shall notify Ecology in writing at least 30 days prior to initial start-up of the modified No. 7 Power Boiler and steam turbine.
6. For NO<sub>x</sub> emissions from the No. 7 Power Boiler exhaust stacks, the Tacoma Mill will demonstrate initial compliance with Condition 1.1 for Amendment 1:
  - 6.1. The Tacoma Mill will conduct a compliance test within 180 days after the effective date of Amendment 1.
  - 6.2. The compliance test will use a Continuous Emission Monitoring System (CEMS) that measures and records NO<sub>x</sub> emissions from No. 7 Power Boiler exhaust stacks.
  - 6.3. The CEMS will meet the requirements of Condition 14.1.
  - 6.4. For the compliance test, NO<sub>x</sub> emissions from No. 7 Power Boiler are continuously monitored.
    - 6.4.1. For not less than 24 consecutive operating hours.
    - 6.4.2. At an average firing rate as close to the rated capacity as practical. If this is less than 90 percent of the rated capacity, the reason shall be explained in the test report.

- 6.5. Determine compliance from the arithmetic mean of the NO<sub>x</sub> emissions data in lb NO<sub>x</sub>/MMBtu monitored pursuant to Condition 6.4, using a continuous 24-hour period of the compliance test.
- 6.6. The Tacoma Mill will submit a test plan to Ecology for approval at least 30 days prior to initial performance testing.
7. For CO emissions from No. 7 Power Boiler exhaust stacks, the Tacoma Mill will demonstrate initial compliance with Condition 2.1.
  - 7.1. The Tacoma Mill will have a compliance test conducted by an independent testing vendor within 60 days of achieving the maximum firing rate at which No. 7 Power Boiler will be operated, but not later than 180 days after initial start-up of the steam turbine.
  - 7.2. No. 7 Power Boiler is to be operated at an average firing rate as close to the rated capacity during the compliance test as practical. If this is less than 90 percent of the rated capacity, the reason shall be explained in the test report.
  - 7.3. Determine compliance using 40 CFR 60, Appendix A, Method 10, or equivalent concentration test method if approved in advance by Ecology.
  - 7.4. The Tacoma Mill will submit a test plan to Ecology for approval at least 30 days prior to initial performance testing.
8. For PM/PM<sub>10</sub> emissions from No. 7 Power Boiler unit exhaust stacks, the Tacoma Mill will demonstrate initial compliance with Condition 3.1.
  - 8.1. The Tacoma Mill will have a compliance test conducted by an independent testing vendor within 60 days of achieving the maximum firing rate at which No. 7 Power Boiler will be operated, but not later than 180 days after initial start-up of the steam turbine.
  - 8.2. No. 7 Power Boiler is to be operated at an average firing rate as close to the rated capacity during the compliance test as practical. If this is less than 90 percent of the rated capacity, the reason shall be explained in the test report.
  - 8.3. Determine compliance using 40 CFR 60, Appendix A, Method 5 front half, or equivalent test method if approved in advance by Ecology.
  - 8.4. For informational purposes only, also run 40 CFR 51, Appendix M, Method 202 for the back half.
  - 8.5. A typical mix of normal fuels such as wood, sludge, and oil shall be burned during the test period. This mix shall be listed in the test plan referenced in Condition 8.6.

- 8.6. The Tacoma Mill will submit a test plan to Ecology for approval at least 30 days prior to initial performance testing.
9. For the cooling tower, the Tacoma Mill shall demonstrate initial compliance by obtaining an affirmative report by the cooling tower drift eliminator manufacturer, based on an on-site inspection of the completed installation, that its product has been installed in accordance with its specifications to have a drift loss of less than 0.0005 percent of the recirculation water flow rate.

### **Compliance Monitoring and Testing**

10. For NO<sub>x</sub> emissions from No. 7 Power Boiler exhaust stacks, the Tacoma Mill will demonstrate compliance with Condition 1.1 and 1.2.
- 10.1. Monitor using a CEMS that measures and records NO<sub>x</sub> emissions from No. 7 Power Boiler exhaust stacks and that meets the requirements of Condition 14.1.
- 10.2. Calculate compliance with Condition 1.2 monthly.
11. For CO emissions from No. 7 Power Boiler exhaust stacks, the Tacoma Mill will demonstrate routine compliance with Conditions 2.1 and 2.2.
- 11.1. Monitor using a CEMS that measures and records CO emissions from the No. 7 Power Boiler exhaust stacks and meets the requirements of Condition 14.2.
- 11.2. Calculate compliance with Condition 2.2 monthly.
12. For particulate emissions from the No. 7 Power Boiler exhaust stacks, the Tacoma Mill will demonstrate routine compliance with Conditions 3.1 and 3.2.
- 12.1. PM<sub>10</sub> emission rates shall be tested monthly. Source testing may be reduced to quarterly if six consecutive months' tests are below 75 percent of the limitation. If any single source exceeds 75 percent of the limit, source testing shall revert to monthly until six consecutive months' tests are below 75 percent of the limit.
- 12.1.1. Testing shall be done using 40 CFR 60, Appendix A, Method 5 (front half only), or equivalent test method if approved in advance by Ecology.
- 12.1.2. Testing shall be done at a boiler-operating rate equal to or greater than 90 percent of the highest daily operating rate within the previous three months.
- 12.1.3. A single 1-hour test may be conducted in lieu of the normal three 1-hour tests.
- 12.1.4. For informational purposes only, once per year testing shall include 40 CFR 51, Appendix M, Method 202 for the back half, or equivalent test method if approved in advance by Ecology.

- 12.2. Compliance with Condition 3.2 shall be by calculation based on the average of the last three particulate tests done per Condition 12.1.
13. For particulate emissions from the cooling tower, the Tacoma Mill will demonstrate compliance with Condition 4 through monthly calculation of emissions. The calculation will be based on cooling tower operating factors such as recirculation rate, total dissolved solids (TDS), and tower design factors. The calculation procedure will be included in the Operation and Maintenance (O&M) manual per Condition 18.
14. CEMS:
- 14.1. Installation, calibration, maintenance, and operation of the CEMS for NO<sub>x</sub> compliance will satisfy the requirements contained in 40 CFR 60.48b(b) through 40 CFR 60.48b(f).
- 14.2. CEMS for CO will satisfy the requirements contained in 40 CFR Part 60, Appendix B, Performance Specification 4 and 40 CFR Part 60, Appendix F, Quality Assurance Procedures.
- 14.3. Required Relative Accuracy Test Audits for the NO<sub>x</sub> and CO CEMS shall be performed during the same test periods.

### **Recordkeeping, Notification, and Reporting**

15. The Tacoma Mill shall submit reports to Ecology concerning routine compliance monitoring and testing in Conditions 10 through 14.
- 15.1. The monthly reports should include:
- 15.1.1. NO<sub>x</sub> daily averages, daily 30-day rolling averages, and maximum 30-day rolling average for the month. Report in units of lb/MMBtu.
- 15.1.2. CO daily averages, daily 30-day rolling averages, and maximum 30-day rolling average for the month. Report in units of lb/MMBtu.
- 15.1.3. PM<sub>10</sub> source test results collected during the month, if any. Report in units of lb/MMBtu and gr/dscf corrected to seven percent O<sub>2</sub>.
- 15.1.4. NO<sub>x</sub>, CO, and PM<sub>10</sub> monthly totals and rolling 12-month totals. Report in units of tons.

NO<sub>x</sub> and CO calculations shall be made by multiplying the daily average concentration (lb/MMBtu) times daily heat input (MMBtu), dividing by 2000 lb/ton to convert to tons, and summing over the appropriate time period.

PM<sub>10</sub> calculations shall be made by multiplying the average concentration of the three previous source tests (lb/MMBtu) times daily heat input (MMBtu), dividing by 2000 lb/ton to convert to tons, and summing for the appropriate time period.

15.1.5. Any exceedances per Condition 16.

15.2. All results of CEM RATAs shall be submitted within 30 days of availability.

15.3. All records pertaining to emissions shall be retained for a period of not less than five years.

16. Each occurrence of NO<sub>x</sub>, CO, or PM<sub>10</sub> emissions measured in excess of the limits shall be reported in writing to Ecology. Such reports shall as a minimum include:

16.1. The time of the occurrence.

16.2. Magnitude of excess from the emission limit.

16.3. The duration of the excess.

16.4. The probable cause.

16.5. Corrective actions taken or planned.

16.6. Any agency contacted.

### **Standard Requirements**

17. Sampling ports and platforms shall be provided on the No. 7 Power Boiler's stacks, after any final pollution control device. The ports shall meet the requirements of 40 CFR 60, Appendix A, Method 1. Adequate, permanent, and safe access to the test ports shall be provided.

18. Within 90 days of start-up of the steam turbine, the Tacoma Mill shall identify operational parameters and practices that will constitute "proper operational practices" of the wood waste fired boiler relative to compliance with the conditions of this permit. These operational parameters and practices shall be included in an O&M manual for the facility. The O&M manual shall be maintained and followed by the Tacoma Mill and shall be available for review by Ecology or EPA. If a failure to follow the requirements of the manuals results in excess emissions, that failure may be considered credible evidence that the event was caused by poor or inadequate operation or maintenance.

19. Access to the source by Ecology or the EPA shall be permitted upon request. Failure to allow such access is grounds for an enforcement action under the federal Clean Air Act and the Washington State Clean Air Act.

20. This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of the final approval, or if construction of the facility is discontinued for a period of eighteen (18) months, unless Ecology extends the 18-month period, pursuant to 40 CFR 52.21(r)(2) and applicable EPA guidance.

21. A PSD permit, any conditions contained in a PSD permit, or the denial of PSD permit may be appealed to the pollution control hearings board as provided in Chapter 43.21B RCW.

**Prepared by:**

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Date

**Approved by:**

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Washington State Department of Ecology

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Date