STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

Central Maine & Quebec Railway US Inc. **Piscataquis County** **Milo, Maine** **A-1131-71-B-A**	**Departmental** **Findings of Fact and Order** **Air Emission License** **Amendment #1**

FINDINGS OF FACT

After review of the air emission license amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

Central Maine & Quebec Railway US Inc. (CMQR) was issued Air Emission License A-1131-71-A-N on May 17, 2018, for the operation of emission sources associated with their railcar cleaning and maintenance facility.

CMQR has requested an amendment to their license in order to:

1. Revise the Best Available Control Technology (BACT) analysis for the railcar cleaning operation;
2. Replace the previously licensed Boiler #1 with a different unit.

The equipment addressed in this license is located at 18 B&A Avenue, Milo, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license amendment:

Process Equipment

Equipment	Pollution Control Equipment
Car Cleaning Lines #1 - #4	Flare #1

Fuel Burning Equipment

Equipment	Max. Capacity (MMBtu/hr)	Maximum Firing Rate (scfh)	Fuel Type	Date of Install.	Stack #
Boiler #1[a]	4.1	1,594	Propane	2019	2
Flare #1	24.5	equivalent to 9,500	Propane (pilot)	2019	N/A

[a] Replaces the previously licensed Boiler #1.

C. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the "Significant Emission" levels as defined in the Department's *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

Pollutant	Current License (TPY)	Future License (TPY)	Net Change (TPY)	Significant Emission Levels
PM	0.8	6.7	+5.9	100
PM_{10}	0.8	6.7	+5.9	100
SO_2	0.0	10.0	+10.0	100
NO_x	2.2	11.3	+9.1	100
CO	0.5	35.1	+34.6	100
VOC	49.9	49.9	-0-	50

This modification is determined to be a minor modification and has been processed as such.

D. Facility Classification

With the annual facility-wide SO_2, VOC, and HAP emission limits, the facility is licensed as follows:

- As a synthetic minor source of air emissions, because the licensed emissions are below the major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

Emissions of VOC and HAP are licensed above 80% of the major source threshold. Therefore, this facility is classified as an "80% Synthetic Minor" for the purpose of determining the minimum required compliance inspection frequency in accordance with Maine's Compliance Monitoring Strategy.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

B. Boiler #1

The previously listed Boiler #1 was never installed. The boilers used to provide heat and hot water to the building housing the railcar cleaning operation are each less than 1.0 MMBtu/hr and therefore considered insignificant activities. This license amendment removes conditions associated with the previously issued Boiler #1.

However, CMQR does plan to install another boiler to generate steam to facilitate the purging of vapors from railcars prior to moving them into the wash bay. This boiler will carry the designation of "Boiler #1." Boiler #1 is a new (2019) propane-fired boiler rated at 4.1 MMBtu/hr.

1. BACT Findings

Following is a BACT analysis for control of emissions from Boiler #1.

a. Particulate Matter (PM, PM_{10})
CMQR has proposed to burn only low-ash content fuels (propane) in Boiler #1. Additional add-on pollution controls are not economically feasible.

BACT for PM/PM_{10} emissions from Boiler #1 is the firing of propane fuel and the emission limits listed in the tables below.

b. Sulfur Dioxide (SO_2)
CMQR has proposed to fire only propane in Boiler #1. The use of this fuel results in minimal emissions of SO_2, and additional add-on pollution controls are not economically feasible.

BACT for SO_2 emissions from Boiler #1 is the firing of propane fuel and the emission limits listed in the tables below.

c. Nitrogen Oxides (NO_x)
CMQR considered several control strategies for the control of NO_x including Selective Catalytic Reduction (SCR), Selective Non-Catalytic Reduction (SNCR), water/steam injection, and flue gas recirculation (FGR).

None of the control strategies evaluated are available on propane-fired boilers as small as Boiler #1.

BACT for NO_x emissions from Boiler #1 is the firing of propane fuel and the emission limits listed in the tables below.

d. Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)
CMQR considered several control strategies for the control of CO and VOC including oxidation catalysts and thermal oxidizers.

Oxidation catalysts and thermal oxidizers both have high capital, maintenance, and operational costs considering the size of the boiler in question. These controls were determined to not be economically feasible.

BACT for CO and VOC emissions from Boiler #1 is the firing of propane fuel and the emission limits listed in the tables below.

e. Emission Limits
The BACT emission limits for Boiler #1 were based on the following:

PM/PM_{10}	–	0.05 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
SO_2	–	0.018 lb/1000 gal based on AP-42 Table 1.5-1 dated 7/08
NO_x	–	13 lb/1000 gal based on AP-42 Table 1.5-1
CO	–	7.5 lb/1000 gal based on AP-42 Table 1.5-1
VOC	–	1 lb/1000 gal based on AP-42 Table 1.5-1
Visible Emissions	–	06-096 C.M.R. ch. 115, BACT

The BACT emission limits for Boiler #1 are the following:

Unit	Pollutant	lb/MMBtu
Boiler #1	PM	0.05

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #1	0.21	0.21	neg	0.58	0.34	0.04

2. Visible Emissions

   Visible emissions from Boiler #1 shall not exceed 10% opacity on a six-minute block average basis.

3. New Source Performance Standards (NSPS): 40 C.F.R. Part 60, Subpart Dc

   Due to its size, Boiler #1 is not subject to *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units,* 40 C.F.R. Part 60, Subpart Dc for units greater than 10 MMBtu/hr manufactured after June 9, 1989. [40 C.F.R. § 60.40c]

4. National Emission Standards for Hazardous Air Pollutants (NESHAP): 40 C.F.R. Part 63, Subpart JJJJJJ

   Boiler #1 is not subject to the *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*, 40 C.F.R. Part 63, Subpart JJJJJJ. Gas-fired boilers are exempt from 40 C.F.R. Part 63, Subpart JJJJJJ. A "gas-fired boiler" is defined as any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel. Periodic testing on liquid fuel shall not exceed a combined total of 48 hours during any calendar year. [40 C.F.R. § 63.11237]

C. Car Cleaning Lines #1 - #4

CMQR has installed two independent process lines for cleaning of railcars (Car Cleaning Lines #1 & #2) and may install two additional lines (Car Cleaning Lines #3 & #4). If more than 18 months elapse between startup of Car Cleaning Lines #1 & #2 and commencement of construction of Car Cleaning Lines #3 & #4, authorization to construct Car Cleaning Lines #3 & #4 becomes invalid and CMQR shall modify their license before proceeding to install them.

At maximum capacity, CMQR anticipates being able to clean up to 16 railcars per day. This process involves cleaning the interior of railcars with water and non-VOC containing

surfactants. These railcars have been used to transport various products including petroleum products and other VOC and HAP containing chemicals including, but not limited to, the following:

Butane	Gasoline	Fracking oil/sand	Acids
Propane	Distillate oil	Crude oil	Caustics
	Residual oil		Clay

CMQR has stated it is their intent to only accept railcars for cleaning that meet the empty container standard in *Hazardous Waste Management Rules*, 06-096 C.M.R. ch. 850.

Prior to commencing the cleaning process, the manways and other appurtenances will remain closed and sealed.

CMQR will remove any liquid or solid heels from the railcar. VOC/HAP containing liquids drained from the railcar shall be collected and stored in closed, air-tight containers.

Prior to entering the building for cleaning, each railcar containing flammable liquids or gases must be purged with air, nitrogen, or steam to ensure the railcar does not contain an explosive atmosphere which could pose a safety hazard. Emissions from the purging of railcars is addressed in the BACT section below.

After any VOC/HAP containing vapors are removed from the railcar, it is pulled into a bay of the cleaning building, and a vacuum system is attached. While pulling a slight vacuum on the railcar, the manway is opened. Collected gases are routed to the Vapor Reduction System. Cleaning heads are lowered into the railcar, and hydroblasting of the interior of the car commences.

Railcars most recently containing commodities listed in the Appendix to this air emission license may be processed. Appendix List 1 includes commodities that may be processed using work practice standards outlined in the BACT section below. They include acids, bases, low-volatility/low-HAP liquids and gases, and non-hazardous dry materials/slurries. Appendix List 2 includes commodities that are considered flammable liquids or gases, including gasoline and propane. Control of emissions from cleaning cars containing these materials is addressed in the BACT section below.

CMQR shall not clean railcars which most recently carried commodities not included in Lists 1 or 2 without prior written approval by the Department. The Department may require CMQR to apply for a license modification, including a detailed BACT analysis, to add commodities to either list. Some commodities (such as anhydrous ammonia) may require controls other than those specified by this license. To accommodate such cases, a List 3 may be added in the future to address commodities that require individual BACT determinations.

1. BACT

BACT for the car cleaning lines was previously determined to be a set of work practice standards which included using a chemical flocculant to control VOC and HAP emissions. CMQR has requested BACT be reevaluated for the car cleaning operation as discussed in this section.

Due to the array of chemicals that the railcars may have previously carried, the BACT analysis involved grouping the contents of railcars into the following categories:

- Flammable Liquids and Gases
- Low-Volatility/Low-HAP Liquids and Gases
- Acids
- Bases
- Non-hazardous Dry Materials/Slurries

A separate BACT analysis was performed for each grouping as discussed below.

a. Flammable Liquids and Gases

The primary pollutants of concern for purging/cleaning railcars which formerly contained flammable liquids or gases are VOCs and HAPs. Commodities included in this category are included in List 2 of the Appendix attached to this license. They include (among others) gasoline, propane, ethanol, methanol, and natural gas.

CMQR considered several control strategies for control of VOC/HAP including carbon adsorption, refrigerated condensers, trickling bioreactors, activated sludge reactors, biofilters, and thermal oxidizers.

(1) Carbon adsorption is the process of passing contaminated air streams through a bed of adsorbent material, typically activated carbon, although other media may be suitable for certain applications. Hydrocarbons attach to the surfaces of the activated carbon particles.

Carbon adsorbers can be either regenerative or non-regenerative. With non-regenerative carbon adsorption, the adsorbent eventually becomes saturated and loses its effectiveness. The adsorbent needs to be periodically replaced and the spent material disposed of.

With regenerative carbon adsorption, hydrocarbons are desorbed and collected, typically by drawing a vacuum on the sorbent bed or by using heated air, steam, or nitrogen. Depending on the process, the recovered hydrocarbons can be reused, recycled, or disposed of. This approach is preferred when the recovered hydrocarbons can be reused. That is not the case at CMQR.

Another drawback of this control approach is that the adsorbent typically binds strongly to heavy hydrocarbons and is less effective at capturing lighter organics such as propane. Therefore, it may be difficult to desorb some materials which can foul the adsorbent over time. Additionally, lighter materials are even more likely to pass through without being adequately collected if heavy hydrocarbons have already bound to the adsorbent.

Due to the cost of disposing of spent adsorbent and the limitations of this control approach in controlling lighter hydrocarbons, the use of a carbon adsorber is determined not to be economically or technically feasible for control of VOC or HAP for the purging of railcars in this category.

(2) A refrigerated condenser is a control device that cools a VOC laden air stream to condense and remove material. It works best on emissions streams containing high concentrations of VOC. The control efficiency is affected by both the vapor pressure of the condensed liquid (i.e., the partial pressure of the organic vapors in the emission stream) and the concentration of the VOC in the air stream.

The exhaust temperature must minimally be brought below the boiling point of the VOC to be controlled. To achieve the highest level of control efficiency, the exhaust temperature would need to be brought to below the freezing point of the VOC to be controlled. This approach is very energy intensive, especially for low molecular weight materials such as butane which has a boiling point of 30°F and a freezing point of -216.4°F and propane which has a boiling point of -43°F and a freezing point of -306°F. The exact amount of purge gas required and the concentration of the VOC will vary as the purging process progresses. Therefore, the effectiveness and efficiency of the refrigerated condenser would decrease over time during the purging process. The entire volume of the recovered condensate would become an additional waste stream which would need to be disposed of. Additionally, the condensate would need to be kept cold and/or pressurized to prevent it from volatilizing and being re-emitted.

Due to the energy trade-offs and the limitations of this control approach in controlling lighter hydrocarbons, the use of a refrigerated condenser is determined not to be economically or environmentally feasible for control of VOC or HAP for the purging of railcars in this category.

(3) A trickling bioreactor (also known as a biotrickling filter) is similar to a packed-bed wet scrubber. The scrubbing solution is a nutrient-rich solution flowing through a bed of packing media specifically designed to support an active bacterial population. The bacteria form a "biofilm" on the surfaces of the media, and the VOC vapors are absorbed into the solution and taken up in the biofilm.

Biological degradation of the VOC produces water and carbon dioxide. In order to be effective, bioreactors need to operate at a steady state. Swings in loading due to batch operations, such as railcar purging, is not well suited to this technology.

Due to the batch nature of the process and wide swings in pollutant concentration that would be experienced, a trickling bioreactor is determined not to be technically feasible for control of VOC or HAP for the purging of railcars in this category.

(4) An activated sludge reactor uses a basin filled with a slurry of activated sludge with the exhaust air distributed through bubblers at the bottom. The VOC dissolves into the liquid where it is decomposed by the bacteria in the solution. This type of system may be suitable for a low volume, high concentration exhaust. However, these systems are currently used primarily for odor control. No information was found regarding their use as a proven application for the reduction of VOC from process emissions similar to the railcar purging operation.

Due to its unproven nature, an activated sludge reactor is determined not to be technically feasible for control of VOC or HAP for the purging of railcars in this category.

(5) In a biofilter, the exhaust gas stream is humidified, then passed through a distribution system beneath a bed of compost, bark mulch, or soil. The media in the bed contains an active population of bacteria and other microbes. As the air stream flows upward through the media, pollutants are adsorbed into the media and converted by microbial metabolism to form carbon dioxide and water. Biofilters work best at steady state conditions and cannot tolerate extended periods of downtime.

Due to the batch nature of the process and wide swings in pollutant concentration that would be experienced, a biofilter is determined not to be technically feasible for control of VOC or HAP for the purging of railcars in this category.

(6) A thermal oxidizer raises the temperature of the exhaust stream to oxidize (burn) or pyrolyze (thermally break down) the constituents. In the case of hydrocarbons (including VOC and volatile organic HAP), complete combustion produces carbon dioxide and water.

Regenerative thermal oxidizers (RTOs) use heat exchangers to preheat the exhaust and/or recover waste heat from the treated air stream. However, RTOs do not work well when the heat content of the exhaust is highly variable or the

process is intermittent. Therefore, the use of an RTO is not considered technically feasible for this process.

An air-assisted, open, elevated flare is a type of thermal oxidizer that directs the VOC laden exhaust stream through a vertical pipe to a burner assembly located well above ground level. "Air-assisted" refers to a system of blowers, dampers, and controls to regulate supplemental airflow to optimize combustion, improve flame stability, and reduce or eliminate visible emissions. An elevated flare is considered safer than a ground flare because the flame and products of combustion are further away from the work area. An open flare can accommodate a wide range of capacities and is more suited to an intermittent and variable process.

CMQR proposes to use an air-assisted open elevated flare (Flare #1) for reduction of VOC and HAP emissions from purging of flammable liquids and gases from railcars. Flare #1 has a heat input rating of 24.5 MMBtu/hr. It uses propane as a supplemental fuel to ensure combustion is maintained over a wide range of vapor concentrations. Flare #1 is equipped with a flame sensor and electric igniter which will ensure the flare pilot remains lit throughout the purging process. CMQR shall ensure the flare pilot is lit prior to commencing purging of the railcar.

The railcars will be purged by adding heated nitrogen to the railcar to force flammable gases or vapors to the flare. Purging with nitrogen will continue until the exhaust gas is measured to be 0% of the lower explosive limit (LEL), at which time the railcar is considered empty and cleaning can continue without further controls. Note: Since the railcars will be purged with nitrogen, CMQR will utilize an air supply attachment with the explosimeter which allows LEL readings to be taken even though there is little to no oxygen in the railcar.

Flare #1 is expected to have a destruction efficiency of 98% for VOC and HAP for items in Appendix List 2.

BACT for VOC/HAP emissions from the railcar cleaning operation for railcars which most recently carried flammable liquids and gases (as contained in Appendix List 2) is determined to be the use of an air-assisted, open, elevated flare (Flare #1) and the following emission limits for Flare #1. BACT shall also include compliance with the Car Cleaning Work Practice Standards listed in Section II(C)(2) of this license.

Unit	Pollutant	lb/MMBtu
Flare #1	PM	0.05

Unit	PM (lb/hr)	PM_{10} (lb/hr)	NO_x (lb/hr)	CO (lb/hr)
Flare #1	1.23	1.23	1.67	7.61

Visible emissions from Flare #1 shall not exceed 10% on a six-minute block average basis.

The emission limits for Flare #1 are based on the following emission factors:

PM/PM_{10}	–	0.05 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
NO_x	–	0.068 lb/MMBtu based on AP-42 Table 13.5-1 dated 2/18
CO	–	0.31 lb/MMBtu based on AP-42 Table 13.5-2 dated 2/18
Visible Emissions	–	06-096 C.M.R. ch. 115, BACT

CMQR is subject to facility-wide emission limits of 49.9 tpy of VOC, 9.9 tpy of any single HAP, and 24.9 tpy for all HAP combined. Calculation of emissions of VOC/HAP from the car cleaning operation for List 2 materials shall be based on a 98% control efficiency. Pre-control emissions from each railcar shall be determined by use of EPA's TANKS program.

Emissions of SO_2 from this process are expected to be insignificant unless CMRQ flares vapors containing sulfur compounds. Emissions of SO_2 from Flare #1 shall be based on the sulfur content of the vapor being flared and the assumption that all sulfur is converted to SO_2.

b. Low-Volatility/Low-HAP Liquids and Gases

Low-volatility products included in Appendix List 1 include residual oil, asphalt, distillate oil, vegetable oil, and grease. These commodities do not generate significant quantities of VOC or HAP emissions. As an example, maximum potential emissions of VOC were calculated for the purging/cleaning of distillate railcars. Emissions were calculated using EPA's TANKS program based on the cleaning of 10 distillate railcars per day for 365 days per year. This calculation resulted in total uncontrolled emissions of 318 pounds of VOC per year. Actual emissions are expected to be significantly less. Add-on pollution control technology is not justified for emissions at these levels. Therefore, BACT for the cleaning of railcars that most recently carried these types of products is determined to be compliance with the Car Cleaning Work Practice Standards listed in Section II(C)(2) of this license.

c. Acids

Acids are water soluble, and any residue remaining in the railcar will be removed by flushing with water. Most acids have a relatively low vapor pressure and will not result in quantifiable emissions. However, cleaning railcars containing some acids, such as hydrochloric acid (HCl), may result in aerosols or vapors which are considered a HAP.

The quantity of HCl in the headspace of a typical railcar was calculated using the equations listed in EPA document *"Emergency Planning and Community Right-to-Know Act – Section 131 Guidance for Reporting Hydrochloric Acid"* (EPA-745-B-99-014, December 1999). Potential emissions were then calculated using EPA's TANKS program. Assuming no control and a railcar size of up to 21,000 gallons, potential emissions of HCl were estimated to be 21.57 pounds per railcar. Because of the assumptions made, this estimate is considered conservatively high.

Based on the assumed potential emissions per railcar and the expectation that relatively few railcars containing acids will be cleaned per year, add-on pollution controls are not economically justified. Therefore, BACT for the cleaning of railcars that most recently carried acids (as listed in Appendix List 1) is determined to be compliance with the Car Cleaning Work Practice Standards listed in Section II(C)(2) of this license.

It is expected that the work practice standards will significantly reduce actual emissions of acids from the car cleaning process. However, when calculating emissions to demonstrate compliance with the annual emission limits in this license, CMQR shall not take any credit for emissions reductions due to the work practice standards.

d. Bases

Bases, such as sodium hydroxide, are not volatile. However, there is a potential for entrainment of aerosol particles (PM) during cleaning. Potential emissions from this process are unquantifiable but are assumed to be extremely small. Therefore, BACT for the cleaning of railcars that most recently carried bases (as listed in Appendix List 1) is determined to be compliance with the Car Cleaning Work Practice Standards listed in Section II(C)(2) of this license.

e. Non-hazardous Dry Materials/Slurries

Non-hazardous dry materials included in Appendix List 1 include products such as rock salt and cement. The pollutant of concern for these commodities is particulate matter. Potential emissions from this process are unquantifiable but are assumed to be extremely small. BACT for the cleaning of railcars that most recently carried

non-hazardous dry materials (as listed in Appendix List 1) is determined to be compliance with the Car Cleaning Work Practice Standards listed in Section II(C)(2) of this license.

2. Work Practice Standards

CMQR has proposed work practice standards for the minimizing of emissions from Car Cleaning Lines #1 - #4. Although the work practice standards are expected to reduce emissions, the exact amount is unquantifiable and potentially variable. Therefore, when calculating emissions to demonstrate compliance with the facility's emission limits, no credit should be given for emission reductions due to work practice standards.

These work practice standards include use of a Vapor Reduction System provided by Global Vacuum Systems. During cleaning, each railcar will be exhausted through the Vapor Reduction System which uses a combination surfactant tank (wet scrubber) and carbon absorption to potentially reduce emissions of VOC, HAP, and particulate matter. Although the Vapor Reduction System is expected to have a positive impact on emissions, the manufacturer does not provide any specific guarantee on the amount of reduction achieved or the length of time between needed carbon replacement. Therefore, no control efficiency has been assigned to this equipment and, as described above, no credit for actual emissions reduction will be given.

The following shall constitute work practice standards for Car Cleaning Lines #1 - #4:

a. Prior to the Cleaning Process, the manways and other appurtenances shall remain closed and sealed.
b. To the amount practicable, each railcar shall be thoroughly drained of liquids prior to the Cleaning Process.
c. All VOC/HAP containing liquids drained from the railcar prior to cleaning shall be collected and stored in closed, air-tight containers.
d. The cleaning solutions used shall consist of steam, hot or cold water, and low-VOC (<5% by weight) containing detergents.
e. During the Cleaning Operations, exhaust from railcars shall be vented through the Vapor Reduction System.
f. The Vapor Reduction System shall be maintained in good working order per the manufacturer's written specifications.
g. CMQR shall perform monthly inspections of Flare #1 and the Vapor Reduction System to check for leaks, carbon breakthrough, or other malfunctions.

3. Compliance

Compliance with the requirements for Car Cleaning Lines #1 - #4 shall be demonstrated by the following recordkeeping:

a. Logs of each railcar cleaned including:
   (1) Date and time the purging began and ended;
   (2) Last material the railcar carried and whether it is a List 1 or List 2 commodity;
   (3) Whether or not the railcar purge was controlled by Flare #1;
   (4) If controlled by Flare #1, logs indicating staff checked that the flare pilot was lit prior to commencing purging of the railcar;
   (5) Whether the last material the railcar carried contained sulfur compounds (only for railcars sent to Flare #1);
   (6) Volume of the railcar vapor space;
   (7) Final LEL reading when purging ended (List 2 materials only);
   (8) Whether or not the Vapor Reduction System was utilized during cleaning.
b. Records of the liquid collected and final disposition of the material (e.g., shipped off-site) including dates and the amount of each material.
c. Amount of propane (gallons) purchased for use in Flare #1 on a monthly basis.
d. Hours of operation for Flare #1 on a monthly basis.
e. Records of monthly inspections and any maintenance activities (planned or unplanned) performed on Flare #1 and the Vapor Reduction System including the dates the carbon is replaced.
f. Records of any calibration and maintenance activities performed on the explosimeter.
g. Monthly calculations of the VOC and HAP emissions from the railcar cleaning process. Emissions for all railcars (Lists 1 and 2) cleaned per month shall be summed to provide the monthly total. Emissions shall be based on calculated working losses from the railcar through use of EPA's TANKS program and the assumed combined capture and control efficiency (e.g., 0% for List 1 commodities, 98% for List 2 commodities).
h. Monthly calculations of the SO_2 emissions from the railcar cleaning process. Emissions of all railcars containing sulfur compounds which were sent to Flare #1 shall be summed to provide the monthly total.

D. Chapter 166

Since CMQR's air emission license was issued, the Department has adopted *Industrial Cleaning Solvents*, 06-096 C.M.R. ch. 166.

The car cleaning lines do not use any industrial cleaning solvents as they use only water, steam, and aqueous-based surfactants. The facility's paint booths are exempt per § 3(A)(8). Therefore, none of the equipment or processes at CMQR are subject to the requirements of 06-096 C.M.R. ch. 166.

E. Emission Statements

CMQR is subject to emissions inventory requirements contained in *Emission Statements*, 06-096 C.M.R. ch. 137. CMQR shall maintain the following records in order to comply with this rule:

1. The amount of distillate fuel purchased for or fired in Furnace #1 and Generator #1 on a calendar year basis;
2. The amount of propane purchased for or fired in Boiler #1 on a calendar year basis;
3. The amount of propane pilot fuel purchased for or fired in Flare #1 on a monthly and calendar year basis;
4. Hours of operation of Flare #1 on a monthly and calendar year basis (for calculation of emissions of products of combustion);
5. The sulfur content of the distillate fuel fired in Furnace #1 and Generator #1;
6. Monthly calculations of the SO_2, VOC, and HAP emissions from the railcar cleaning process;
7. Monthly calculations of the VOC and HAP emissions from the paint booths; and
8. Annual hours of operation for each emission unit on a calendar year basis.

Beginning with reporting year 2020 and every third year thereafter, CMQR shall report to the Department emissions of hazardous air pollutants as required by 06-096 C.M.R. ch. 137, § (3)(C). The Department will use these reports to calculate and invoice for the applicable annual air quality surcharge for the subsequent three billing periods. CMQR shall pay the annual air quality surcharge, calculated by the Department based on these reported emissions of hazardous air pollutants, by the date required in Title 38 M.R.S. § 353-A(3). [38 M.R.S. § 353-A(1-A)]

F. Annual Emissions

CMQR shall be restricted to the following annual emissions, based on a 12-month rolling total. Emissions were calculated based on the following:

- Operation of Furnace #1, Boiler #1, and Flare #1 for 8,760 hours/year;
- Operation of Generator #1 for 100 hours/year; and
- Compliance with a facility-wide limits for SO_2, VOC, and HAP.

Please note, the information above provides the basis of fee calculation only and should not be construed to represent a comprehensive list of license restrictions or permissions.

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	PM_{10}	SO_2	NO_x	CO	VOC
Boiler #1	0.9	0.9	–	2.6	1.5	–
Furnace #1	0.4	0.4	–	0.8	0.2	–
Generator #1	–	–	–	0.6	0.1	–
Flare #1	5.4	5.4	–	7.3	33.3	–
Facility	–	–	10.0	–	–	49.9
Total TPY	**6.7**	**6.7**	**10.0**	**11.3**	**35.1**	**49.9**

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source is determined by the Department on a case-by case basis. In accordance with 06-096 C.M.R. ch. 115, an ambient air quality impact analysis is not required for a minor source if the total licensed annual emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

Pollutant	Tons/Year
PM_{10}	25
SO_2	50
NO_x	50
CO	250

The total licensed annual emissions for the facility are below the emission levels contained in the table above and there are no extenuating circumstances; therefore, an ambient air quality impact analysis is not required as part of this license.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License Amendment A-1131-71-B-A subject to the conditions found in Air Emission License A-1131-71-A-N and the following conditions.

Severability. The invalidity or unenforceability of any provision of this License Amendment or part thereof shall not affect the remainder of the provision or any other provisions. This License Amendment shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

The following shall Replace Specific Condition (16) of Air Emission License A-1131-71-A-N:

(16) **Furnace #1 and Boiler #1**

A. CMQR shall not purchase or otherwise obtain distillate fuel for use in Furnace #1 with a sulfur content that exceeds 0.0015% by weight (15ppm). Compliance shall be demonstrated by fuel records from the supplier showing the quantity, type, and the percent sulfur of the fuel delivered. [06-096 C.M.R. ch. 115, BPT]

B. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Boiler #1	PM	0.05	06-096 C.M.R. ch. 115, BACT

C. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BACT]:

Emission Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Furnace #1	0.10	0.10	–	0.18	0.05	–
Boiler #1	0.21	0.21	–	0.58	0.34	0.04

D. Visible emissions from Furnace #1 shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]

E. Visible emissions from Boiler #1 shall not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]

The following shall Replace Specific Condition (18) of Air Emission License A-1131-71-A-N:

(18) **Car Cleaning Lines #1 - #4**

A. Before commencing cleaning operations on a railcar, CMQR shall determine the commodity most recently carried by the railcar. [06-096 C.M.R. ch. 115, BPT]

B. CMQR shall not clean railcars which most recently carried commodities not included in Appendix Lists 1 or 2 without prior written approval by the Department. The Department may require CMQR to apply for a license modification, including a detailed BACT analysis, to add commodities to a list. [06-096 C.M.R. ch. 115, BPT]

C. CMQR shall not clean railcars which most recently carried a material with a Reportable Quantity (RQ) less than or equal to 10 pounds per *Designation, Reportable Quantities, and Notification*, 40 C.F.R. Part 302.4 or *Emergency Planning and Notification*, 40 C.F.R. Part 355, Appendix A. [06-096 C.M.R. ch. 115, BPT]

D. CMQR shall comply with the following work practice standards for all railcars cleaned.

1. Prior to the Cleaning Process, the manways and other appurtenances shall remain closed and sealed.
2. To the amount practicable, each railcar shall be thoroughly drained of liquids prior to the Cleaning Process.
3. All VOC/HAP containing liquids drained from the railcar prior to cleaning shall be collected and stored in closed, air-tight containers.
4. The cleaning solutions used shall consist of steam, hot or cold water, and low-VOC (<5% by weight) containing detergents.
5. During the Cleaning Operations, exhaust from railcars shall be vented through the Vapor Reduction System.
6. The Vapor Reduction System shall be maintained in good working order per the manufacturer's written specifications.
7. CMQR shall perform monthly inspections of Flare #1 and the Vapor Reduction System to check for leaks, carbon breakthrough, or other malfunctions.

[06-096 C.M.R. ch. 115, BPT]

E. List 2 Commodities

1. When processing railcars whose most recent commodity carried is on Appendix List 2, CMQR shall purge the railcar with nitrogen and direct all vapors from the purge to Flare #1 until the atmosphere inside the railcar measures 0% LEL. [06-096 C.M.R. ch. 115, BPT]

2. The pilot for Flare #1 shall be lit prior to commencing purging of any railcar being vented to it. [06-096 C.M.R. ch. 115, BPT]

3. Flare #1 shall be equipped with continuously burning pilots and an automatic re-ignition system. The presence of the pilot flame shall be monitored using a thermocouple or equivalent device. An infrared monitor is considered equivalent to a thermocouple for pilot flame monitoring purposes. [06-096 C.M.R. ch. 115, BPT]

4. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Flare #1	PM	0.05	06-096 C.M.R. ch. 115, BACT

5. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BACT]:

Emission Unit	PM (lb/hr)	PM_{10} (lb/hr)	NO_x (lb/hr)	CO (lb/hr)
Flare #1	1.23	1.23	1.67	7.61

6. Visible emissions from Flare #1 shall not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]

F. Compliance with the requirements for Car Cleaning Lines #1 - #4 shall be demonstrated by the following recordkeeping [06-096 C.M.R. ch. 115, BPT]:

1. Logs of each railcar cleaned including:
   a. Date and time the purging began and ended;
   b. Last material the railcar carried and whether it is a List 1 or List 2 commodity;
   c. Whether or not the railcar purge was controlled by Flare #1;
   d. If controlled by Flare #1, logs indicating staff checked that the flare pilot was lit prior to commencing purging of the railcar;
   e. Whether the last material the railcar carried contained sulfur compounds (only for railcars sent to Flare #1);
   f. Volume of the railcar vapor space;
   g. Final LEL reading when purging ended (List 2 materials only);
   h. Whether or not the Vapor Reduction System was utilized during cleaning.
2. Records of the liquid collected and final disposition of the material (e.g. shipped off-site) including dates and the amount of each material.
3. Amount of propane (gallons) purchased for use in Flare #1 on a monthly basis.
4. Hours of operation for Flare #1 on a monthly basis.

5. Records of monthly inspections and any maintenance activities (planned or unplanned) performed on Flare #1 and the Vapor Reduction System including the dates the carbon is replaced.
6. Records of any calibration and maintenance activities performed on the explosimeter.
7. Monthly calculations of the VOC and HAP emissions from the railcar cleaning process. Emissions for all railcars (Lists 1 and 2) cleaned per month shall be summed to provide the monthly total. Emissions shall be based on calculated working losses from the railcar through use of EPA's TANKS program and the assumed combined capture and control efficiency (e.g., 0% for List 1 commodities, 98% for List 2 commodities).
8. Monthly calculations of the SO_2 emissions from the railcar cleaning process. Emissions of all railcars containing sulfur compounds which were sent to Flare #1 shall be summed to provide the monthly total.

The following shall Replace Specific Condition (21) of Air Emission License A-1131-71-A-N:

(21) **Annual Emission Limits**

A. Total facility-wide annual emissions of SO_2 shall not exceed 10.0 tpy on a 12-month rolling total basis. Compliance with this limit shall be demonstrated through recordkeeping required by this license. [06-096 C.M.R. ch. 115, BACT]

B. Total facility-wide annual emissions of VOC shall not exceed 49.9 tpy on a 12-month rolling total basis. Compliance with this limit shall be demonstrated through recordkeeping required by this license. [06-096 C.M.R. ch. 115, BACT]

C. Facility-wide annual emissions of HAP shall not exceed 9.9 tpy on a 12-month rolling total basis for any single HAP and 24.9 tpy on a 12-month rolling total basis for all HAP combined. Compliance with these limits shall be demonstrated through recordkeeping required by this license. [06-096 C.M.R. ch. 115, BACT]

D. Emissions of SO_2, VOC, and HAP from Furnace #1, Boiler #1, Generator #1, and the Parts Washers are determined to be negligible and are not required to be included as part of the annual facility-wide emissions for compliance purposes. [06-096 C.M.R. ch. 115, BPT]

The following shall Replace Specific Condition (25) of Air Emission License A-1131-71-A-N:

(25) **Annual Emission Statement**

A. In accordance with *Emission Statements*, 06-096 C.M.R. ch. 137, CMQR shall annually report to the Department, in a format prescribed by the Department, the information necessary to accurately update the State's emission inventory. The emission statement shall be submitted as specified by the date in 06-096 C.M.R. ch. 137.

B. CMQR shall keep the following records in order to comply with 06-096 C.M.R. ch. 137:

1. The amount of distillate fuel purchased for or fired in Furnace #1 and Generator #1 on a calendar year basis;
2. The amount of propane purchased for or fired in Boiler #1 on a calendar year basis;
3. The amount of propane pilot fuel purchased for or fired in Flare #1 on a monthly and calendar year basis;
4. Hours of operation of Flare #1 on a monthly and calendar year basis; (for calculation of emissions of products of combustion)
5. The sulfur content of the distillate fuel fired in Furnace #1 and Generator #1;
6. Monthly calculations of the SO_2, VOC, and HAP emissions from the railcar cleaning process;
7. Monthly calculations of the VOC and HAP emissions from the paint booths; and
8. Annual hours of operation for each emission unit on a calendar year basis.

[06-096 C.M.R. ch. 137]

C. Beginning with reporting year 2020 and every third year thereafter, CMQR shall report to the Department emissions of hazardous air pollutants as required by 06-096 C.M.R. ch. 137, § (3)(C). CMQR shall pay the annual air quality surcharge, calculated by the Department based on these reported emissions of hazardous air pollutants, by the date required in Title 38 M.R.S. § 353-A(3). [38 M.R.S. § 353-A(1-A)]

DONE AND DATED IN AUGUSTA, MAINE THIS 4th DAY OF November , 2019.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____ for
GERALD D. REID, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-1131-71-A-N.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 11/21/18
Date of application acceptance: 11/26/18

Date filed with the Board of Environmental Protection:

Filed
NOV 04 2019
State of Maine
Board of Environmental Protection

This Order prepared by Lynn Muzzey, Bureau of Air Quality.

Appendix

A-1131-71-B-A
LIST 1 – COMMODITIES SUBJECT TO WORK PRACTICE STANDARDS ONLY

STCC[1] (If Known)	Commodity	Common Name or Type of Chemical Product	CAS No.	RQ (lbs)
4912269 4912336 4914146 4914170	Fuel Oil	#2 through #6 fuel oil and diesel fuel	various	None
2821245	Latex (liquid rubber) synthetic	Latex	None	None
2899834	Polyacrylamide-water solution	Polymer	None	None
2899885	Additives Fuel Oil Gasoline or Lubricating Oil	Fuel or lubricating oil additives	Various	None
3295230	Kaolin & Water Slurry Kaolin	Kaolin	1332-58-7 1318-74-7	None
4918723	Sodium Chlorate	Sodium Chlorate (solid powder)	7775-09-9	None
4961605	Heated Asphalt	Asphalt Roofing Flux	8052-42-4	None
1311110 1441314 4910164 4910165 4910187 4910191 4910599	Petroleum Oil Crude Oil or Shale Oil Crude Sand Industrial Oil or Gas Well Fracture Petroleum Crude Petroleum Sour	Crude Oil with a vapor pressure <0.5 psi	None	None
1441310	Industrial Sand Ungrounded and Unbonded	Sand	Various	None
1471510	Rock Salt	Rock Salt	14762-51-7	None
1491970	Perlite Rock	Perlite Rock (solid)	None	None
2046115	Corn Syrup (Glucose)	Corn Syrup	Various	None
2093342	Rapeseed Oil	Rapeseed Oil	None	None
2812355	Sodium Sulfate (Salt Cake)	Sodium Sulfate (solid)	Various	None
2812534	Potassium Chloride	Potassium Chloride	7447-40-7	None
2911990	Paraffin Wax or Petroleum Wax	Wax	Various	None
3241110 3241115	Cement Clinker Cement Hydraulic Portland	Cement (solid)	Various	None
3295956	Limestone Slurry Consisting of Ground Limestone	Lime	Various	None
4918311	Ammonium Nitrate	Ammonium Nitrate	6484-52-2	None
	Hydrochloric Acid	Hydrochloric Acid	7647-01-0	5,000
4930040	Sulfuric Acid	Sulfuric Acid	7664-93-9	1,000

Appendix

A-1131-71-B-A
LIST 1 – COMMODITIES SUBJECT TO WORK PRACTICE STANDARDS ONLY

STCC[1] (If Known)	Commodity	Common Name or Type of Chemical Product	CAS No.	RQ (lbs)
4935240	Sodium Hydroxide (Caustic Soda)	Sodium Hydroxide (solid)	1310-73-2	1,000
	Axperse	Water-based processing aid for industrial operations, no hazardous substances, no flash point	None	None
	Crystalline Silica	Silica	None	None
	Diammonium Sulfate (Trinseo for RAP 740NA Latex)	Styrene-butadiene based polymer (45-55%)	Trade Secret	None
		Diammonium sulfate (<1.5%)	7783-20-2	None
		Water (45-55%)	7732-18-15	None
	Latex LXC 803F NA – Trinseo	Styrene-butadiene based polymer (45-55%) Water (45-55%)	Trade Secret 7732-18-15	None
	CP 615 NA Latex – Trinseo			
	XU 31719.00 Experimental Latex – Trinseo			
	XU 31032.50 Experimental Latex – Trinseo			
	Flosperse	Processing aid for industrial operations, no hazardous substances, water-based, no flash point	None	None
	Quartz	Quartz	14808-60-7	None
	Tetrasodium Salt	Acetic acid	64-02-8	None
	Amres 1110-E Wet Strength Resin (water-based, no flash point)		Various	None
	NovaCote 1936HS Surface Sizeing Agent (water-based, no flash point)		Various	None
	Precipitated Calcium Carbonate		471-34-1	None
	Digitall 9708.1 (paper coating solution)	Water (55-75%) Polymers (25-45%)	Trade Secret	None
	Taflonol UMS Series Liquid	Brightener (10-30%) Water (70-90%)	16470-24-9 7732-18-5	None
	Formaldehyde Solutions with vapor pressure <0.05 psi		50-00-0	100
	YaraVera Urea 46-0-0	Urea	57-13-6	None

[1] Standard Transportation Commodity Code

Appendix

A-1131-71-B-A
LIST 2 – FLAMMABLE LIQUIDS AND GASES

STCC[1] (If Known)	Commodity	Common Name or Type of Chemical Product	CAS No.	RQ (lbs)
2818414 2818417 2818445 2818446 4908170 4908179 4908180 4909117 4909152 4909159 4909363 4910240 4914105 2085120	Ethanol – Ethyl Alcohol Anhydrous Denatured – Alcohol Beverage Ethanol Gas Denatured Alcohol	Ethanol	64-17-5	None
2899415 4909230	Fatty Acid Esters of Vegetable Fish or Animal Methanol	Methanol	67-56-1	5,000
2899416	Methyl Esters (Methyl Soyate) Diesel from Vegetable oil	Methyl Esters	Various	1,000
2911976	Petroleum Condensate	Natural Gas Condensate	Various	None
2991240	Motor Fuel NEC Liquid (Blends of Alcohol and Motor Fuel)	Gasoline	Various	None
4905419 4905421 4905423 4905424 4905752 4905784 4907603 4909105 4910236	 Liquefied Petroleum Gas	 Propane / Odorized Propane Butane Ethane	 74-98-6 106-97-8 74-84-0	 None
4906620	Propylene Oxide	Propylene Oxide	75-56-9	100
4907250	Methyl Methacrylate	Methyl Methacrylate	80-62-6	1,000
4907265	Styrene Monomer	Styrene Monomer	100-42-5	1,000
4912215	Butyl Acrylate	Butyl Acrylate	Various	None

Appendix

A-1131-71-B-A
LIST 2 – FLAMMABLE LIQUIDS AND GASES

STCC[1] (If Known)	Commodity	Common Name or Type of Chemical Product	CAS No.	RQ (lbs)
	Natural Gas	Natural Gas / Methane	74-82-8	None
	Isobutane	Isobutane	75-28-5	None
	P-P Mix	Propylene (75-80%)	115-07-1	None
		Propane (0-3%)	74-98-6	None
	Formaldehyde Solutions with vapor pressure ≥0.05 psi		50-00-0	100
1311110 1441314 4910164 4910165 4910187 4910191 4910599	Petroleum Oil Crude Oil or Shale Oil Crude Sand Industrial Oil or Gas Well Fracture Petroleum Crude Petroleum Sour	Crude Oil with a vapor pressure ≥0.5 psi	None	None

[1] Standard Transportation Commodity Code