August 30, 2024

VIA ELECTRONIC MAIL

Mr. Steve Ott
Enforcement and Compliance Assurance Division
US Environmental Protection Agency
Region 3
Four Penn Center
1600 JFK Blvd.
Philadelphia, PA 19103-2029
ott.steven@epa.gov

Re: Request for Information under § 114(a) of the Clean Air Act, 42 U. S. C. § 7414 (a)

Dear Mr. Ott,

Empire Green Generation LLC respectfully submits the following information in response to the above references Request for information regarding the Empire Green Generation LLC facility located at 801 Koppers Road, Follansbee West Virginia.

As a point of clarification, the Request for Information was requesting information "In order for EPA to determine whether a violation had occurred". The above referenced facility is still under construction at this time. There has not been any processing of material, or emissions from this facility. The outstanding issue is the submitted permit revision to change the plant feedstock from medical waste to plastics. Empire Green Generation has committed to not processing medical waste through the facility.

The response is formatted in the outline format that the questions were presented in Appendix B. The EPA question is in bold print, and response immediately following. The only exception is Question 9 which additionally has Attachment A to support the reply.

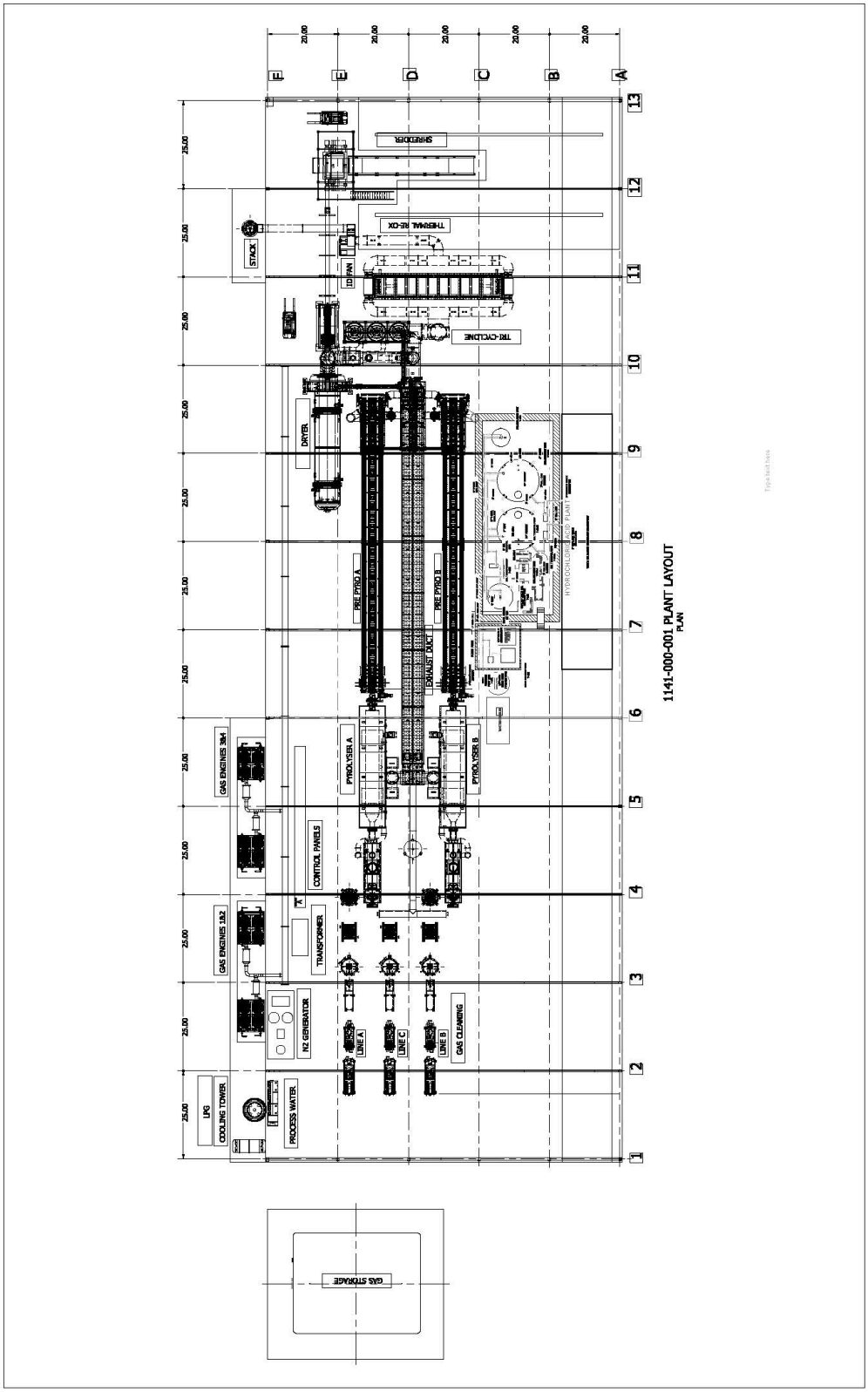
If there are any questions, please feel free to contact us.

Sincerely,

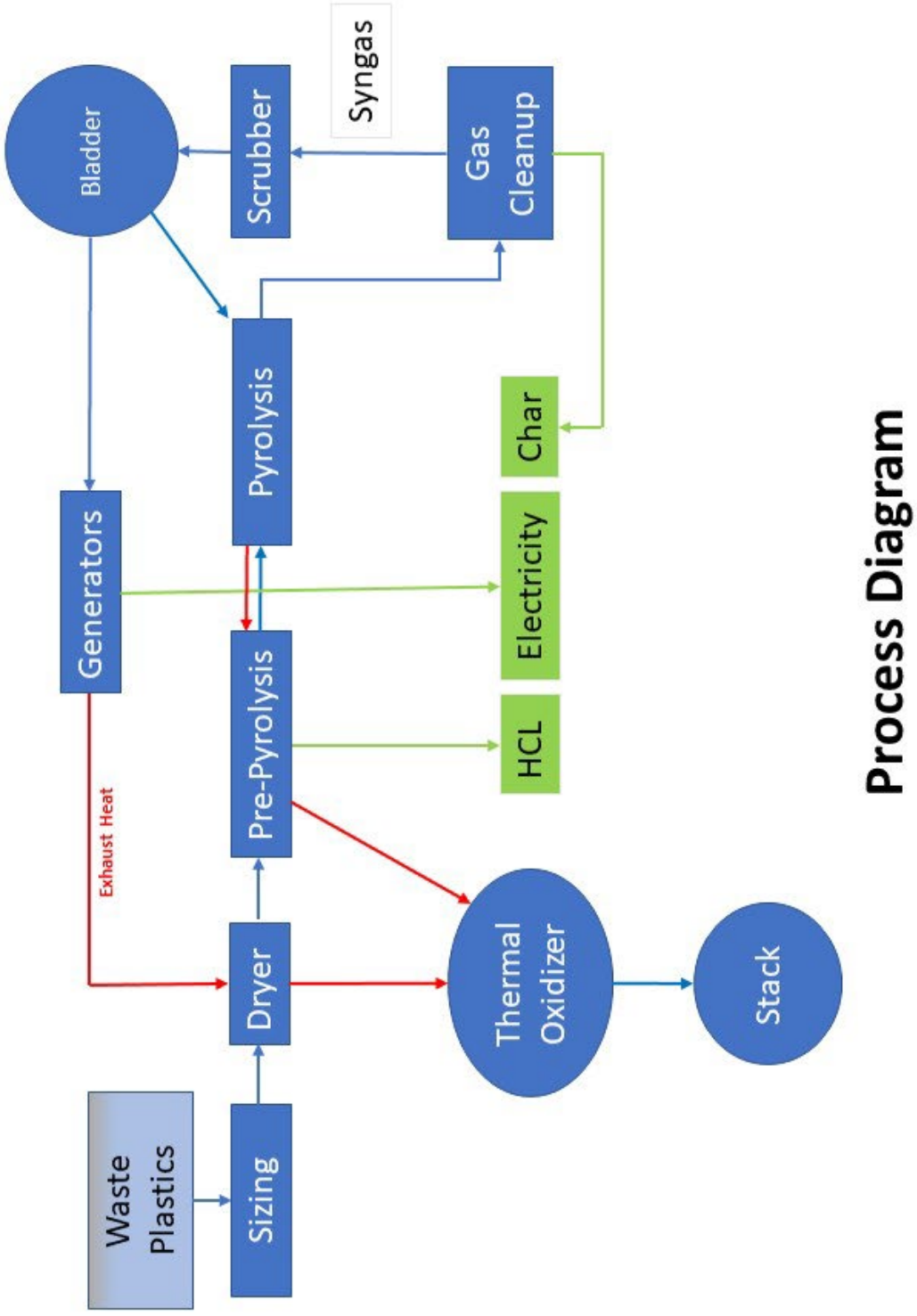
Bernard Brown

Bernard Brown
Chief Operating Officer

1. **Provide a plot plan or map of facility**.



2. **Provide a process diagram and corresponding description of the facility.**



PROCESS DESCRIPTION

PLASTIC WASTE RECEIVING

Plastic waste for disposal is delivered by contractor trucks from a pre-processing facility in Ohio. The waste is coarse shredded and baled or placed in "super sacks" for ease of handling prior to delivery.

SHREDDER FEED

The plastic bales or sacks are placed onto the shredder feed conveyor by means of a forklift. The conveyor transports the sealed bags to the top of the shredder where they are tipped into the receiving hood of the shredder. The receiving hood is equipped with an air extraction duct that feeds to the thermal oxidizer inlet duct. This extraction system ensures that no airborne material is released into the atmosphere.

SHREDDER

The shredder has two stages that reduce the size of the waste to 20 mm (3/4"). The shredded waste is discharged into sealed screw conveyors that transport the shredded material away from the shredder.

DRYER

The shredder discharge screw conveyors feed material into the dryer feed hopper. This is a sealed hopper with a screw conveyor in the base. This conveyor feeds material into the rotating dryer. The dryer is a two-pass unit where the material is fed into an inner drum and progressed to the opposite end of the dryer. As the material reaches the end of the inner drum it falls into the outer drum and returns to the feed end taking forty (40) minutes in the dryer and is discharged into an expansion chamber. Hot air, consisting of the exhaust gasses from the engines and combustion gasses from the pyrolysers, enters the dryer at the feed end and follows the flow of material to the expansion chamber. This air is controlled at an exit temperature of 105ºC (220ºF). The expansion chamber separates the solid material and the gasses, the solid material drops into a screw conveyor and the gasses are ducted to the thermal oxidizer.

PRE-PYROLYSER

The solids from the dryer are conveyed into a buffer hopper which has two discharge screw conveyors in the base, These conveyors feed two parallel pre-pyrolyser systems. Each system consists of an airlock which is purged with nitrogen to eliminate oxygen, a weighing system used for record keeping and a pre-pyrolyser. The pre-pyrolyser has an inner retort fitted with a conveyor. The retort is heated externally by the exhaust from the pyrolyser heating chamber. The retort is fed pre-heated nitrogen to aid in heating and maintain an oxygen free atmosphere. The internal temperature of the retort is controlled at a temperature of 300 – 350ºC (572 - 662°F) for twenty (20) minutes. During the pre-pyrolysis stage chlorine gas is driven off and is further processed to produce hydrochloric

acid which will be sold into the wholesale market.

PYROLYSER

The material is then fed into a rotating pyrolyser retort where it is heated to 830°C (1,526°F) for thirty (30) minutes externally, by syngas and oil burners. The material undergoes a thermochemical process where the plastic is converted to syngas. The gas and remaining solids then enter a deceleration chamber where the gasses and solids are separated. The solids are returned to the pyrolyser heating chamber where combustion of the solids occurs in an oxygen rich environment. The gasses continue to the condensing and scrubbing section for clean-up.

GAS CLEANUP AND SCRUBBER

Gasses from the pyrolyser are fed into a heat exchanger to control the temperature, from there the gasses pass through a condenser where the tars are condensed, these tars are returned to the pyrolyser heating chamber and combusted. The gasses then pass through a series of scrubbers where any remaining oil and condensable are separated from the syngas. The separated oil is fed into a holding tank and from there to oil burners in the pyrolyser heating chamber.

BLADDER & ENGINES

After scrubbing the syngas is piped to a holding bladder which acts as a buffer to feed the engines and pyrolyser heating chamber burners. The syngas is the fuel for four internal combustion, spark ignited engines which drive generators to produce 1.4 MW of electricity. This electricity is used to power the plant itself (400 KW) and any excess (1 MW) is available for other uses at the facilities.

EXHAUST SYSTEM & REGENERATIVE THERMAL OXIDISER

All exhaust gasses from the engines and pyrolyser burners are ducted to a Regenerative Thermal Oxidizer (RTO). The gasses are heated to a temperature of 850°C (1,560°F) for at least 2 seconds. The RTO controls volatile organic compounds (VOC's), hazardous air pollutants (HAP's) and odors by converting the emissions into CO2 and H2O. The gasses are extracted by a fan and ducted to a stack with an installed emergency flair which discharges the odorless gasses into the atmosphere.

3. **Identify what type(s) of materials EGG intends to process, and:**
    - **a. If plastic will be material processed, identify the percentage of each plastic type intended to be processed (i.e., HDPE, PVC, ABS, PET, etc).**
        - a.i. EGG has the capability of processing all seven types of plastic (PET, HDPE, PVC, LDPE, PP, PS, and PC). The only limitation is that PVC is maintained at 15% or less by weight, of the total input stream. EGG will be evaluating which combination of plastics produce the best quality syngas.
    - **b. What is the anticipated amount of plastic processed daily?**
        - b.i. 77 tons per day (70 metric tonnes)
    - **c. What is the maximum possible daily capacity of material? Provide calculations.**
        - c.i. The design capacity of the plant is 77 tons per day as provided by the designer and manufacturer of the processing equipment, Technotherm from South Africa.
    - **d. What are the caloric values of each plastic type being processed?**
        - d.i. EGG does not have caloric values by plastic types. The information provided to EGG by the manufacturer indicates values ranging from 9,000 to 16,000 BTU/lb. for various analysis performed on mixed plastic waste streams.
    - **e. How is the plastic processed prior to being delivered to EGG?**
        - e.i. Processing consists of sizing and consolidation of plastic waste steam.
    - **f. Does EGG plan to process medical waste as permitted by the WVDEP under Permit R13- 3555?**
        - f.i. No, EGG does not plan on processing medical waste at this facility. The modification of the existing permit being requested is solely to take medical waste out of the feed stream for the plant.
4. **Does EGG consider pyrolysis to be "processing" as defined in 40 CFR 241.2**
    - a. EGG does consider pyrolysis to be processing, EGG is taking plastics and through the process of heating the material at high temperatures in the absence of oxygen to break them down chemically. This results in the production of fuel in the form of syngas.
5. **For each pyrolysis unit provide the following:**
    - **a. Make/model of the pyrolysis unit.**
        - a.i. Technotherm model 1141-10
    - **b. Will there be batch processing or continuous processing of plastics?**
        - b.i. Continuous process
6. **What is the oxygen content inside of the pyrolysis unit during normal operations? Please use either ppm or percentage of air.** <3% oxygen
    - **a. How will the oxygen content be controlled?**
        - a.i. The feed stock passes through an air lock prior to entering the pyrolyser, the air lock is purged with nitrogen each cycle of the air lock.
    - **b. How will the oxygen content be monitored?**
        - b.i. An oxygen level monitor is situated after the gas clean-up system. Should the oxygen reach the upper set limit nitrogen will purge the system.
    - **c. How will oxygen be purged during start-up operations?**
        - c.i. The pyrolyser is purged with nitrogen through to the gas clean-up system prior to introducing feedstock.
7. **Provide calculations for the conversion of plastic (tons) to hydrochloric acid (gallons, tons, and concentration).** The only plastic waste to be used to produce hydrochloric acid is PVC. The conversion of PVC waste plastic to hydrochloric acid via pre-pyrolysis has been well documented regarding both chlorine release temperatures and efficiency and supported by empirical testing from Technotherm. This application is recycling of waste plastics, thus not a homogeneous feed stock. PVC plastics are identified by their polymer type but can contain up to 50% additives by weights. These additives can be stabilizers,

processing aids, fillers, coupling agents, cross-linking agents, foaming agents, nucleating agents, colorants, antimicrobials, flame retardants, and many more. Two PVC samples can be quite different from each other, dependent on additives used in manufacturing. We are following the manufacturer recommended maximum percentage of PVC plastic in our feedstock to insure complete removal of HCl and protection of the downstream equipment from corrosion.

a. **Describe how, and where in the process, the hydrochloric acid will be separated from other gases in the process**.

a.i. Feed plastic containing PVC is pre-heated in the pre-pyrolizer where the chlorine molecules in the PVC is converted to hydrogen chloride gas. The hydrogen chloride gas is extracted, cooled, and contacted with demineralized water to form Hydrochloric acid.

b. Will water be added to the produced hydrochloric acid to change the final volume or concentration?

b.i. Yes

c. If water is added, will it be sourced from well/municipal water or derived from the pyrolysis/combustion process?

c.i. Municipal water passing through a on-site demineralizer plant

d. Will a scrubber be used to remove any residual acid forming gas, prior to the generator sets? If so provide make, model, capacity, and what type of scrubbing media material will be used.

d.i. The hydrochloric processing system is effectively a scrubber capturing the acid forming gasses and converting them into a salable product. The design limitation of the system is that it can remove the hydrogen chloride gas of a maximum of 15% PVC by weight in the plant feed.

8. **How will the generated hydrochloric acid be stored and offloaded (drums, truck, or rail)**

a. Provide details regarding truck/rail transfers, if applicable, and how emissions will be controlled?

a.i. The hydrochloric acid will be stored in tanks and removed from the site daily by truck. The fumes from the tanks and transfer points will be collected and pass through a sodium hydroxide scrubber to neutralize the fumes. The discharge gas will routed to the regenerative thermal oxidizer for final cleaning prior to being discharged with other exhaust gasses.

b. **Does EGG currently have a buyer(s) for the produced hydrochloric acid?** In process.

b.i. **What are the specifications required by the buyer(s) such as %Hydrochloric Acid, purity?**

- Baume, % Acid, Specific Gravity, Iron, Color, Arsenic as As, Benzene, Heavy Metals, Nonvolatile Residue, Oxidizing Substances as Chlorine, Sulfates as SO4, Sulfur Trioxide, and Non-Fluorinated Organic Compounds

b.ii. **How will EGG determine if the buyer specification is met or not, please identify the analytic method(s) and type of instruments to be used?**

- Third party laboratory

b.iii. **Who is/are the buyer(s)?**

- We have a letter of intent with Univar Solutions

b.iv. **What will EGG do with any off-spec HCL?**

- Univar Solutions will take off-spec HCl at a reduced price

9. **For each product of pyrolysis (oils, solids, tars, and syngas) provide a safety data sheet.**

a.i. Oils and tars will be consumed as combustion fuel. Safety data sheet (SDS) still needs to be created for the solids, and Univar's SDS for hydrochloric acid is attached.

b. **What is the expected chlorine content, by weight and percentage, found in solid and liquid streams**. EGG expects less 0.15% Chlorine in the residue

c. Provide calculations for the conversion of plastic (tons) to each product, include expected yield of oil, solids, tars, and syngas.

c.i. The conversion of waste plastic to gas via pyrolysis has been empirically derived through many processing runs and laboratory analysis. This application is recycling of waste plastics, thus not a homogeneous feed stock. Plastics are identified by their polymer type but can contain up to 70% additives by weights. These additives can be stabilizers, processing aids, fillers, coupling agents, cross-linking agents, foaming agents, nucleating agents, colorants, antimicrobials, flame retardants, and many more. For example, one HDPE waste plastic may have a considerably different gas/product profile than another waste HDPE plastic. The additives impact how the hydrocarbon chains decompose under pyrolysis, and the distribution of products in the process. The following is our anticipated distribution:

Yields % per dry feed
Solids (residue): 24%
Oils/tar: 7%
Water: 4%
Syngas: 52%
HCl gas: 13%

10. **For any syngas storage onsite provide:**
    - **a. Volume of storage vessel(s)**
      a.i. 99 m^3
    - **b. Type of storage vessel i.e. floating roof tank, totes, etc.**
      b.i. Bladder Building
    - **c. Pressure the gas will be stored at.**
      c.i. 0.5 psi
    - **d. If stored as pressurized gas, where does the pressure relief device for the storage vessel vent to?**
      d.i. Flare stack
11. **Provide waste determination(s) from each company/entity in which EGG intends to obtain plastics to process.** Yet to be determined. EGG is in discussions with several entities regarding their waste plastic disposal needs, and willingness to participate in our waste recycling efforts.
    - **a. If EGG and its recycling partners are mutually held by a parent company/entity, describe the relation.**
      a.i. Not Applicable
12. **Pursuant to 40 CFR part 241 provide a non-hazardous secondary materials determination for all plastics intended to be processed.**
    - a. Please see following Non-Hazardous Secondary Material Determination

Empire Green Generation Non-Hazardous Secondary Material Self Determination

Empire Green Generation is self-determining that the feedstock material of plastics 1 through 7 for their proposed pyrolysis plastic processing facility would be exempt from treatment as a solid waste. This is based on the Non-Hazardous Secondary Material Rule (NHSM) and the feedstock is not a solid waste, in accordance with 40 CFR 241.3(b). The site-specific self-determination requirements under 40 CFR 241.3(b) are:

- **The facility generating or combusting an NHSM determines if they will make a waste or nonwasted determination for an NHSM (1) used as fuel managed within the control the generator, (2) used as an ingredient, or (3) used as a fuel or an ingredient produced from processed discarded NHSM.**
- **The NHSM must meet the legitimacy criteria of 40 CFR 241.3(d).**
- **See the flow chart and additional information below (Figure 1).**

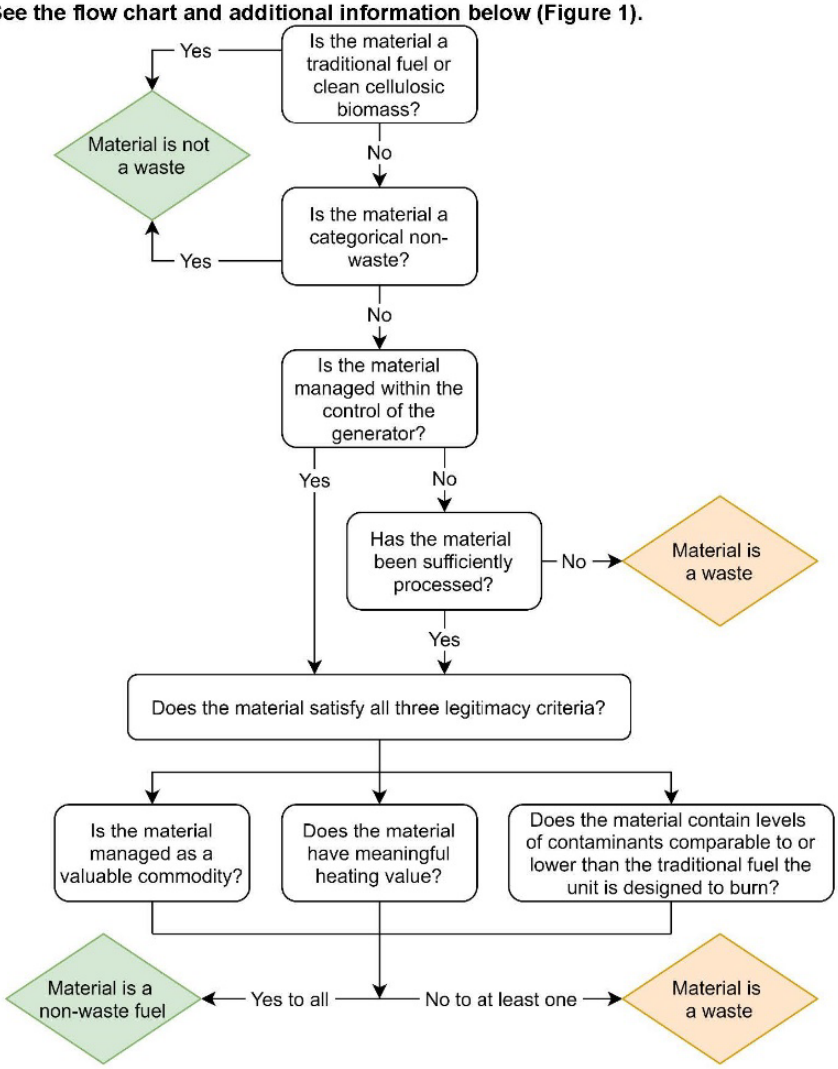


Figure 1

Empire Green Generation Non-Hazardous Secondary Material Self Determination

Question 1 – Is the material a traditional fuel or clean cellulosic biomass?

Answer 1 – *No, the feedstock is not considered a traditional fuel or clean cellulosic biomass as defined in 40 CFR Part 241.2.*

Question 2: Is the material a categorical non-waste?

Answer 2: *No, the feedstock is not considered a categorical non-waste as defined in 40 CFR Part 241.4.*

Question 3: Is the material managed within the control of the generator?

Answer 3: *Yes, 40 CFR Part 241.2 defines "within control of the generator" as meaning that "the non-hazardous secondary material is generated and burned in combustion units at the generating facility: or that such material is generated and burned in combustion units at different facilities, provided the facility combusting the non-hazardous secondary material is controlled by the generator: or both the generating facility and the facility combusting the non-=hazardous secondary material are under the control of the same person as defined in this section." While Empire Green Generations NHSM is not burning or combusting the plastics, the generating facility and the facility (pyrolysis) the non-hazardous secondary material are under the control of the same person as defined in this section.*

Question 4: Does the material satisfy all three legitimacy criteria?

Answer 4: *Yes, the feedstock does meet the legitimacy criteria, as specified in 40 CFR Part 241.3(d)(2)., as follows:*

1. **The NHSM must be managed as a valuable commodity based on the following factors:**
    a. **The storage of the non-hazardous secondary material prior to use must not exceed reasonable time frames:** *This is met at the facility calls for a maximum storage time of 7 days.*
    b. **Where there is an analogous fuel, the non-hazardous secondary material must be managed in a manner consistent with the analogous fuel or otherwise be adequately contained to prevent releases to the environment:** *The plastic feedstock is comprised of synthetic polymers made up of repeating hydrocarbon molecules. The pyrolysis process breaks down the complex molecules into its component hydrocarbon molecules to create syngas. Polyvinyl chloride (PVC) plastic can be processed which will liberate chlorine molecules that are collected and processed into salable hydrochloric acid.*
2. **The non-hazardous secondary material must provide a useful contribution to the production or manufacturing process. The non-hazardous secondary material provides a useful contribution if it contributes a valuable ingredient to the product or intermediate or is an effective substitute for a commercial product.** *The feedstock material is the basis for the synthesis gas (syngas) that is created in the pyrolysis unit. The feedstock material is also the basis for making Hydrochloric Acid which will be sold.*
3. **The non-hazardous secondary material must be used to produce a valuable product or intermediate. The product or intermediate is valuable if:**
    a. **The non-hazardous secondary material is sold to a third part.** *The NHSM is used by the Generator as an ingredient to produce syngas and hydrochloric acid that is sold to a 3rd party, and generates electricity for self-consumption.*
    b. **Or the non-hazardous secondary material is used as an effective substitute for a commercial product or as in an ingredient or intermediate in an industrial**

Empire Green Generation Non-Hazardous Secondary Material Self Determination

process. *The NHSM is used as a substitute for crude oil in the production of syngas which is used to run the unit.*

4. **The non-hazardous secondary material must result in products that contain contaminant at levels that are comparable in concentration to or lower than those found in traditional products that are manufactured without the non-hazardous secondary material.** *Empire Green Generation has an agreement with the end buyer to produce the hydrochloric acid to the industry standards with a threshold of percent weight of hydrochloric at a minimum of 30% and a maximum of 32%, Iron ppm maximum of 1, organics at a non-detect, Mercury at non-detect, Specific Gravity of minimum of 1.1526 maximum 1.1628 and a pH less than 1. The syn-gas produced, which will be used to run the plant is derived from the same base material as the traditional fuel. This product comparable or lower than traditional fuel for contaminants.*

The Green Generation process does not combust the feedstock material, but rather uses pyrolysis to process the material in a non-combustible environment, it meets the legitimacy criteria specified in 40 CFR 241 to be classified as a NHSM based on the answers listed above.

13. **Pursuant to 40 CFR part 241 provide a non-hazardous secondary materials determination for all products of pyrolysis prior to gas cleanup.**
    a. The additional products of pyrolysis prior to gas cleanup are Hydrochloric Acid and Char. Both of these are saleable by-products of the process and will be sold to outside parties.

14. **Pursuant to 40 CFR part 241 provide a non-hazardous secondary materials determination for all products of pyrolysis prior to gas cleanup.**
    a. The additional products of pyrolysis prior to gas cleanup are Hydrochloric Acid and Char. Both of these are saleable by-products of the process and will be sold to outside parties.

15. **For each generator set, provide the following information in an excel sheet:**
    a. Make/model
        a.i. Weifang Naipute Gas Genset / 300GFT
    b. Make/model of the engine.
        b.i. Yuchai C6TD600N-D30 and YC6TD600N-D30
    c. Serial No of each engine.
        c.i. TDN11J90014, TDN11J90026, TDN11J90027, TDN11J90028
    d. Type of engines.
        d.i. Spark Ignition
    e. Fuel type of each engine.
        e.i. Syngas
    f. Power output rating of the engine.
        f.i. 330 kW
    g. Make/model and capacity of electric generators.
        g.i. Xingnuo XN636H, 300GFT, 300kW/375kVA, 60Hz 3ph 480V
    h. Will generated electricity be used onsite or sold to the local electrical grid?
        h.i. Onsite

16. **For each vitrifier (process heater), provide the following:**
    - **a. internal and external dimensions in feet/inches**
        - a.i. The pyrolyser encompasses the combustion chamber, vitrifier, and retort (the rotating cylinder in which the plastic is polysized at high temperatures and no oxygen).
        - a.ii. Pyrolyser internal dimensions: Length = 33’ 1”, Width = 6’ 1”, Height = 11’ 4”
          Pyrolyser external dimensions: Length = 34’ 1”, Width = 7’ 1”, Height = 12’ 4”
    - **b. Describe the process by which the vitrifier will be used and how the generated heat will interact with the process material.**
        - b.i. The vitrifier is in the combustion chamber external to the retort. The vitrifier and four burners heat the outside of the pyrolyser retort.
    - **c. Make/Model/Heat Input Rating of the burners for each vitrifier, also please specify heat input rating by type of fuel.**
        - c.i. There are 4 Technotherm dual fuel burners (Model FC2) for each pyrolyser. Each burner is rated at 2 gJ (1,895,634 BTU)
    - **d. Please note or identify any other streams entering the vitrifier?**
        - d.i. None
    - **e. What streams are leaving the vitrifier? Please describe the make-up of these streams and where any of these streams are considered and/or to as a waste.**
        - e.i. Oxidized residue, vitrified inorganic minerals

17. **For the dryer, provide the following:**
    - **a. Source of the heat energy for the dryer.**
        - a.i. Genset Exhaust/Propane/Syngas
    - **b. Make/model/fuel type/heat input capacity of burner(s) if equipped.**
        - b.i. Technotherm Dual fuel burner (Model FC 5), rated at 3 gJ (2,843,451 BTU)

18. **For the gas cleaning trains, please provide the following:**
    - **a. Please describe how the different streams (tars, oils, hydrochloric acid, solids (char), and synthetic gas) are going to be separated using the gas cleaning trains/equipment.**
        - a.i. Tars will be removed by the condenser, oils will be removed by scrubbers and spray towers, solids removed by drop out (deacceleration) chamber. Hydrochloric chloride gas is removed prior to the pyrolysis unit and routed to hydrochloric acid plant for final processing.
    - **b. Please identify the type(s) of equipment going to be used in the gas cleaning trains.**
        - b.i. Condensers, spray towers, scrubbers and regenerative thermal re-oxidizer
    - **c. Please identify the operating conditions needed to perform the desired separations.**
        - c.i. A gas temperature of 1,526°F (830° C) exiting the pyrolysis unit
    - **d. Please identify any additional inlet streams that are necessary to perform the desired separations.**
        - d.i. None
    - **e. Please identify all outlet streams to include any wastewater.**
        - e.i. There are no wastewater streams from the gas cleanup process. Due to the high temperatures any water generated will be evaporated and exit the system as steam out the stack.

Safety Data Sheet
HYDROCHLORIC ACID 22 BE

Version 1.2 Revision Date: 03/01/2024

SECTION 1. IDENTIFICATION

Product name : HYDROCHLORIC ACID 22 BE

Synonyms : No data available

Recommended use of the chemical and restrictions on use

Recommended use : Industrial Chemical

Restricted Uses : No data available

Manufacturer or supplier's details

Company : Univar Solutions Canada Ltd.
Address 64 Arrow Road
North York, ON, M9M 2L9
Canada

Emergency telephone number:
Local Emergency Contact : During Office hours Monday-Friday, 8.00 am - 4.30 pm (Pacific Standard Time) : 1-866-686-4827

Additional Information: : Responsible Party: Product Compliance Department
E-mail: SDSNA@univarsolutions.com
SDS Requests: 1-855-429-2661
Website: www.univarsolutions.com

SECTION 2. HAZARD IDENTIFICATION

Hazardous Classification of the substance or mixture

Corrosive to metals : Category 1

Skin corrosion : Category 1B

Serious eye damage : Category 1

Specific target organ toxicity - single exposure : Category 3 (Respiratory system)

Label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

Precautionary statements : **Prevention:**
P234 Keep only in original packaging.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P363 Wash contaminated clothing before reuse.
P390 Absorb spillage to prevent material damage.
Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

CAS-No.	Chemical name	% by Weight	Synonyms
7647-01-0	Hydrochloric acid	30 - 60	Hydrochloric acid

Actual concentration or concentration range is withheld as a trade secret

SECTION 4. FIRST-AID MEASURES

General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact	:	Small amounts splashed into eyes can cause irreversible tissue damage and blindness. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Continue rinsing eyes during transport to hospital. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Carbon dioxide (CO2) Foam Dry powder Water mist
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	toxic fumes
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Advice on safe handling	:	Avoid formation of aerosol. Do not breathe vapours/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. To avoid spills during handling keep bottle on a metal tray. Dispose of rinse water in accordance with local and national regulations.
Conditions for safe storage	:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

CAS-No.	Components	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
7647-01-0	Hydrochloric acid	(c)	2 ppm 3 mg/m3	CA AB OEL
		C	2 ppm	CA BC OEL
		C	2 ppm	CA QC OEL

Personal protective equipment

Respiratory protection	:	In the case of vapour formation use a respirator with an approved filter.

Hand protection

Remarks	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Eye protection	:	Eye wash bottle with pure water Tightly fitting safety goggles Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	:	Impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	colourless
Odour	:	pungent, sharp odor
Odour Threshold	:	No data available
pH	:	< 2
Freezing Point (Melting point/freezing point)	:	-35 °C (-31 °F)
Boiling Point (Initial boiling point and boiling range)	:	108 °C (226 °F)
Flash point	:	No data available
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	13.3 kPa @ 20 °C (68 °F)
Relative vapour density	:	1.268 @ 20 °C (68 °F)
Relative density	:	1.178 - 1.187 @ 20 °C (68 °F) Reference substance: (water = 1)
Density	:	9.931 lb/gal
Water solubility	:	No data available
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Thermal decomposition	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No decomposition if stored and applied as directed.
Conditions to avoid	:	Keep away from heat, flame, sparks and other ignition sources.
Incompatible materials	:	Acids Amines Ammonia brass chlorinated hydrocarbons Metals metallic oxides nitrates sodium hypochlorite steel

Strong bases
Strong oxidizing agents
Sulphides
water
Aluminium
Peroxides

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components:

7647-01-0:

Acute inhalation toxicity : LC50 (Rat, male): 8.3 mg/l
Exposure time: 0.5 h
Test atmosphere: dust/mist

Skin corrosion/irritation

Product:

Remarks: Extremely corrosive and destructive to tissue.

Components:

7647-01-0:

Species: Rabbit
Result: Causes severe burns.

Serious eye damage/eye irritation

Product:

Remarks: May cause irreversible eye damage.

ACGIH No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

STOT - single exposure

Components:

7647-01-0:

Target Organs: Respiratory system, Lungs
Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

Further information

Product:

Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

No data available

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

Product:

Additional ecological information : No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of in accordance with all applicable local, state and federal regulations.
For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Univar Solutions ChemCare: 1-800-637-7922

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

TDG (Transportation of Dangerous Goods):
UN1789, HYDROCHLORIC ACID SOLUTION, 8, II

IATA (International Air Transport Association):
UN1789, Hydrochloric acid, 8, II

IMDG (International Maritime Dangerous Goods):
UN1789, HYDROCHLORIC ACID, 8, II

SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all of the information required by the HPR.

NPRI Components : 7647-01-0

The components of this product are reported in the following inventories:

REACH : Not in compliance with the inventory

TSCA : On TSCA Inventory

DSL : All components of this product are on the Canadian DSL

AICS : On the inventory, or in compliance with the inventory

NZIoC : Not in compliance with the inventory

ENCS : On the inventory, or in compliance with the inventory

ISHL : Not in compliance with the inventory

KECI : On the inventory, or in compliance with the inventory

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

TCSI : Not in compliance with the inventory

SECTION 16. OTHER INFORMATION

The information accumulated is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made become available subsequently to the date hereof, we do not assume any responsibility for the results of its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Univar Solutions EHS Product Compliance Department (1-855-429-2661) SDSNA@univarsolutions.com.

Revision Date : 03/01/2024

Material number:
16178239, 16174898, 16174655, 16169274, 16168348

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical	LOAEL	Lowest Observed Adverse Effect Level

	Substances		
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50		Lethal Concentration 50%	

Appendix C

STATEMENT OF CERTIFICATION

This Certification is for signature by the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or another executive with authority to perform similar policy or decision-making functions of the corporation.

Empire Green Generation is submitting the enclosed documents in response to the U.S. Environmental Protection Agency's ("EPA") request for information, issued pursuant to Section 114(a) of the Clean Air Act, to determine whether the facility is in compliance with the Clean Air Act.

I certify that I am fully authorized by Empire Green Generation to provide the above information on its behalf to EPA.

I certify under penalty of law that I have personally examined and am familiar with the statements and information submitted in the enclosed documents, including all attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are, to the best of my knowledge and belief, true, correct, accurate and complete. I am aware that there are significant penalties for knowingly submitting false statements and information, including the possibility of fines or imprisonment pursuant to Section 113(c)(2) of the Clean Air Act, 42 U.S.C. § 7413(c)(2), and 18 U.S.C. §§ 1001 and 1341.

Date: 8/30/2024

Name (Printed): Bernard R. Brown

Signature: [signature]

Title: Chief Operating Officer