MARYLAND DEPARTMENT OF THE ENVIRONMENT

AIR AND RADIATION ADMINISTRATION
APPLICATION FOR A PERMIT TO CONSTRUCT

DOCKET #15-24

COMPANY: US Army Garrison – Fort Detrick

LOCATION: 201 Beasley Dr., Suite 230
Fort Detrick, MD 21702-9229

APPLICATION: Installation and operation of two (2) new multiple chamber medical waste incinerators (MWI) each with a rated burning capacity of 550 lb/hr, equipped with air pollution control systems, & one (1) natural gas fired emergency generator rated at 1000 kW.

ITEM	DESCRIPTION
1	Notice of Application and Informational Meeting
2	Environmental Justice (EJ) Information - EJ Fact Sheet
3	Permit to Construct Application Forms – Forms 5T, Forms 5EP, Forms 6, Forms 10 and Forms 42, Vendor Specifications, evidence of workman's compensation insurance, process flow diagrams with emission points, EJ Score and Screening Report, site plan including the proposed source and property boundary locations, material balance data and all emissions calculations.
4	Evidence of Zoning being exempt for military based facilities (Fort Detrick) under United States Code (U.S.C.)

MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION

NOTICE OF APPLICATION AND INFORMATIONAL MEETING

The Maryland Department of the Environment, Air and Radiation Administration (ARA) received a permit-to-construct application from US Army Garrison – Fort Detrick on October 29, 2024 for the installation and operation of two (2) new multiple chamber medical waste incinerators (MWI) each with a rated capacity of burning 550 lb/hr, equipped with air pollution control systems, & one (1) natural gas fired emergency generator rated at 1000 kW. The proposed installation will be located on the Fort Detrick campus at 8425 Navy Way, Fort Detrick, MD 21702.

In accordance with HB 1200/Ch. 588 of 2022, the applicant provided an environmental justice (EJ) Score for the census tract in which the project is located using the MDE EJ Screening Tool. The EJ Score, expressed as a statewide percentile, was shown to be 22 which the Department has verified. This score considers three demographic indicators – minority population above 50%, poverty rate above 25% and limited English proficiency above 15%. Multiple environmental health indicators are used to identify overburdened communities.

Copies of the application, the MDE EJ Screening Tool Report (which includes the score), and other supporting documents are available for public inspection on the Department's website at https://mde.maryland.gov/programs/Permits/AirManagementPermits/Pages/index.aspx (click on Docket Number 15-24). Any applicant-provided information regarding a description of the environmental and socioeconomic indicators contributing to that EJ score can also be found at the listed website. Such information has not yet been reviewed by the Department. A review of the submitted information will be conducted when the Department undertakes its technical review of all documents included in the application.

Pursuant to the Environment Article, Section 1-603, Annotated Code of Maryland, an Informational Meeting has been scheduled so that citizens can discuss the application and the permit review process with the applicant and the Department.

An Informational Meeting will be held on February 26, 2025 (inclement weather date: March 6, 2025) from 6:00 p.m. to 8:00 p.m. at the Hampton Inn and Suites Frederick Fort Detrick located at 1565 Opossumtown Pike, Frederick, MD 21702.

The Department will provide an interpreter for deaf and hearing impaired persons provided that a request is made for such service at least ten (10) days prior to the meeting. Further information may be obtained by calling Ms. Shannon Heafey at 410-537-4433.

Christopher R. Hoagland, Director
Air and Radiation Administration

Maryland
Department of
the Environment

The Applicant's Guide to Environmental Justice and Permitting

What You Need to Know

This fact sheet is designed to provide guidance to applicants on incorporating environmental justice screening requirements pursuant to House Bill 1200, effective October 1, 2022.

What is Environmental Justice?

The concept behind the term environmental justice (EJ) is that regardless of race, color, national origin, or income, all Maryland residents and communities should have an equal opportunity to enjoy an enhanced quality of life. How to assess whether equal protection is being applied is the challenge.

Communities surrounded by a disproportionate number of polluting facilities puts residents at a higher risk for health problems from environmental exposures. It is important that residents who may be adversely affected by a proposed source be aware of the current environmental issues in their community in order to have meaningful involvement in the permitting process. Resources may be available from government and private entities to ensure that community health is not negatively impacted by a new source located in the community.

Extensive research has documented that health disparities exist between demographic groups in the United States, such as differences in mortality and morbidity associated with factors that include race/ethnicity, income, and educational attainment. House Bill 1200 adds to MDE's work incorporating diversity, equity and inclusion into our mission to help overburdened and underserved communities with environmental issues.

What is House Bill 1200 and what does it require?

Effective October 1, 2022, House Bill 1200 requires a person applying for a permit from the Department under §1-601 of the Environment Article of the Annotated Code of Maryland or any permit requiring public notice and participation to include in the application an EJ Score for the census tract where the applicant is seeking the permit; requiring the Department, on receiving a certain permit application to review the EJ Score; and requiring notices to include information related to EJ Scores and generally relating to environmental permits and environmental justice screenings.

What is a "Maryland EJ Tool"?

The term "Maryland EJ Tool" means a publicly available state mapping tool that allows users to: (1) explore layers of environmental justice concern; (2) determine an overall EJ score for census tracts in the state; and (3) view additional context layers relevant to an area. The MDE EJ Screening Tool is considered a Maryland EJ Tool.

What is an "EJ Score"?

The term "EJ Score" means an overall evaluation of an area's environment and environmental justice indicators, as defined by MDE in regulation, including: (1) pollution burden exposure; (2) pollution burden environmental effects; (3) sensitive populations; and (4) socioeconomic factors.

The MDE EJ Screening Tool considers three demographic indicators, minority population above 50%, poverty rate above 25% and limited English proficiency above 15%, to identify underserved communities, and multiple environmental health indicators to identify overburdened communities. The tool uses these indicators to calculate a

Final EJ Score Percentile, statewide. It is that score, linked to the census tract where the project is to be located, that needs to be reported to MDE as part of your permit application.

What does the application require?

The link for the MDE EJ Screening Tool is located on the Department's website, www.mde.maryland.gov. Click on the Environmental Justice header at the top of the Department's home page, then select EJ Screening Tool from the menu on the left. Click on Launch the EJ Screening Tool. After you open the tool, click okay on the opening screen. At the top right, please click the first button for the MDE Screening Report. Input the address of the proposed installation in the address bar. Click on the Report button. Once the report has been generated select the print icon and save it in a .pdf format.

The applicant needs to include the MDE Screening Report with the EJ Score from the MDE EJ Screening Tool as part of the permit application upon submission. An application will not be considered complete without the report.

The applicant is encouraged to provide the Department with a discussion about the environmental exposures in the community. This will provide pertinent information about how the applicant should proceed with engaging with the community. Residents of a community with a high indicator score and a high degree of environmental exposure should be afforded broader opportunities to participate in the permit process and understand the impacts a project seeking permit approval may have on them.

Questions

For air quality permits, please call 410-537-3230.
For water permits, please call 410-537-4145.
For land permits pertaining to Solid Waste, please call 410-537-3098. For land permits pertaining to Oil Control, please call 410-537-3483.
For land permits pertaining to Animal Feeding Operations, please call 410-537-4423.
For land permits pertaining to Biosolids, please call 410-537-3403.

U.S. ARMY GARRISON AT FORT DETRICK
INCINERATOR PERMIT TO CONSTRUCT

Prepared By:
TRINITY CONSULTANTS
8425 Navy Way
Fort Detrick, MD, 21702
(845) 325 - 0887

October 2024

Project 242101.0105

Trinity Consultants

TABLE OF CONTENTS

1. PERMIT APPLICATION SUMMARY 1-1
1.1 Application Organization 1-1

2. PROJECT DESCRIPTION 2-1
2.1 Technical Overview 2-1
2.2 Incinerator Design Criteria 2-1
2.3 Incinerator Components 2-2
2.3.1 Auxiliary Fuel Burners 2-2
2.3.2 Combustion Air Supply System 2-2
2.3.3 Waste Loader System 2-2
2.3.4 Breeching, Stack & APC System By-Pass 2-3
2.3.5 Wet Ash Conveyor 2-3
2.3.6 APC System 2-3
2.4 Process Controls and Instrumentation 2-4
2.5 State-of-the-Art Emission Control Technology 2-4

3. EMISSION QUANTIFICATION 3-1
3.1 Incineration of HMI Waste 3-1
3.2 Combustion from Emergency Generators 3-2
3.3 Total Project Emissions 3-2

4. REGULATORY APPLICABILITY 4-1
4.1 Title V Applicability 4-1
4.2 New Source Review Applicability 4-1
4.2.1 Source Classification 4-1
4.2.2 Defining Existing versus New Emission Units 4-2
4.2.3 PSD/NNSR Applicability Determination 4-2
4.3 Federal Regulatory Applicability 4-2
4.3.1 New Source Performance Standards 4-2
4.3.2 National Emission Standards for Hazardous Air Pollutants 4-7
4.4 Maryland State Regulatory Applicability 4-7
4.4.1 COMAR 26.11.02.09 - Source Subject to Permits to Construct and Approvals 4-7
4.4.2 COMAR 26.11.06.08 & 26.11.06.09 – Nuisance and Odors 4-8
4.4.3 COMAR 26.11.08.04 – Control of Incinerators – Visible Emissions 4-8
4.4.4 COMAR 26.11.08.05 – Control of Incinerators – Particulate Matter 4-8
4.4.5 COMAR 26.11.08.09 – Incinerator Operator Training 4-8
4.4.6 COMAR 26.11.09.05 – Control of Fuel Burning Equipment and Stationary Internal Combustion – Visible Emissions 4-8
4.4.7 COMAR 26.11.09.07 – Control of Fuel Burning Equipment and Stationary Internal Combustion – Sulfur Oxides 4-8
4.4.8 COMAR 26.11.09.08 – Control of Fuel Burning Equipment and Stationary Internal Combustion at Major Stationary Sources – Nitrogen Oxides 4-8
4.4.9 COMAR 26.11.15 & 26.11.16 – Toxic Air Pollutants 4-9
4.4.10 COMAR 26.11.36 – Distributed Generation 4-9

5. TOXIC AIR POLLUTANT ASSESSMENT 5-1
5.1 Site-Wide TAP Emissions 5-1

5.2 TAP Evaluation 5-1
5.2.1 Small Emitter Exemption 5-1
5.2.2 Allowable Emission Rates (AER) 5-2
5.3 T-BACT Analysis 5-2

APPENDIX A. RBLC SEARCH OUTPUT

APPENDIX B. PTE CALCULATIONS

APPENDIX C. PERMIT TO CONSTRUCT FORMS

APPENDIX D. AREA MAP AND PROCESS FLOW DIAGRAM

APPENDIX E. MANUFACTURER PERFORMANCE GUIDELINES

APPENDIX F. WASTE CHARACTERIZATION SURVEY

1. PERMIT APPLICATION SUMMARY

Fort Detrick is a Federal military installation located within the city limits of Frederick, Maryland. The military installation is comprised of the following four noncontiguous parcels: Main Post (728 acres); Area B, including the FLAIR Armory (399 acres); Water Treatment Plant (7 acres); and Sewage Treatment Plant (9 acres). The Main Post is subject to Title V Operating Permit Part 70 No. 24-021-00131 given its potential emissions are above major source threshold levels for all criteria pollutants, except lead. This includes the testing, monitoring, recordkeeping and reporting requirements specific to each emissions unit. Fort Detrick houses several medical research laboratories and a worldwide communications area providing a "hot line" to Moscow and satellite dishes for satellite tracking. Fort Detrick is proposing to replace the on-site medical waste incinerators (MWI) with new MWI and other support equipment. The proposed medical waste incinerators are subject to the New Source Performance Standards (NSPS), 40 CFR Part 60 Subpart Ec. The proposed incinerators will be controlled by Envitech Inc.'s Medical Waste Incinerator Air Pollution Control System which is guaranteed to meet all applicable regulations for a new, large medical waste incinerator.

Two previous MWI units (EU B5 and B6) were installed in June 1995. Each were rated at a capacity of 1,000 lb/hr and equipped with an emission control system and a waste heat recovery boiler. Both units have been out of service since 2018, due to equipment age and cost of maintenance. Accordingly, continued use of the existing MWI units is no longer considered viable and plans are underway to install two replacement MWI units in a new laboratory building. The new MWI units mentioned above will consist of multiple chambers and are each rated at a capacity of 550 lb/hr. An estimated 1 million pounds of waste per year is to be burned 5 days per week, 8 hours per day.

Additionally, Fort Detrick will install an emergency generator and several exempt natural gas-fired combustion units; however, their emissions contribution is included in the New Source Review (NSR) applicability analysis.

Fort Detrick is located in Frederick County which is currently designated as "attainment" or "unclassifiable" for all pollutants, except ozone which is "nonattainment". The facility is classified as a major source under the Nonattainment New Source Review (NNSR) and Title V permit program due to potential NOX emissions (an ozone precursor) exceeding the NNSR major source threshold of 25 tpy. Emissions of all pollutants regulated under the Prevention of Significant Deterioration (PSD) program are less than the 250 tpy major source threshold.

1.1 Application Organization

This submittal contains a Permit to Construct (PTC) application for the proposed project. The application is organized as follows:

- Section 2 provides a project description;
- Section 3 summarizes the emission increases associated with the proposed project;
- Section 4 details the regulatory applicability analysis for the proposed project;
- Section 5 provides a Toxic Air Pollutant (TAP) assessment;
- Appendix A contains the RACT/BACT/LAER Clearinghouse (RBLC) search results in support of the siting analysis;
- Appendix B includes documentation of emission calculations;
- Appendix C contains the required PTC forms;
- Appendix D contains the facility area map and process flow diagram for the proposed project;

- Appendix E contains the new MWI, control equipment, and generator performance guidelines; and
- Appendix F contains a characterization of the medical waste streams.

2. PROJECT DESCRIPTION

This section provides an overview of the proposed project at Fort Detrick's campus.

2.1 Technical Overview

Fort Detrick is planning to replace two existing MWI (EU B5 and B6) with two new MWI. Design criteria and guidelines have been prepared for the procurement, installation, commissioning, and compliance testing for the new MWIs. These documents include detailed performance criteria with minimum design and construction requirements for the complete incineration system, its associated APC system, and all associated components and appurtenances. They also include specific requirements and criteria for system and equipment commissioning, performance and compliance testing, operator training and certification, and for final acceptance. The documents specify that the new MWI units must comply with 40 CFR Part 60, Subpart Ec for Large Medical Waste Incinerators and that they must include air pollution control (APC) systems that have proven successful in meeting the emission standards specified in the regulations. Mortenson Construction is responsible for the design/building for the two new medical waste incinerators at Fort Detrick.

The new incinerators will be comprised of two refractory-lined chambers, inter-connected by gas passage ports or ducts, to provide for complete combustion of the hazardous medical material. The specific model to be used at the Fort Detrick facility includes a primary combustion chamber (PCC) into which waste is loaded and burned under air-deficient, or starved-air, conditions as a means to minimize particulate entrainment and carry-over from the chamber. This air deficiency causes volatile gases and smoke to be generated and carried into a secondary combustion chamber (SCC). In the SCC, excess combustion air is introduced along with auxiliary fuel firing to combust the volatile gases and entrained organic particulate matter discharged from the PCC. Combustion air supply to both chambers is independently, automatically, and continually controlled and adjusted to maintain proper respective air balances.

Other equipment will be installed in support of the new MWI units, including a 1,000 kW emergency standby natural gas generator, three mechanical chillers, and several natural gas-fired combustion units, including two hot water boilers (HWB1-2), one domestic water heaters (DWH1), and other small heaters.

2.2 Incinerator Design Criteria

The new incinerators have a design capacity to burn up to 550 lb/hr of mixed waste having an average heating value of 9,000 BTU/lb, operating at 1,800^{o}F. The incinerators will be equipped with an automatic feed with cart dumper device, and automatic ash removal. The incinerator units will be fully automatic, with a system equipped with time-proven reliable components. Waste reduction of medical waste is up to 99% of combustible materials. Based on the design of the facility, only one incinerator will be able to operate at a time.

One of the two incinerators will typically be operated for up to 8 hr/day, 5 days a week, however, one MWI could be operated up to 24 hours per day if needed due to unexpected waste surges.

The PCC design criteria are provided as follows:

- The PCC is comprised of two 1.5 MMBtu modulating natural gas burners. Both air and gas are fully modular. This will enable the combustion of highly-volatile, high BTU waste loadings, such as those containing large volumes of plastics, without detrimental operating problems or upset conditions. Combustion air is piped into the primary chamber at a modulated maximum rate of 290 scfm and will modulate when the burner is not in use. The primary chamber piping is equipped with a modulating butterfly damper to provide high and low pressure operation of the combustion air supply.

The SCC design criteria are provided as follows:

- The SCC is comprised of one 2.8 MMBtu modulating natural gas burner. Both air and gas are fully modular. The SCC is equipped with a combustion air blower rated at 15 HP to generate 2,600 scfm of combustion air to supply intermediate pressure combustion air to the fuel burners, and the primary and secondary chamber combustion air manifold. Additionally, five modulating butterfly dampers will provide combustion air to the primary burners, the secondary burner, and to the secondary combustion air manifold. The SCC will be sized for providing 1.0+ second chamber residence time when the incinerator is operated at rated capacity and with a flue gas temperature of 1,800º F to 2,000° F.

2.3 Incinerator Components

2.3.1 Auxiliary Fuel Burners

The PCC will be equipped with two, natural gas fired, auxiliary fuel burners, with each having a nominal firing rate of 1.5 MMBtu. The PCCs will be controlled to maintain combustion temperatures in the range of 1,400° F to 1,600° F.

The SCC will be equipped with a natural gas fired, auxiliary fuel burner having a nominal firing rate of 2.8 MMBtu and with full modulation controls for preheating and maintaining normal operating flue gas temperatures in the range of 1,800° F to 2,000° F.

All burners will be equipped with integral combustion air blowers and independent fuel gas trains. Burner controls will be fully integrated with combustion air supply controls in a cascade type sequence for maximizing combustion efficiencies and minimizing auxiliary fuel usage.

2.3.2 Combustion Air Supply System

Both combustion chambers will be equipped with independent combustion air supply blowers with variable-frequency drives. The blowers will be controlled on the basis of temperature loops in each respective combustion chamber in conjunction with auxiliary fuel firing controls.

Operating temperatures in both combustion chambers will be continuously monitored and recorded, and the waste loading system will be locked-out or prevented from operating should temperatures in either chamber be below or above the temperature range limits noted above.

2.3.3 Waste Loader System

The incinerator will be equipped with a hydraulically-actuated, automatically-controlled, hopper / ram type loader system that is integrated with an independent cart dumper for loading or charging waste into the PCC. The cart dumping device is fully interlocked to the hopper lid and automated to the extent possible.

The cart tipper will be built to accommodate (tip) an 800 lb capacity. Loader operations will be time-controlled or limited to ensure waste loads are at regulated intervals and to ensure that maximum hourly loading limits are not exceeded. Also, the waste loader will be automatically locked-out and prevented from operating should conditions, such as incinerator temperatures, not be within permitted limits or should there be failures that could cause equipment damage.

2.3.4 Breeching, Stack & APC System By-Pass

High-temperature, refractory-lined breeching will duct flue gases from the SCC to the APC system quench section, and from the SCC to the APC system by-pass connecting directly to the stack, and from the discharge of the APC system to the stack.

A high-temperature, refractory-lined, butterfly type bypass damper will be installed in the bypass breeching that directly interconnects the SCC and stack as the means to divert or dump flue gases from the SCC directly to the stack during emergency conditions or after a normal incinerator system shutdown. The waste loader will be locked-out whenever the bypass damper opens, and normal waste loading operations will not be able to resume until emergency conditions and other problems have been fully corrected. Any opening of the bypass damper during waste burning operations will be duly recorded and reported.

The incinerator system stack will have a total height of 46.25-ft with a 28-inch diameter for the incinerator bypass and a 14-inch inner diameter for the APC stack. The stack will be equipped with a stack screen and test ports to enable emissions testing.

2.3.5 Wet Ash Conveyor

The hydraulic, motor-driven wet ash conveyor lifts ash material up an incline and deposits the material into a waste container or dumpster. It is equipped with three hydraulic drive shafts and four idlers in the chain path. The conveyor tank is filled with water to seal the ash chute and wet the ash to prevent dust conditions. The conveyor runs for an adjustable timed period after every charge of waste into the incinerator.

2.3.6 APC System

The APC system will be the product of a manufacturer that specializes in the design, manufacturing, start-up, commissioning, and operations of high-efficiency APC systems and equipment that are proven capable of meeting the emission limits specified in 40 CFR Part 60, Subpart Ec for a Large HMIWI which are shown in Table 1B of the rule.

The APC system will comprise a combination of standard, proven components and unit processes that have demonstrated, proven capabilities for meeting the emission limits specified in the HMIWI regulations, and such capabilities must be based on demonstrated success on similar applications meeting comparable or more stringent emission limits. The selected APC system manufacturer will be responsible for selecting, arranging, and designing the various system components and processes as a complete, fully-integrated system, as needed for meeting and guaranteeing compliance with the emission limits.

Acceptable, standard APC system components include the following:

- Quench Section: For quench-cooling hot flue gases ducted from the SCC to adiabatic saturation temperatures via thermostatically-controlled water spray injection.

- Condenser/Adsorber Section: For removal of acid gases and sulfur oxides (SO_X) from the flue gases, comprised of packing media and a scrubber water recirculation system via controlled, metered sodium hydroxide injection.
- Sub-Cooling System: Comprising a plate-and-frame type heat exchanger using chilled water to reduce temperatures of water circulated in the wet scrubber section below adiabatic saturation levels for removal of particulate matter (PM) and heavy metals.
- Particulate Removal Section: A high-pressure drop, high-efficiency, automatically controlled venturi for the capture and removal of PM from the flue gases.
- Entrainment Separator: A high-efficiency, mesh type filter section for removing water droplets entrained in flue gases discharged from the wet scrubber processes before they enter the ID fan or other downstream components.
- Cartridge Filter Unit: A housing containing a number of individual, ultra-high efficiency tubular filtration units for enhanced removal of sub-micron size PM
- Carbon Adsorber Unit: A deep bed, vapor-phase chamber containing powdered-activated carbon (PAC) media for enhanced removal of mercury (Hg) and dioxins/furans (TCCD/TCDF) from the flue gases via passive adsorption.
- Induced Draft (ID) Fan: A fan to draw or pull flue gases across the APC system components and to force or push them through the breeching connecting to the stack.

2.4 Process Controls and Instrumentation

The incineration and APC systems will be fully integrated and controlled to operate together as a single unit in an efficient, safe manner for all operating modes, inclusive of startup and preheating, steady-state operations, burndown, and cool down periods, in continued compliance with regulatory requirements and permit conditions. This will be accomplished via PLC-based controls and instrumentation and an operator interface located within a centralized main control panel. The operator interface panel will enable operating personnel to continually monitor all system processes, key operating parameters, and the status of all components on a real-time basis.

All key operational data and regulatory parameters, including waste loading data, temperatures, scrubber flow rates, PCC draft, pressure drops, pH, and emergency or out-of-compliance conditions will be continually monitored, recorded, and transmitted to a Data Acquisition System (DAS).

2.5 State-of-the-Art Emission Control Technology

The APC system equipment and criteria as specified in the CDs are based on successful compliance emissions test data for comparable HMIWI systems at other facilities. Accordingly, the CDs identify the APC system manufacturers that are considered prequalified based on their demonstrated ability to provide an APC system to meet the emission limits in the regulations and for their willingness to provide guarantees for meeting them. As such, the specified APC system and equipment truly reflect of state-of-the-art technology.

In addition, incinerator system requirements specified in the CDs such as a 1.0+ second SCC residence time at 1,800° F to 2,000° F and with cascade type combustion controls for the burners and blowers will serve to minimize the formation and emissions of CO, organic PM, VOC, and other organics. This is also reflective of state-of-the-art technology.

3. EMISSION QUANTIFICATION

Emissions from the new MWI units will result from the incineration of medical and pathological waste, and the combustion of natural gas in the primary and secondary combustion chambers (PCC and SCC, respectively). The purpose of the incinerator is to ensure safe disposal of hazardous medical waste. The PCC and SCC burners will only burn natural gas.

Emission increases associated with the proposed project will be generated from the following equipment additions to Fort Detrick:

1. Medical waste incinerations
2. Combustion of natural gas in the PCC and SCC of the new MWI
3. Operations of one 1,000kW natural gas-fired emergency generator
4. Natural gas-fired combustion units, including two hot water boilers, one domestic water heater, and other small combustion units

Note that there are no air emissions from the mechanical chillers.

The methodologies for estimating emission increases from the MWI and emergency generator are summarized in the following section of this application. Please refer to Appendix B for detailed emission calculations for all sources.

3.1 Incineration of HMI Waste

The new MWI units will be subject to NSPS Subpart Ec, which includes emission limits for MWI constructed after December 1, 2008. The APC system manufacturer has provided uncontrolled and controlled emission rates for several regulated pollutants. The manufacturer data and applicable NSPS Subpart Ec emission limits were used to calculate emissions where applicable. Detailed uncontrolled and controlled emission calculations and emission factors are shown in Appendix C.

For hazardous air pollutant (HAP) and TAP not included in the manufacturer data or NSPS Subpart Ec emission limits, potential emissions are based on emission factors from U.S. EPA AP-42 Chapter 2.3 Medical Waste Incineration, Table 2.3-1 through Table 2.3-13. The emission factors used in these calculations was chosen based on the effectiveness the proposed control measures. The potential throughput of 550 lb/hr and continuous operation of a single MWI was utilized to calculate potential emissions.

Potential MWI Emissions (lb/hr):

$$Hourly\ Potential\ Emissions\ \left(\frac{lb}{hr}\right) = Emission\ Factor\left(\frac{lb}{ton}\right) \times\ Throughput\left(\frac{lb}{hr}\right) \times \left(\frac{ton}{2{,}000\ lb}\right)$$

Note that the emission rates in the manufacturer data, NSPS Subpart Ec, and AP-42 do not distinguish between emissions from waste combustion and natural gas combustion and are intended to represent worst-case emissions.

3.2 Combustion from Emergency Generators

Potential emissions from the 1,000 kW Caterpillar G3512 natural gas-fired emergency standby generator were calculated using the Caterpillar generator specification performance data, 40 CFR Part 60 Subpart JJJJ emission limits, and the U.S. EPA AP-42, Section 3.2 – Natural Gas-fired Reciprocating Engines.

Potential Emissions – NO_X, CO, and VOC (lb/hr):

$$Hourly\ Potential\ Emissions\ \left(\frac{lb}{hr}\right) = Emission\ Factor\ \left(\frac{lb}{hp-hr}\right) \times Power\ Rating\ (kW) \times \left(\frac{1.34\ hp}{kW}\right)$$

Potential Emissions – PM, PM_{10}, $PM_{2.5}$, SO_2, CO_2, CH_4, and N_2O (lb/hr):

$$Hourly\ Potential\ Emissions\ (lb/hr) = Emission\ Factor\left(\frac{lb}{MMBtu}\right) \times Heat\ Input\ \left(\frac{MMBtu}{hr}\right)$$

The potential emissions calculations for CO_2e are based on the maximum heating value of natural gas, heat input rate, and Global Warming Potential (GWP) for each GHG pollutant per 40 CFR 98, Subpart A, Table A-1.

Table 3-1. GWP for GHG pollutants per 40 CFR 98, Subpart A, Table A-1.

	CO_2	CH_4	N_2O
Global Warming Potential (GWP)	1	25	298

Potential Emissions – CO_2e (lb/hr):

$$Potential\ Emissions\ \left(\frac{lb}{MMBtu}\right) = CO2e\ Emission\ Factor\ \left(\frac{lb}{MMscf}\right) \times Heating\ Value\ \left(\frac{scf}{Btu}\right)$$

$$Hourly\ Potential\ Emissions\ \left(\frac{lb}{hr}\right) = Potential\ Emissions\ \left(\frac{lb}{MMBtu}\right) \times Heat\ Input\ Rate\ \left(\frac{MMBtu}{hr}\right)$$

3.3 Total Project Emissions

Annual potential emissions are calculated assuming controlled continuous operations (although proposed project indicates operations only 5 days per week, 8 hours per day).

Annual Emissions (tpy):

$$Annual\ Potential\ Emissions\ (tpy) = Hourly\ Emissions\ \left(\frac{lb}{hr}\right) \times Hours\ of\ Operation\ \left(\frac{hr}{yr}\right) \times \left(\frac{ton}{2{,}000\ lb}\right)$$

As shown in Table 3-2, emissions from the proposed project are less than the NNSR and PSD applicability thresholds.

Table 3-2. Project Emissions Increase Summary

Unit Description	Potential Emissions (tpy)								
	CO	$PM_{filterable}$	PM_{10}	$PM_{2.5}$	NO_X	SO_2	VOC	CO_2e	HAP
New Incinerator	0.53	0.14	0.14	0.14	7.23	0.88	0.36	4,504	0.18
New Generator	0.30	3.67E-05	4.76E-03	4.76E-03	2.95E-01	2.80E-04	1.48E-01	56	3.44E-02
Natural Gas Combustion	0.66	0.06	0.06	0.06	0.78	0.00	0.04	937	0.06
Project Emission Increase	**1.48**	**0.20**	**0.21**	**0.21**	**8.30**	**0.88**	**0.55**	**5,497**	**0.27**
NNSR/PSD Threshold	**250**	**250**	**250**	**250**	**25**	**250**	**25**	**N/A**	**N/A**
Above Threshold?	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N/A**	**N/A**

Table 3-3 summarizes the state TAP emissions from this project. Additional details related to the toxics assessment and comparison to the Allowable Emission Rate (AER) contained in Section 6 of this application.

Table 3-3. Total Project Toxics Impact Analysis Summary

Pollutant	CAS Number	Project Actual Emissions [1]			Allowable Emission Rate			Below AER?[2]
		1-hr lb/hr	8-hr lb/hr	Annual lb/yr	1-hr lb/hr	8-hr lb/hr	Annual lb/yr	
Aluminum	7429905	8.33E-04	8.33E-04	1.73E+00		3.58E-02		Y
Antimony	7440360	8.50E-05	8.50E-05	1.77E-01		1.79E-02		Y
Arsenic	7440382	8.99E-06	8.99E-06	1.87E-02		3.58E-04		Y
Barium	7440393	5.69E-05	5.69E-05	1.18E-01		1.79E-02		Y
Beryllium	7440417	1.06E-06	1.06E-06	2.20E-03				Y
Chlorine	7782505	2.89E-04	2.89E-04	6.01E-01	1.04E-01	5.20E-02		Y
Cadmium	7440439	1.23E-06	1.23E-06	2.55E-03		7.17E-05		Y
Chromium	7440473	7.10E-05	7.10E-05	1.48E-01		1.79E-02		Y
Copper	7440508	7.56E-05	7.56E-05	1.57E-01		7.17E-03		Y
Iron	7439896	2.60E-03	2.60E-03	5.42E+00		4.41E+00		Y
Dioxin Furans	Various	3.30E-10	3.30E-10	6.86E-07			1.09E-05	Y
Hydrogen Bromide	10035106	1.44E-02	1.44E-02	3.00E+01	2.37E-01	9.66E-01		Y
Hydrogen Chloride	7647010	7.00E-02	7.00E-02	1.46E+02	1.07E-01	5.92E-01	2.55E+02	Y
Hydrogen Fluoride	7664393	1.00E-02	1.00E-02	2.08E+01	5.87E-02	1.47E-02		Y
Lead	7439921	6.50E-06	6.50E-06	1.35E-02		1.79E-03		Y
Manganese	7439965	1.56E-04	1.56E-04	3.24E-01		7.17E-03		Y
Mercury	7439976	1.23E-05	1.23E-05	2.55E-02	1.08E-03	3.58E-04		Y
Nickel	7440020	1.46E-04	1.46E-04	3.03E-01		3.58E-03		Y
Silver	7440224	4.70E-05	4.70E-05	9.78E-02		3.58E-04		Y
Thallium	7440280	3.03E-04	3.03E-04	6.29E-01		7.17E-04		Y
Total PCBs	1336363	1.28E-05	1.28E-05	2.66E-02		9.53E-02	3.65E+00	Y

1. Toxics screening analysis excludes emissions from the emergency generator and natural gas combustion sources, which are exempt as fuel burning equipment per COMAR 26.11.15.03(B)(2)(a).
2. Modeling is required if the expected actual emissions exceed the allowable emission rate.

4. REGULATORY APPLICABILITY

The proposed project will be subject to certain federal and state air quality regulations. This section of the application summarizes the air permitting requirements and the key air quality regulations that will apply to the proposed project.

4.1 Title V Applicability

Fort Detrick is located in Frederick County, Maryland, which is designated as a nonattainment area for the 2015 8-hour ozone standard. The Title V major source thresholds for Frederick County are 25 tpy for VOC or NO_X as ozone precursors, 100 tpy for other criteria pollutants, 25 tpy for any combination of HAPs, or 10 tpy for any single HAP. Fort Detrick is classified as a major source under the Title V program due to emissions greater than the Title V major source threshold.

4.2 New Source Review Applicability

NSR is a federal permitting program, which requires construction permits for new emission sources, or any proposed modifications, which results in an emission increase of air pollution in excess of certain threshold levels. The NSR program is comprised of two distinct NSR permitting programs: NNSR and Attainment NSR (a.k.a. PSD). NNSR permitting applies to new construction or modifications that result in emission increases of a particular pollutant for which the area in which the facility is located is classified as "nonattainment" for that pollutant with respect to the National Ambient Air Quality Standards (NAAQS). The PSD program applies to project increases of those pollutants for which the area the facility is located in is classified as "attainment" or "unclassifiable". Areas that were nonattainment but came into attainment are "maintenance" areas.

4.2.1 Source Classification

The federal NSR program, as listed in 40 CFR 51-52, provide Federal permitting requirements for projects with emissions in excess of specified thresholds. Frederick County, where Fort Detrick is located, has been classified as nonattainment with respect to the ozone NAAQS. Therefore, the NNSR major source thresholds for ozone are 25 tpy for NO_X and VOC.

The PSD program, as established in Title 40 CFR Part 52.21, regulates emissions from major stationary sources of regulated air pollutants. For the purposes of the PSD program, a major stationary source is defined as any one of the following:

- The facility belongs to one of the 28 named source categories in 40 CFR 52.21(b)(1)(i)(a) and has the potential to emit 100 tons per year (tpy) of any other pollutant subject to the regulation; or
- The facility has the potential to emit 250 tpy or more of any other pollutant subject to the regulation, regardless of its source category.

Health/Medical/Infectious Waste Incineration is not one of the 28 named source categories that trigger PSD major source applicability at 100 tpy emission levels. Therefore, the PSD major source threshold for regulated pollutants other than NO_X and VOC is 250 tpy.

Fort Detrick is a major source with respect to the NNSR program. Therefore, emission increases from the proposed project must be compared to the NO_X and VOC NNSR significant emission rates (25 tpy). Fort Detrick is a minor source with respect to the PSD permit program. Therefore, emission increases of

pollutants regulated under PSD from the proposed project must be compared to the PSD major source threshold (250 tpy).

4.2.2 Defining Existing versus New Emission Units

Different calculation methodologies are used for existing and new units; however, only new emission units are evaluated, as this project is in reference to a new MWI building, which is a freestanding building separated from the existing facility.

4.2.3 PSD/NNSR Applicability Determination

For projects that involve only new emission units, PSD applicability is determined using the actual-to-potential applicability test, with baseline actual emissions for a new emission unit of zero tons per year, and potential to emit defined as follows:

> *…means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable* ***or enforceable as a practical matter****…*

As shown in Table 4-1 below, the project emission increases based on the potential to emit of the new units do not exceed the NNSR significant emission rates or the PSD major source thresholds, and the project does not trigger NNSR or PSD permitting requirements.

Table 4-1. NNSR/PSD Applicability Analysis

Unit Description	Potential Emissions (tpy)								
	CO	$PM_{filterable}$	PM_{10}	$PM_{2.5}$	NO_X	SO_2	VOC	CO_2e	HAP
New Incinerator	0.53	0.14	0.14	0.14	7.23	0.88	0.36	4,504	0.18
New Generator	0.30	3.67E-05	4.76E-03	4.76E-03	2.95E-01	2.80E-04	1.48E-01	56	3.44E-02
Natural Gas Combustion	0.66	0.06	0.06	0.06	0.78	0.00	0.04	937	0.06
Project Emission Increase	**1.48**	**0.20**	**0.21**	**0.21**	**8.30**	**0.88**	**0.55**	**5,497**	**0.27**
NNSR/PSD Threshold	**250**	**250**	**250**	**250**	**25**	**250**	**25**	**N/A**	**N/A**
Above Threshold?	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N/A**	**N/A**

4.3 Federal Regulatory Applicability

NSPS in 40 CFR Part 60 and National Emission Standards for Hazardous Air Pollutants (NESHAP) in 40 CFR Parts 61 and 63 were reviewed to determine applicability to the proposed project.

4.3.1 New Source Performance Standards

NSPS require new, modified, or reconstructed sources to control emissions to the level achievable by the best-demonstrated technology as specified in the applicable provisions. Moreover, any source subject to an NSPS is also subject to the general provision of NSPS Subpart A, unless specifically excluded.

4.3.1.1 NSPS Subpart A – General Provisions

NSPS requires new, modified, or reconstructed sources to control emissions to the level achievable by the best-demonstrated technology as specified in the application provisions. All affected sources are subject to the general provisions of NSPS Subpart A unless specifically excluded by the source specific NSPS. Subpart A requires initial notification and performance testing, recordkeeping, monitoring, reference methods, and control device requirements for all other subparts as applicable.

4.3.1.2 NSPS Subpart Ec - Standards of Performance for HMIWI

Subpart Ec applies to each individual HMIWI that is constructed after December 1, 2008 or modified after April 6, 2010. Fort Detrick's new HMIWI meets at least one of the following definitions for a large HMIWI, (i) An HMIWI whose maximum design waste burning capacity is more than 500 pounds per hour; or (ii) A continuous or intermittent HMIWI whose maximum charge rate is more than 500 pounds per hour; or (iii) A batch HMIWI whose maximum charge rate is more than or equal to 4,000 pounds per day.[1]
Since a 10 percent limitation on hospital and medical infectious waste on a quarterly basis is not being requested, Fort Detrick's new MWI does not meet the following definition for a co-fired combustor:

> *A unit combusting hospital waste and/or medical/infectious waste with other fuels or wastes and subject to an enforceable requirement limiting the unit to combusting a fuel feed stream, 10 percent or less of the weight of which is comprised, in aggregate, of hospital waste and medical/infectious waste as measured on a calendar quarter basis. For purposes of this definition, pathological waste, chemotherapeutic waste, and low-level radioactive waste are considered "other" wastes when calculating the percentage of hospital waste and medical/infectious waste combusted.*[2]

Because the new incinerator units meet the definition of a large HMIWI and does not qualify as a co-fired combustor, the new incinerator is subject to NSPS Subpart Ec. Subpart Ec requires that the following standards will be met:

- Emission limitations for opacity and visible emissions[3], PM, CO, dioxins/furans, HCl, SO_2, NO_X, Pb, Cd, and Hg[4]
- Operator training[5]
- Siting requirements[6]
- Waste management plan[7]
- Compliance and performance testing[8]
- Monitoring of operating parameters[9]

---

[1] 40 CFR §60.51c.

[2] 40 CFR §60.51c.

[3] 40 CFR §60.52c(b),(c).

[4] 40 CFR §60.52c, Table 1B.

[5] 40 CFR §60.53c

[6] 40 CFR §60.54c.

[7] 40 CFR §60.55c.

[8] 40 CFR §60.56c.

[9] 40 CFR §60.57c, Table 2.

4.3.1.2.1 Emission Limitations

Table 4-1 summarizes the emission limitations for the new MWI as defined in 40 CFR 60.50c(a)(3), which will be guaranteed by the vendor. Section 2 of this application details the system design that will ensure the limits are met.

Table 4-1. Emissions Limits for Large HMIWI

Pollutant	Emission Limits for Large HMIWI (@ 7% O_2)	
Particulate Matter	0.0080	grains per dry standard cubic foot
Opacity	6%	6-minute block average
Carbon Monoxide	11	parts per million by volume
Dioxins/Furans TEQ	0.035	ng per dry standard cubic meter
Hydrogen Chloride	5.1	parts per million by volume
Sulfur Dioxide	8.1	parts per million by volume
Nitrogen Oxides	140	parts per million by volume
Lead	0.00069	mg per dry standard cubic meter
Cadmium	0.00013	mg per dry standard cubic meter
Mercury	0.0013	mg per dry standard cubic meter

In addition to the emission limits provided, the facility is also required to limit visible emissions of combustion ash from ash conveying systems to less than or equal to 5 percent of the three-hour observation period per 40 CFR §60.52c(c). If the conveying systems are within a building or enclosure, the limit applies to emissions discharged from the building or enclosure per 40 CFR §60.52c(d). This requirement does not apply during periods of maintenance or repair of the ash conveying systems per 40 CFR §60.52c(d).

4.3.1.2.2 Operator Training and Qualification

During HMIWI operation, a trained and qualified operator must be accessible, either at the facility or within 1 hour from the facility. The operator must be trained through a State-approved program including the specified content, and meet the qualification requirements outlined in this subpart.

4.3.1.2.3 Siting Analysis

Fort Detrick must conduct an analysis that considers air pollution control alternatives that minimize, on a site-specific basis, to the maximum extent practicable, potential risks to public health or the environment. The analysis of alternatives may consider costs, energy impacts, non-air environmental impacts, or any other factors related to the practicability of the alternatives.

An investigation into RACT/BACT/LAER Clearinghouse (RBLC) was completed. This database contains case-specific information on the "Best Available" air pollution technologies that have been required to reduce the emission of air pollutants from stationary sources.[10] This information has been provided by State and local permitting agencies. The RBLC was searched for the best technologies available for HMIWI control devices. A search for waste combustion processes only revealed incinerators as a technology for hospital, medical, and infectious waste disposal. A review of recently permitted HMIW incinerators subject to Subpart Ec

[10] Reasonably Acheivable Control Technology (RACT); Best Available Control Technology (BACT); Lowest Achievable Emission Rate (LAER).

revealed one comparable medical waste incinerator added in the last 20 years. The results for this RBLC search can be found in Appendix A.

Based on the Siting Analysis and RBLC review, Fort Detrick proposes the APC system equipment and criteria as described within this application as the best alternative. This selection is based on compliant emissions test data for comparable HMIWI systems at other facilities and the APC system manufacturers have been prequalified based on their demonstrated ability to provide an APC system to meet the emission limits in the regulations and for their willingness to provide guarantees for meeting them. As such, the APC system and equipment truly reflect state-of-the-art technology.

4.3.1.2.4 Waste Management Plan

The incinerator will be processing laboratory waste from Fort Detrick. All waste, including pathological, is autoclaved before incineration. Because Fort Detrick follows strict guidelines regarding separation of wastes from the laboratory, the laboratory procedures can be considered a waste management plan to fulfill the requirements of 40 CFR §60.55c.

4.3.1.2.5 Compliance and Performance Testing

Fort Detrick will conduct the required initial and subsequent performance testing specified in 40 CFR §60.56c. The methods used to demonstrate compliance with the emission limits for each pollutant are outlined as follows:

- Particulate matter – Method 5, Method 26A or Method 29 per §60.56c(b)(6)
- NO_X – Method 7 or 7E per §60.56c(b)(7)
- SO_2 – Method 6 or 6 C per §60.56c(b)(8)
- Opacity – Method 9, use of a bag leak detection system per §60.56c(b)(9), or use of COMS per §60.11(e)(5)
- CO – Continuous emissions monitoring system (CEMS) per §60.56c(c)(4) and (5)
- Dioxin/furan – Method 23 or use of a continuous automated sampling system per §60.56c(b)(11)
- HCl – Method 26 or 26A per §60.56c(b)(12)
- Pb, Cd and Hg – Method 29 or use of ASTM D6784-02 (Hg only) per §60.56c(b)(13)
- Visible emissions – Method 22 per §60.56c(b)(14)

Note that CEMS will be utilized to monitor emissions of NO_X and SO_2, however, Subpart Ec does not specify use of CEMS or COMS as an alternative to initial compliance demonstration requirements for NO_X, SO_2, or opacity. As allowed in §60.8(b)(3), Fort Detrick requests to follow the requirements of §60.56c(c)(5) to demonstrate compliance with the NO_X and SO_2 emission limit through the use of CEMS.

As specified in §60.56c(d), operating parameters for the APC system will be established during the initial performance test. Note that use of the bypass stack during source operation constitutes a violation of NSPS Subpart Ec.

4.3.1.2.6 Monitoring, Recordkeeping, and Reporting

All key operational data and regulatory parameters will be continuously monitored, recorded, and transmitted to a Data Acquisition System (DAS). The parameters that will be monitored are listed as follows:

- Maximum charge rate
- Date, time and duration of bypass stack use
- The presence of bag leaks through the use of a bag leak detection system

- SCC temperature
- Fabric filter inlet temperature
- Sorbent flow rate
- Scrubber liquor flow rate
- Scrubber liquor pH
- CEMS emissions data

Per §60.58c(a)(1), Fort Detrick is required to submit a notification of intent to construct, along with the anticipated date of commencement of construction, and the required siting analysis. The anticipated date of commencement of construction is October 1, 2025, and the siting analysis is included in Section 4.3.1.2.3. The application also includes the requested information in §60.58c(a)(2), which is listed as follows:

- Types of waste combusted: Laboratory, medical and infectious waste
- Maximum design waste burning capacity: 550 lb/hr at 9,000 Btu/hr, or 4.95 MMBtu/hr of waste
- Anticipated maximum charge rate: 550 lb/hr
- Petition for site-specific operating parameters: Not applicable

Therefore, this application satisfies the requirements of §60.58c(a).

Other reporting requirements include submittal of performance test reports within 60 days following performance tests, and semi-annual compliance reports.

4.3.1.3 NSPS Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

NSPS Subpart JJJJ, Standards of Performance for Spark Ignition Internal Combustion Engines, is potentially applicable to stationary internal combustion engines (ICE) based on the date each engine was constructed, reconstructed, or modified. The rule provides performance standards for both engine manufacturers and operators. Engine operators must meet the specified emission standards and fuel type specifications.

Fort Detrick's proposed project plans to operate one natural gas-fired emergency generator. As the engine will be manufactured after June 12, 2006, the unit will be subject to the requirements under this part.

The emergency generator will be rated at approximately 1,000 kW. Pursuant to 40 CFR 60.4233(e), the emergency generator must comply with the emission standards in Table 1 of Subpart JJJJ. The following emission standards are specified in Table 1:

- NO_X: 2 g/hp-hr
- CO: 4 g/hp-hr
- VOC: 1 g/hp-hr

Pursuant to 40 CFR 60.4243(d), operation of the engines will be limited to emergency situations, testing/maintenance for 100 hours per year, and other non-emergency situations for 50 hours per year. Any non-emergency operation also counts toward the 100 hour per year limit for maintenance and testing. The engine will be equipped with a non-resettable hour meter pursuant to the requirements of 40 CFR 60.4237(a), and Fort Detrick will record the hours and purpose of operation of the engine pursuant to 40 CFR 60.4245(b).

4.3.2 National Emission Standards for Hazardous Air Pollutants

NESHAP require control of hazardous air pollutant (HAP) emissions for major and area sources in specified source categories. NESHAP prescribe standards for "existing" and "new" affected sources, as defined by the applicable NESHAP. Additionally, any source subject to a NESHAP is also subject to the general provisions of NESHAP Subpart A, unless specifically excluded.

4.3.2.1 NESHAP Subpart EEEE – Hazardous Waste Combustors

NESHAP Subpart EEE, *National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors,* applies to hazardous waste incinerators at area and major sources. The proposed MWIs are exempt from Subpart EEE because they will not burn hazardous waste as defined in 40 CFR §261.3. The new MWIs will only burn wastes exempt from RCRA regulations under 40 CFR §266.100(c).

4.3.2.2 NESHAP Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines

NESHAP Subpart ZZZZ, *NESHAP for Stationary Reciprocating Internal Combustion Engines*, applies to new, existing, and reconstructed reciprocating internal combustion engines (RICE) located at a major or area source of HAP emissions. Per §63.6590(c)(1), new spark ignition engines at area sources of HAP emissions meet the requirements of Subpart ZZZZ by complying with NSPS Subpart JJJJ. Therefore, there are no further requirements under Subpart ZZZZ.

4.3.2.3 NESHAP Subpart JJJJJJ – Industrial, Commercial, Institutional Boilers at Area Sources

NESHAP Subpart JJJJJJ, *NESHAP for Industrial, Commercial, and Institutional Boilers at Area Sources*, applies to boilers at area source of HAP emissions. Per §63.11195(e), gas-fired boilers are not subject to this subpart. Therefore, none of the proposed natural gas-fired combustion units are subject to this subpart.

4.4 Maryland State Regulatory Applicability

Maryland's air quality regulations are codified under COMAR 26.11. These regulations, where potentially applicable to the facility, have been reviewed in this section. The regulations are not discussed in detail where the facility is categorically exempt, or where general regulations are not specific to the proposed operations.

4.4.1 COMAR 26.11.02.09 - Source Subject to Permits to Construct and Approvals

This regulation applies to the construction or modification of potential air emission sources. Air Quality Permits to Construct are required before construction or modification can begin for various source types. The MWIs and the emergency generator require a Permit to Construct since they do not meet any of the exemption criteria in COMAR 26.11.02.10. Submittal of this permit application meets the requirements of this section. The emergency generator under this project does not meet the definition of a "generating station" under the Maryland Public Service Commission (PSC) Certificate of Public Convenience and Necessity (CPCN) process since it is an emergency backup unit rated at less than 2 MW to be used to provide power to the site and will have equipment installed that prevents the flow of electricity produced by the generator to the grid. In addition, the facility will comply with all applicable regulations regarding noise levels and testing hours. As such, the generator does not require a CPCN or formal CPCN exemption from the PSC and this application is being submitted directly to MDE.

Per COMAR 26.11.02.10C, the natural gas-fired hot water boilers, domestic water heaters, and other natural gas-fired combustion units do not require a Permit to Construct since the heat input capacity is less than 1 MMBtu/hr.

4.4.2 COMAR 26.11.06.08 & 26.11.06.09 – Nuisance and Odors

COMAR 26.11.06.08 and COMAR 26.11.06.09 establish general provisions for the control of nuisances and odor, respectively. The facility will be subject to these general requirements.

4.4.3 COMAR 26.11.08.04 – Control of Incinerators – Visible Emissions

The MWIs will be subject to COMAR 26.11.08.04 which limits visible emissions in Areas I, II, V, and VI to 20 percent. This limit does not apply during start-up and process modification or adjustment, or occasional cleaning of control equipment if the opacity does not exceed 40% and do not occur for more than 6 consecutive minutes in any 60 minute period. This limit exceeds the applicable limit in NSPS Subpart Ec, therefore, the facility will remain in compliance with this limit.

4.4.4 COMAR 26.11.08.05 – Control of Incinerators – Particulate Matter

The MWIs will be subject to COMAR 26.11.08.05 which limits particulate matter emissions to 0.10 grains per standard cubic foot dry (gr/SCFD). This limit exceeds the applicable limit in NSPS Subpart Ec, therefore, the facility will remain in compliance with this limit.

4.4.5 COMAR 26.11.08.09 – Incinerator Operator Training

Operators at the facility will be required to meet the incinerator operator training requirements in COMAR 26.11.08.09. Operators of the proposed MWIs at Fort Detrick will meet the requirements of this regulation.

4.4.6 COMAR 26.11.09.05 – Control of Fuel Burning Equipment and Stationary Internal Combustion – Visible Emissions

The emergency generator will be subject to COMAR 26.11.09.05E which limits visible emissions to 10 percent when operating at idle and to 40 percent when operating at conditions other than idle. These limits do not apply while maintenance, repair, or testing is being performed by qualified mechanics. The 10 percent limit for idling does not apply for a period of two consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system. The 10 percent limit also does not apply to emissions resulting directly from cold engine start-up and warm-up for a maximum of 30 minutes if engine is idle continuously when not in service or a maximum of 15 minutes for all other engines.

4.4.7 COMAR 26.11.09.07 – Control of Fuel Burning Equipment and Stationary Internal Combustion – Sulfur Oxides

This regulation establishes limits for NO_x emissions from fuel burning equipment. Fort Detrick will comply with a limit of 0.3 percent sulfur content in diesel fuel/renewable diesel burned in the generator per COMAR 26.11.09.07A(2)(b) by complying with 40 CFR 60.4207(b), as discussed in Section 4.3.3.

4.4.8 COMAR 26.11.09.08 – Control of Fuel Burning Equipment and Stationary Internal Combustion at Major Stationary Sources – Nitrogen Oxides

This regulation establishes limits for NO_x emissions from fuel burning equipment and stationary internal combustion at major stationary sources. The proposed site is a major stationary source and is therefore

subject to the requirements of this regulation. The natural gas-fired emergency generator and combustion units will be subject to an emission limit of 0.20 lb/MMBtu. Additionally, the site will be subject to the operator training requirements in COMAR 26.11.09.08B(5), and any space heaters will be subject to the requirements of COMAR 26.11.09.08F.

4.4.9 COMAR 26.11.15 & 26.11.16 – Toxic Air Pollutants

These regulations establish requirements for sources that emit TAPs. A detailed TAP analysis is provided in Section 5 of this application.

4.4.10 COMAR 26.11.36 – Distributed Generation

COMAR 26.11.36.03 contains requirements for all stationary engines which apply to the proposed natural gas-fired generators. Under this regulation, the engines will need to meet the requirements under 40 CFR 60 Subpart IIII or 40 CFR 60 Subpart JJJJ. Refer to Section 4.3.1.3 for applicable requirements under NSPS Subpart JJJJ.

5. TOXIC AIR POLLUTANT ASSESSMENT

The proposed facility will emit TAPs, as defined by COMAR 26.11.16. As such, Fort Detrick must demonstrate compliance with the TAP regulations. The facility must quantify emissions of each TAP, identify, install, and operate Best Available Control Technology for Toxics (T-BACT) on new sources of TAP emissions (COMAR 26.11.15.05), and demonstrate that emissions of TAPs (total allowable emissions from the premises) will not adversely impact public health beyond the property line (COMAR 26.11.15.06).

The following sections contain the premise-wide TAPs analysis conducted for the proposed project based on site-wide emissions upon project completion.

5.1 Site-Wide TAP Emissions

TAP emissions from the facility occur from the proposed MWI process, as well as fuel burning sources at the facility. Since fuel burning sources are exempt from TAP requirements per COMAR 26.11.15.03B(2)(a), and the existing MWI are no longer operational, the only sources requiring a TAP evaluation are the proposed MWI. Please refer to Section 3 for details on the emissions calculations and methodology.

5.2 TAP Evaluation

As described in COMAR 26.11.15, demonstrating compliance with TAP regulations is a multi-step process in which TAP emission rates must be compared to certain thresholds. If a TAP falls below a particular threshold, it is no longer considered for evaluation. Detailed TAP emission calculations are provided in Appendix B.

5.2.1 Small Emitter Exemption

As described in COMAR 26.11.15.03B(3), a small emitter exemption is available based on the type of pollutant (Class I TAP vs. Class II TAP), the emission rate, and the screening level. Specifically, the small emitter exemption is available based on the following:

- For a Class II pollutant
  - The total allowable emissions of the TAP from the premises are 0.5 pounds per hour (0.23 kilogram per hour) or less; and
  - All applicable TLV-based, threshold-based, or special screening levels for the TAP are greater than 200 µg/m^3.
- For a Class I pollutant
  - The total allowable emissions of the TAP from the premises are 0.5 pounds per hour (0.23 kilogram per hour) or less;
  - The total allowable emissions of the TAP from the premises are 350 pounds per year (159 kilograms per year) or less;
  - All applicable TLV-based, threshold-based, or special screening levels for the TAP are greater than 200 µg/m^3 and;
  - The applicable risk-based screening level is greater than 1 µg/m^3.

For those pollutants that meet these criteria, no further evaluation is required. Only iron meets the small emitter exemption for the facility.

5.2.2 Allowable Emission Rates (AER)

For each pollutant that does not qualify for the small emitter exemption, pollutant emission rates must next be compared to their respective allowable emission rate (AER) as shown in Appendix B. The AERs are developed by examining the screening levels that have been established for each particular pollutant (1-hr, 8-hr, and/or annual averaging periods) and dividing that level by a conversion factor. There are two conversion factors that can be used: 1) stack sources with no downwash, and 2) sources that are either non-stack sources or stack sources with downwash. The second conversion factor was used to develop AERs for the MWI operation based on the types of sources included in the TAPs analysis.

As shown in Appendix B, all TAPs are below the AERs. No further evaluation is required for those pollutants.

5.3 T-BACT Analysis

Per COMAR 26.11.15.05, Fort Detrick is required to implement T-BACT for TAPs that do not meet the small emitter exemption. The use of the proposed APC system for minimization of acid gases, PCBs, dioxins/furans, and metal TAPs are proposed as T-BACT.

APPENDIX A. RBLC SEARCH OUTPUT

Appendix A - Medical Waste Incinerator RBLC Search Results

RBLC ID	Facility Name	County	State	Permit No.	Issuance Date	Process Name	Process Notes	Pollutant	Control Method	Emission Limit	Units	Case-by-Case Basis
NV-0047	NELLIS AIR FORCE BASE	CLARK	NV	114	2/26/2008	MEDICAL WASTE INCINERATOR	THE FACILITY HAS ONE MEDICAL WASTE INCINERATOR NEAR THE HOSPITAL, WHICH IS PERMITTED TO INCINERATE ONLY PATHOLOGICAL, LOW-LEVEL RADIOACTIVE, AND CHEMOTHERAPEUTIC WASTE. THE AMOUNT OF WASTE INCINERATED IS LIMITED TO 50 POUNDS PER HOUR, 100 POUNDS PER DAY, AND 10,400 POUNDS PER YEAR. THE INCINERATOR IS NOT ALLOWED TO OPERATE UNLESS TEMPERATURE IN THE PRIMARY CHAMBER IS BETWEEN 1,400 AND 2,000 F. THE EMISSION LIMITS GIVEN IN THE PERMIT ARE IN LBS/HOUR AND TONS/YEAR ONLY.	Sulfur Oxides (SOx)	USE OF NATURAL GAS AS THE FUEL	0.05	LB/H	BACT-PSD
								Volatile Organic Compounds	MULTIPLE-CHAMBER DESIGN AND TEMPERATURE CONTROL	0.01	LB/H	Other Case-by-Case
								Hydrochloric Acid	LIMIT OF AMOUNT OF MEDICAL WASTE INCINERATED	0.838	LB/H	Other Case-by-Case
								Carbon Monoxide	MULTIPLE-CHAMBER DESIGN AND TEMPERATURE CONTROL	0.01	LB/H	Other Case-by-Case
								Nitrogen Oxides (NOx)	MULTIPLE-CHAMBER DESIGN AND TEMPERATURE CONTROL	0.09	LB/H	Other Case-by-Case
								Particulate matter, filterable	MULTIPLE-CHAMBER DESIGN AND TEMPERATURE CONTROL	0.04	LB/H	Other Case-by-Case

APPENDIX B. PTE CALCULATIONS

Appendix B - Ft. Detrick Medical Waste Incinerator Facility Potential to Emit

Table B.1. Project Potential Emissions

Pollutant	Potential Emissions [1]		NNSR/PSD Applicability Threshold[2]	Above Threshold?
	lb/hr	tpy	tpy	
NO_X	7.74	8.30	25	No
CO	6.18	1.48	250	No
$PM_{filterable}$	0.05	0.20	250	No
PM_{10}	0.14	0.21	250	No
$PM_{2.5}$	0.14	0.21	250	No
SO_2	0.21	0.88	250	No
VOC[3]	3.05	0.55	25	No
CO_2e	2,358	5,497	N/A	No
Total HAP[3]	9.97E-01	3.36E-01	N/A	No

1. Potential emissions for the project are the sum of emissions from all new equipment.
2. Per COMAR 26.11.03.01A(1), major sources in Maryland are required to obtain a Title V Operating Permit.
3. Facility VOC emissions are below the NSR threshold of 100 tpy. HAP is not a NSR regulated pollutant.

Table B.2. Project Potential Emissions By Unit

Unit Description	Potential Emissions (tpy)								
	CO	$PM_{filterable}$	PM_{10}	$PM_{2.5}$	NO_X	SO_2	VOC	CO_2e	HAP
New Incinerator	0.53	0.14	0.14	0.14	7.23	0.88	0.36	4,504	0.18
New Generator	0.30	3.67E-05	4.76E-03	4.76E-03	2.95E-01	2.80E-04	1.48E-01	56	3.44E-02
Natural Gas Combustion	0.66	0.06	0.06	0.06	0.78	0.00	0.04	937	0.06
Project Emission Increase	**1.48**	**0.20**	**0.21**	**0.21**	**8.30**	**0.88**	**0.55**	**5,497**	**0.27**
NNSR/PSD Threshold	**250**	**250**	**250**	**250**	**25**	**250**	**25**	**N/A**	**N/A**
Above Threshold?	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N/A**	**N/A**

Table B.3. Toxics Impact Analysis Summary

Pollutant	Class I/II	CAS Number	Project Actual Emissions [1]			Screening Level			Allowable Emission Rate			Below AER?[2]
			1-hr lb/hr	8-hr lb/hr	Annual lb/yr	1-hr ug/m^3	8-hr ug/m^3	Annual ug/m^3	1-hr lb/hr	8-hr lb/hr	Annual lb/yr	
Aluminum	II	7429905	8.33E-04	8.33E-04	1.73E+00		10.00			3.58E-02		Y
Antimony	II	7440360	8.50E-05	8.50E-05	1.77E-01		5.00			1.79E-02		Y
Arsenic	I	7440382	8.99E-06	8.99E-06	1.87E-02		0.10			3.58E-04		Y
Barium	II	7440393	5.69E-05	5.69E-05	1.18E-01		5.00			1.79E-02		Y
Beryllium	I	7440417	1.06E-06	1.06E-06	2.20E-03		0.0005	0.0004		1.79E-06	1.46E-01	Y
Chlorine	II	7782505	2.89E-04	2.89E-04	6.01E-01	29.00	14.50		1.04E-01	5.20E-02		Y
Cadmium	I	7440439	1.23E-06	1.23E-06	2.55E-03		0.02			7.17E-05		Y
Chromium	II	7440473	7.10E-05	7.10E-05	1.48E-01		5.00			1.79E-02		Y
Copper	II	7440508	7.56E-05	7.56E-05	1.57E-01		2.00			7.17E-03		Y
Iron	II	7439896	2.60E-03	2.60E-03	5.42E+00		1230.00			4.41E+00		Y
Dioxin Furans	I	Various	3.30E-10	3.30E-10	6.86E-07			0.00000003			1.09E-05	Y
Hydrogen Bromide	II	10035106	1.44E-02	1.44E-02	3.00E+01	66.19	269.40		2.37E-01	9.66E-01		Y
Hydrogen Chloride	II	7647010	7.00E-02	7.00E-02	1.46E+02	29.83	165.27	0.70	1.07E-01	5.92E-01	2.55E+02	Y
Hydrogen Fluoride	II	7664393	1.00E-02	1.00E-02	2.08E+01	16.37	4.09		5.87E-02	1.47E-02		Y
Lead	II	7439921	6.50E-06	6.50E-06	1.35E-02		0.50			1.79E-03		Y
Manganese	II	7439965	1.56E-04	1.56E-04	3.24E-01		2.00			7.17E-03		Y
Mercury	II	7439976	1.23E-05	1.23E-05	2.55E-02	0.30	0.10		1.08E-03	3.58E-04		Y
Nickel	I	7440020	1.46E-04	1.46E-04	3.03E-01		1.00			3.58E-03		Y
Silver	II	7440224	4.70E-05	4.70E-05	9.78E-02		0.10			3.58E-04		Y
Thallium	II	7440280	3.03E-04	3.03E-04	6.29E-01		0.20			7.17E-04		Y
Total PCBs	I	1336363	1.28E-05	1.28E-05	2.66E-02		26.60	0.01		9.53E-02	3.65E+00	Y

1. Toxics screening analysis excludes emissions from the emergency generator and natural gas combustion sources, which are exempt as fuel burning equipment per COMAR 26.11.15.03(B)(2)(a).
2. Modeling is required if the expected actual emissions exceed the allowable emission rate. Expected actual emissions are based on the controlled actual emission rate (i.e., normal operation), and do not include bypass emissions. Emissions of HF are based on expected actual emissions vs. potential emissions.

Table B.4. Operating Parameters for the new MWI

Fuel[1]	Natural Gas Fuel	
Heat Input Capacity	5.80	MMBtu/hr
Operating Hours[2]	8,760	hr/yr
Incinerator Throughput[3]	550	lb/hr
Gas Flow Rate[1]	2,516	dscfm
	4,275	dscm/hr

1. Fuel type provided in manufacturer data for Fort Detrick military installation.
2. Operating hours conservatively assume continuous operation. Expected operation is 5 days per week, 8 hours per day.
3. Each incinerator has a throughput capacity of 550 lb/hr. The facility design allows operation of only one incinerator at a time.

Table B.5. Potential Criteria Pollutant Emissions from the new MWI

Pollutant	Uncontrolled Potential Emissions		Controlled Potential Emissions[1]		Notes
	lb/hr	tpy	lb/hr	tpy	
NO_x	1.65	7.23	1.65	7.23	2
CO	0.12	0.53	0.12	0.53	2
VOC	0.08	0.36	0.08	0.36	3
$PM_{filterable}$	3.46	15.15	0.03	0.14	4
$PM_{10,total}$	3.46	15.15	0.03	0.14	4
$PM_{2.5,total}$	3.46	15.15	0.03	0.14	4
SO_2	2.00	8.76	0.2	0.88	2
CO_2	1,020	4,467.60	1,020	4,467.60	2
CH_4	0.02	0.09	0.02	0.09	5
N_2O	0.03	0.12	0.03	0.12	5
CO_2e	1,028	4,504.34	1,028	4,504.34	5

1. Potential emissions assume operation of one MWI at a time assuming 8,760 hours of operation per year.
2. NO_X, CO, and SO_2 emission factors are based on worst-case emission rates from manufacturer data for Fort Detrick military installation. Uncontrolled emissions are based on Stream Number 1 in the process flow diagram and controlled emissions are based on Stream Number 50.
3. AP-42 Table 2.3-2 indicates that TOC emissions are 0.299 lb/ton for uncontrolled emissions and negligible for a Medium Energy Scrubber/FF. Potential controlled emissions conservatively assume controlled emissions are equal to uncontrolled emissions.
4. Uncontrolled emission rate based on manufacturer data for Fort Detrick military installation. Controlled emission rate based on NSPS Subpart Ec emission limit.
5. Emission factors from 40 CFR Part 98 Subpart C for solid biomass and converted to lb/hr using the heating value solid byproducts (10.39 MMBtu/ton) and the maximum MWI throughput of 550 lb/hr. CO_2e emissions based on the Global Warming Potential (GWP) for each GHG pollutant per 40 CFR 98, Subpart A, Table A-1:

CO_2: 1
CH_4: 25
N_2O: 298

Table B.6. Potential HAP Emissions from the new MWI

Pollutants	HAP? X	Uncontrolled Emission Factor[1]		Controlled Emission Factor[1]		Uncontrolled Potential Emissions lb/hr	Uncontrolled Potential Emissions tpy	Controlled Potential Emissions lb/hr	Controlled Potential Emissions tpy
Aluminum		1.05E-02	lb/ton	3.03E-03	lb/ton	2.89E-03	1.26E-02	8.33E-04	3.65E-03
Antimony	X	1.28E-02	lb/ton	3.09E-04	lb/ton	3.52E-03	1.54E-02	8.50E-05	3.72E-04
Arsenic	X	2.42E-04	lb/ton	3.27E-05	lb/ton	6.66E-05	2.91E-04	8.99E-06	3.94E-05
Barium		3.24E-03	lb/ton	2.07E-04	lb/ton	8.91E-04	3.90E-03	5.69E-05	2.49E-04
Beryllium	X	6.25E-06	lb/ton	3.84E-06	lb/ton	1.72E-06	7.53E-06	1.06E-06	4.63E-06
Chlorine [2]	X	1.05E-01	lb/ton	1.05E-03	lb/ton	2.89E-02	1.26E-01	2.89E-04	1.26E-03
Cadmium [3]	X	1.60E-01	mg/dscm	1.30E-04	mg/dscm	1.51E-03	6.60E-03	1.23E-06	5.37E-06
Chromium	X	7.75E-04	lb/ton	2.58E-04	lb/ton	2.13E-04	9.33E-04	7.10E-05	3.11E-04
Copper		1.25E-02	lb/ton	2.75E-04	lb/ton	3.44E-03	1.51E-02	7.56E-05	3.31E-04
Iron		1.44E-02	lb/ton	9.47E-03	lb/ton	3.96E-03	1.73E-02	2.60E-03	1.14E-02
Dioxin Furans [3]	X	240.00	ng/dscm	3.50E-02	ng/dscm	2.26E-06	9.91E-06	3.30E-10	1.44E-09
Hydrogen Bromide		4.33E-02	lb/ton	5.24E-02	lb/ton	1.19E-02	5.22E-02	1.44E-02	6.31E-02
Hydrogen Chloride [3]		10.00	lb/hr	7.00E-02	lb/hr	1.00E+01	4.38E+01	7.00E-02	3.07E-01
Hydrogen Fluoride [3]	X	0.04	lb/hr	4.00E-02	lb/hr	4.00E-02	1.75E-01	4.00E-02	1.75E-01
Lead [3]	X	2.12E+00	mg/dscm	6.90E-04	mg/dscm	2.00E-02	8.77E-02	6.50E-06	2.85E-05
Manganese	X	5.67E-04	lb/ton	5.67E-04	lb/ton	1.56E-04	6.83E-04	1.56E-04	6.83E-04
Mercury [3]	X	3.12E+00	mg/dscm	1.30E-03	mg/dscm	2.94E-02	1.29E-01	1.23E-05	5.37E-05
Nickel	X	5.90E-04	lb/ton	5.30E-04	lb/ton	1.62E-04	7.11E-04	1.46E-04	6.38E-04
Silver		2.26E-04	lb/ton	1.71E-04	lb/ton	6.22E-05	2.72E-04	4.70E-05	2.06E-04
Thallium		1.10E-03	lb/ton	1.10E-03	lb/ton	3.03E-04	1.32E-03	3.03E-04	1.32E-03
Total PCBs	X	4.65E-05	lb/ton	4.65E-05	lb/ton	1.28E-05	5.60E-05	1.28E-05	5.60E-05
					Total HAP	**1.24E-01**	**5.43E-01**	**4.08E-02**	**1.79E-01**

1. AP-42 Chapter 2.3 Medical Waste Incineration, Table 2.3-1 through Table 2.3-13 (July 1993), unless otherwise noted. The AP-42 factor for medium energy scrubber/FF is used as a conservative estimate, or worst-case emission factor if no HES factor is provided.
2. According to AP-24 Section 2.3.2, acid gas concentration in HCl are directly related to the chlorine content of the waste. Most of the chlorine will be converted to HCl in the scrubber. Assumes 1% not converted to HCl.
3. Potential emissions were set equal to worst-case emission rates from manufacturer data for Fort Detrick military installation. Uncontrolled emissions are based on Stream Number 1 and controlled emissions are based on Stream Number 50 in the process flow diagram.

Table B.7. Operating Parameters for Emergency Generator

Fuel[1]	Natural Gas
Power Rating[1]	1,000 kW
Annual Operating Hours[2]	100 hr/yr
Fuel Consumption (100% load)[1]	9,526 Btu/kW-h
Heat Input Rate[3]	9.53 MMBtu/hr

1. Fuel Type, power rating, and fuel consumption per Generator Specification Sheet "CAT G3512 with fast
2. Operating hours based on 40 CFR Part 60, Subpart JJJJ that states an emergency generator can run up to 100 hours per calendar year for maintenance checks and readiness testing with 50 included hours for non-emergency situations.
3. Calculated using the fuel consumption, average heating value and the fuel density.

Table B.8. Potential Criteria Pollutant Emissions from Emergency Generators

Pollutant	Emission Factor		Ref	Potential Emissions	
				lb/hr	tpy
NO_x	2.00E+00	g/hp-hr	1	5.91E+00	2.95E-01
CO	2.00E+00	g/hp-hr	1	5.91E+00	2.95E-01
VOC	1.00E+00	g/hp-hr	1	2.95E+00	1.48E-01
$PM_{filterable}$	7.71E-05	lb/MMBtu	2,3	7.34E-04	3.67E-05
$PM_{10,total}$	9.99E-03	lb/MMBtu	2,3	9.51E-02	4.76E-03
$PM_{2.5,total}$	9.99E-03	lb/MMBtu	2,3	9.51E-02	4.76E-03
SO_2	5.88E-04	lb/MMBtu	2	5.60E-03	2.80E-04
CO_2	1.17E+02	lb/MMBtu	4	1.11E+03	5.57E+01
CH_4	2.20E-03	lb/MMBtu	4	2.10E-02	1.05E-03
N_2O	2.20E-04	lb/MMBtu	4	2.10E-03	1.05E-04
CO_2e	1.17E+02	lb/MMBtu	4	1.12E+03	5.58E+01

1. Emission factors based on emission limits in 40 CFR Part 60, Subpart JJJJ.
2. Emission factor based on U.S. EPA AP-42 Section 3.2 Table 3.2-2 for 4-Stroke Lean-Burn Engines.
3. Assumes filterable PM is equivalent to filterable PM_{10} and $PM_{2.5}$.
4. Emission factors from 40 CFR Part 98 and CO_2e emissions based on the Global Warming Potential (GWP) for each GHG pollutant per 40 CFR 98, Subpart A, Table A-1:

CO_2:	1
CH_4:	25
N_2O:	298

Table B.9. Potential HAP/TAP Emissions from Emergency Generator

Pollutants	HAP?	Emission Factor[1]	Potential Emissions	
	X	lb/MMBtu	lb/hr	tpy
1,1,2,2-Tetrachloroethane	X	4.00E-05	3.81E-04	1.91E-05
1,1,2-Trichloroethane	X	3.18E-05	3.03E-04	1.51E-05
1,1-Dichloroethane		2.36E-05	2.25E-04	1.12E-05
1,2,3-Trimethylbenzene		2.30E-05	2.19E-04	1.10E-05
1,2,4-Trimethylbenzene		1.43E-05	1.36E-04	6.81E-06
1,2-Dichloroethane		2.36E-05	2.25E-04	1.12E-05
1,2-Dichloropropane		2.69E-05	2.56E-04	1.28E-05
1,3,5-Trimethylbenzene		3.38E-05	3.22E-04	1.61E-05
1,3-Butadiene	X	2.67E-04	2.54E-03	1.27E-04
1,3-Dichloropropene	X	2.64E-05	2.51E-04	1.26E-05
2-Methylnaphthalene	X	3.32E-05	3.16E-04	1.58E-05
2,2,4-Trimethylpentane	X	2.50E-04	2.38E-03	1.19E-04
Acenaphthene	X	1.25E-06	1.19E-05	5.95E-07
Acenaphthylene	X	5.53E-06	5.27E-05	2.63E-06
Acetaldehyde	X	8.36E-03	7.96E-02	3.98E-03
Acrolein	X	5.14E-03	4.90E-02	2.45E-03
Benzene	X	4.40E-04	4.19E-03	2.10E-04
Benzo(b)fluoranthene	X	1.66E-07	1.58E-06	7.91E-08
Benzo(e)pyrene	X	4.15E-07	3.95E-06	1.98E-07
Benzo(g,h,i)perylene	X	4.14E-07	3.94E-06	1.97E-07
Biphenyl	X	2.12E-04	2.02E-03	1.01E-04
Butane		5.41E-04	5.15E-03	2.58E-04
Butyr/Isobutyraldehyde		1.01E-04	9.62E-04	4.81E-05
Carbon Tetrachloride	X	3.67E-05	3.50E-04	1.75E-05
Chlorobenzene	X	3.04E-05	2.90E-04	1.45E-05
Chloroethane		1.87E-06	1.78E-05	8.91E-07
Chloroform	X	2.85E-05	2.71E-04	1.36E-05
Chrysene	X	6.93E-07	6.60E-06	3.30E-07
Cyclopentane		2.27E-04	2.16E-03	1.08E-04
Ethane		1.05E-01	1.00E+00	5.00E-02
Ethylbenzene	X	3.97E-05	3.78E-04	1.89E-05
Ethylene Dibromide	X	4.43E-05	4.22E-04	2.11E-05
Fluoranthene	X	1.11E-06	1.06E-05	5.29E-07
Fluorene	X	5.67E-06	5.40E-05	2.70E-06
Formaldehyde	X	5.28E-02	5.03E-01	2.51E-02
Methanol	X	2.50E-03	2.38E-02	1.19E-03
Methylcyclohexane		1.23E-03	1.17E-02	5.86E-04
Methylene Chloride	X	2.00E-05	1.91E-04	9.53E-06
n-Hexane	X	1.11E-03	1.06E-02	5.29E-04
n-Nonane		1.10E-04	1.05E-03	5.24E-05
n-Octane		3.51E-04	3.34E-03	1.67E-04
n-Pentane		2.60E-03	2.48E-02	1.24E-03
Naphthalene	X	7.44E-05	7.09E-04	3.54E-05
PAH	X	2.69E-05	2.56E-04	1.28E-05
Phenanthrene	X	1.04E-05	9.91E-05	4.95E-06
Phenol	X	2.40E-05	2.29E-04	1.14E-05
Propane		4.19E-02	3.99E-01	2.00E-02
Pyrene	X	1.36E-06	1.30E-05	6.48E-07
Styrene	X	2.36E-05	2.25E-04	1.12E-05
Tetrachloroethane	X	2.48E-06	2.36E-05	1.18E-06
Toluene	X	4.08E-04	3.89E-03	1.94E-04
Vinyl Chloride	X	1.49E-05	1.42E-04	7.10E-06
Xylene	X	1.84E-04	1.75E-03	8.76E-05
		Total HAP	**6.87E-01**	**3.44E-02**

1. Emission factors are based on U.S. EPA AP-42 Section 3.2 Natural Gas-fired Reciprocating Engines, Table 3.2-2 Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines. PAH is not included in HAP totals, as the totals of all PAH compounds are included.

Table B.10. Fuel Heating Value

Fuel	Higher Heating Value[1]	
Natural Gas	1,026	Btu/scf

1. Based on 40 CFR Part 98, Subpart C Table C-1.

Table B.11. Criteria Pollutant and GHG Emission Factors for Natural Gas Combustion

Pollutant	Natural Gas Emission Factor (lb/MMscf)[1]	(lb/MMBtu)[2]
Criteria Pollutants		
CO	84	0.08
PM^{3}	7.6	7.41E-03
PM_{10}[3]	7.6	7.41E-03
$PM_{2.5}$[3]	7.6	7.41E-03
NO_X - Uncontrolled	100	0.10
NO_X - Low NO_X Burner[4]	50	0.05
SO_2	0.6	5.85E-04
VOC	5.5	5.36E-03
Greenhouse Gases [5]		
CO_2	120,019	116.98
CH_4	2.26	2.20E-03
N_2O	0.23	2.20E-04
CO_2e	**120,143**	**117.10**

1. Natural gas combustion emission factors per the U.S. EPA's AP-42, Section 1.4, *Natural Gas Combustion,* Tables 1.4-1 and 1.4-2 (Jul. 1998) for small boilers (< 100 MMBtu/hr).
2. AP-42 emission factors for natural gas and fuel oil are given in lb/MMscf and lb/Mgal, respectively. They are converted to lb/MMBtu using the HHV.
3. PM, PM_{10}, and $PM_{2.5}$ emission factors are the sum of filterable $PM/PM_{10}/PM_{2.5}$ and condensable PM.
4. For No. 2 fuel oil combustion, the use of a low NO_X burner results in a reduction in NO_X emissions of 20-50%, per Table 1.3-14 of AP-42. The NO_X emission factor shown here conservatively assumes a reduction of 20% in NO_X
5. Emission factors from 40 CFR Part 98 and CO_2e emissions based on the Global Warming Potential (GWP) for each GHG pollutant per 40 CFR 98, Subpart A, Table A-1:

CO_2:	1
CH_4:	25
N_2O:	298

Table B.12. Potential Hourly Emissions of Criteria Pollutants and GHGs from Natural Gas Combustion

Parameter	HWB1	HWB2	MWI1/2	DWH1	CU1	CU2	CU3	CU4	RTU1	UH1	UH2	Total
Heat Input Capacity (MMBtu/hr)	0.75	0.75	5.80	0.12	0.03	0.04	0.03	0.01	0.08	0.01	0.02	
Low NO_X Burner?	No	No	No	No	No	No	No	No	No	No	No	**lb/hr**
Hourly Emissions												
CO	0.06	0.06		0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	**0.15**
PM	0.01	0.01		0.00	1.91E-04	2.67E-04	1.91E-04	8.89E-05	5.93E-04	6.67E-05	1.33E-04	**0.01**
PM_{10}	0.01	0.01		0.00	1.91E-04	2.67E-04	1.91E-04	8.89E-05	5.93E-04	6.67E-05	1.33E-04	**0.01**
$PM_{2.5}$	0.01	0.01		0.00	1.91E-04	2.67E-04	1.91E-04	8.89E-05	5.93E-04	6.67E-05	1.33E-04	**0.01**
NO_X	0.07	0.07		0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	**0.18**
SO_2	0.00	0.00		0.00	1.51E-05	2.11E-05	1.51E-05	7.02E-06	4.68E-05	5.26E-06	1.05E-05	**0.00**
VOC	0.00	0.00		0.00	1.38E-04	1.93E-04	1.38E-04	6.43E-05	4.29E-04	4.82E-05	9.65E-05	**0.01**
CO_2e	87.82	88		14	3.02	4.22	3.02	1.41	9.37	1.05	2.11	**214**

Table B.13. Potential Annual Emissions of Criteria Pollutants and GHGs from Natural Gas Combustion

Pollutant	Potential Annual Emissions[1] (tpy) HWB1	HWB2	MWI1/2	DWH1	CU1	CU2	CU3	CU4	RTU1	UH1	UH2	Total tpy
CO	0.27	0.27		0.04	0.01	0.01	0.01	0.00	0.03	0.00	0.01	**0.66**
PM	0.02	0.02		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
PM_{10}	0.02	0.02		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
$PM_{2.5}$	0.02	0.02		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
NO_X[3]	0.32	0.32		0.1	0.01	0.02	0.01	0.01	0.03	0.00	0.01	**0.78**
SO_2	0.00	0.00		0.00	6.61E-05	9.22E-05	6.61E-05	3.07E-05	2.05E-04	2.31E-05	4.61E-05	**0.00**
VOC	0.02	0.02		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.04**
CO_2e	384.67	384.67		62	13.23	18.46	13.23	6.15	41.03	4.62	9.23	**937**

Table B.14. Potential HAP/TAP Emissions from Natural Gas Combustion

Pollutant	HAP X	Natural Gas Emission Factor[1] lb/MMscf	Potential Annual Emissions [1] (tpy) HWB1	HWB2	MWI1/2	DWH1	CU1	CU2	CU3	CU4	RTU1	UH1	UH2	Total tpy
2-Methylnaphthalene	X	2.40E-05	7.68E-08	7.68E-08	5.94E-07	1.23E-08	2.64E-09	3.69E-09	2.64E-09	1.23E-09	8.20E-09	9.22E-10	1.84E-09	**7.81E-07**
3-Methylchloranthrene	X	1.80E-06	5.76E-09	5.76E-09	4.46E-08	9.22E-10	1.98E-10	2.77E-10	1.98E-10	9.22E-11	6.15E-10	6.92E-11	1.38E-10	**5.86E-08**
7,12-Dimethylbenz(a)-anthracene	X	1.60E-05	5.12E-08	5.12E-08	3.96E-07	8.20E-09	1.76E-09	2.46E-09	1.76E-09	8.20E-10	5.46E-09	6.15E-10	1.23E-09	**5.21E-07**
Acenaphthene	X	1.80E-06	5.76E-09	5.76E-09	4.46E-08	9.22E-10	1.98E-10	2.77E-10	1.98E-10	9.22E-11	6.15E-10	6.92E-11	1.38E-10	**5.86E-08**
Acenaphthylene	X	1.80E-06	5.76E-09	5.76E-09	4.46E-08	9.22E-10	1.98E-10	2.77E-10	1.98E-10	9.22E-11	6.15E-10	6.92E-11	1.38E-10	**5.86E-08**
Anthracene	X	2.40E-06	7.68E-09	7.68E-09	5.94E-08	1.23E-09	2.64E-10	3.69E-10	2.64E-10	1.23E-10	8.20E-10	9.22E-11	1.84E-10	**7.81E-08**
Arsenic	X	2.00E-04	6.40E-07	6.40E-07	4.95E-06	1.02E-07	2.20E-08	3.07E-08	2.20E-08	1.02E-08	6.83E-08	7.68E-09	1.54E-08	**6.51E-06**
Barium		4.40E-03	1.41E-05	1.41E-05		2.25E-06	4.85E-07	6.76E-07	4.85E-07	2.25E-07	1.50E-06	1.69E-07	3.38E-07	**3.43E-05**
Beryllium	X	1.20E-05	3.84E-08	3.84E-08		6.15E-09	1.32E-09	1.84E-09	1.32E-09	6.15E-10	4.10E-09	4.61E-10	9.22E-10	**9.36E-08**
Benzene	X	2.10E-03	6.72E-06	6.72E-06	5.20E-05	1.08E-06	2.31E-07	3.23E-07	2.31E-07	1.08E-07	7.17E-07	8.07E-08	1.61E-07	**6.84E-05**
Benz(a)anthracene	X	1.80E-06	5.76E-09	5.76E-09	4.46E-08	9.22E-10	1.98E-10	2.77E-10	1.98E-10	9.22E-11	6.15E-10	6.92E-11	1.38E-10	**5.86E-08**
Benzo(a)pyrene	X	1.20E-06	3.84E-09	3.84E-09	2.97E-08	6.15E-10	1.32E-10	1.84E-10	1.32E-10	6.15E-11	4.10E-10	4.61E-11	9.22E-11	**3.91E-08**
Benzo(b)fluoranthene	X	1.80E-06	5.76E-09	5.76E-09	4.46E-08	9.22E-10	1.98E-10	2.77E-10	1.98E-10	9.22E-11	6.15E-10	6.92E-11	1.38E-10	**5.86E-08**
Benzo(g,h,i)perylene	X	1.20E-06	3.84E-09	3.84E-09	2.97E-08	6.15E-10	1.32E-10	1.84E-10	1.32E-10	6.15E-11	4.10E-10	4.61E-11	9.22E-11	**3.91E-08**
Benzo(k)fluoranthene	X	1.80E-06	5.76E-09	5.76E-09	4.46E-08	9.22E-10	1.98E-10	2.77E-10	1.98E-10	9.22E-11	6.15E-10	6.92E-11	1.38E-10	**5.86E-08**
Butane		2.10E+00	6.72E-03	6.72E-03	5.20E-02	1.08E-03	2.31E-04	3.23E-04	2.31E-04	1.08E-04	7.17E-04	8.07E-05	1.61E-04	**6.84E-02**
Cadmium	X	1.10E-03	3.52E-06	3.52E-06		5.64E-07	1.21E-07	1.69E-07	1.21E-07	5.64E-08	3.76E-07	4.23E-08	8.45E-08	**8.58E-06**
Chromium	X	1.40E-03	4.48E-06	4.48E-06		7.17E-07	1.54E-07	2.15E-07	1.54E-07	7.17E-08	4.78E-07	5.38E-08	1.08E-07	**1.09E-05**
Chrysene	X	1.80E-06	5.76E-09	5.76E-09	4.46E-08	9.22E-10	1.98E-10	2.77E-10	1.98E-10	9.22E-11	6.15E-10	6.92E-11	1.38E-10	**5.86E-08**
Cobalt	X	8.40E-05	2.69E-07	2.69E-07	2.08E-06	4.30E-08	9.25E-09	1.29E-08	9.25E-09	4.30E-09	2.87E-08	3.23E-09	6.45E-09	**2.73E-06**
Copper		8.50E-04	2.72E-06	2.72E-06		4.35E-07	9.36E-08	1.31E-07	9.36E-08	4.35E-08	2.90E-07	3.27E-08	6.53E-08	**6.63E-06**
Dibenzo(a,h)anthracene	X	1.20E-06	3.84E-09	3.84E-09	2.97E-08	6.15E-10	1.32E-10	1.84E-10	1.32E-10	6.15E-11	4.10E-10	4.61E-11	9.22E-11	**3.91E-08**
Dichlorobenzene	X	1.20E-03	3.84E-06	3.84E-06	2.97E-05	6.15E-07	1.32E-07	1.84E-07	1.32E-07	6.15E-08	4.10E-07	4.61E-08	9.22E-08	**3.91E-05**
Ethane		3.10E+00	9.93E-03	9.93E-03	7.68E-02	1.59E-03	3.41E-04	4.76E-04	3.41E-04	1.59E-04	1.06E-03	1.19E-04	2.38E-04	**1.01E-01**
Fluoranthene	X	3.00E-06	9.61E-09	9.61E-09	7.43E-08	1.54E-09	3.30E-10	4.61E-10	3.30E-10	1.54E-10	1.02E-09	1.15E-10	2.31E-10	**9.77E-08**
Fluorene	X	2.80E-06	8.96E-09	8.96E-09	6.93E-08	1.43E-09	3.08E-10	4.30E-10	3.08E-10	1.43E-10	9.56E-10	1.08E-10	2.15E-10	**9.12E-08**
Formaldehyde	X	7.50E-02	2.40E-04	2.40E-04	1.86E-03	3.84E-05	8.26E-06	1.15E-05	8.26E-06	3.84E-06	2.56E-05	2.88E-06	5.76E-06	**2.44E-03**
Hexane	X	1.80E+00	5.76E-03	5.76E-03	4.46E-02	9.22E-04	1.98E-04	2.77E-04	1.98E-04	9.22E-05	6.15E-04	6.92E-05	1.38E-04	**5.86E-02**
Indeno(1,2,3-cd)pyrene	X	1.80E-06	5.76E-09	5.76E-09	4.46E-08	9.22E-10	1.98E-10	2.77E-10	1.98E-10	9.22E-11	6.15E-10	6.92E-11	1.38E-10	**5.86E-08**
Lead		5.00E-04	1.60E-06	1.60E-06		2.56E-07	5.51E-08	7.68E-08	5.51E-08	2.56E-08	1.71E-07	1.92E-08	3.84E-08	**3.90E-06**
Manganese	X	3.80E-04	1.22E-06	1.22E-06		1.95E-07	4.19E-08	5.84E-08	4.19E-08	1.95E-08	1.30E-07	1.46E-08	2.92E-08	**2.96E-06**
Mercury	X	2.60E-04	8.32E-07	8.32E-07		1.33E-07	2.86E-08	4.00E-08	2.86E-08	1.33E-08	8.88E-08	9.99E-09	2.00E-08	**2.03E-06**
Molybdenum		1.10E-03	3.52E-06	3.52E-06	2.72E-05	5.64E-07	1.21E-07	1.69E-07	1.21E-07	5.64E-08	3.76E-07	4.23E-08	8.45E-08	**3.58E-05**
Naphthalene	X	6.10E-04	1.95E-06	1.95E-06	1.51E-05	3.12E-07	6.72E-08	9.37E-08	6.72E-08	3.12E-08	2.08E-07	2.34E-08	4.69E-08	**1.99E-05**
Nickel	X	2.10E-03	6.72E-06	6.72E-06		1.08E-06	2.31E-07	3.23E-07	2.31E-07	1.08E-07	7.17E-07	8.07E-08	1.61E-07	**1.64E-05**
Pentane		2.60E+00	8.32E-03	8.32E-03	6.44E-02	1.33E-03	2.86E-04	4.00E-04	2.86E-04	1.33E-04	8.88E-04	9.99E-05	2.00E-04	**8.47E-02**
Phenanthrene	X	1.70E-05	5.44E-08	5.44E-08	4.21E-07	8.71E-09	1.87E-09	2.61E-09	1.87E-09	8.71E-10	5.81E-09	6.53E-10	1.31E-09	**5.53E-07**
Propane		1.60E+00	5.12E-03	5.12E-03	3.96E-02	8.20E-04	1.76E-04	2.46E-04	1.76E-04	8.20E-05	5.46E-04	6.15E-05	1.23E-04	**5.21E-02**
Pyrene	X	5.00E-06	1.60E-08	1.60E-08	1.24E-07	2.56E-09	5.51E-10	7.68E-10	5.51E-10	2.56E-10	1.71E-09	1.92E-10	3.84E-10	**1.63E-07**
Selenium	X	2.40E-05	7.68E-08	7.68E-08	5.94E-07	1.23E-08	2.64E-09	3.69E-09	2.64E-09	1.23E-09	8.20E-09	9.22E-10	1.84E-09	**7.81E-07**
Toluene	X	3.40E-03	1.09E-05	1.09E-05	8.42E-05	1.74E-06	3.74E-07	5.23E-07	3.74E-07	1.74E-07	1.16E-06	1.31E-07	2.61E-07	**1.11E-04**
Vanadium		2.30E-03	7.36E-06	7.36E-06	5.69E-05	1.18E-06	2.53E-07	3.53E-07	2.53E-07	1.18E-07	7.85E-07	8.84E-08	1.77E-07	**7.49E-05**
Zinc		2.90E-02	9.29E-05	9.29E-05	7.18E-04	1.49E-05	3.19E-06	4.46E-06	3.19E-06	1.49E-06	9.90E-06	1.11E-06	2.23E-06	**9.44E-04**
Total HAP			**6.04E-03**	**6.04E-03**	**4.66E-02**	**9.67E-04**	**2.08E-04**	**2.90E-04**	**2.08E-04**	**9.67E-05**	**6.45E-04**	**7.25E-05**	**1.45E-04**	**0.06**

1. Natural gas combustion emission factors per the U.S. EPA's AP-42, Section 1.4, *Natural Gas Combustion,* Tables 1.4-2, 1.4-3 and 1.4-4 (Jul. 1998). MWI emissions are only calculated for combustion HAPs not included separately in the MWI calculations.

APPENDIX C. PERMIT TO CONSTRUCT FORMS

AIR QUALITY PERMIT TO CONSTRUCT APPLICATION CHECKLIST

OWNER OF EQUIPMENT/PROCESS	
COMPANY NAME:	U.S. Army Garrison at Fort Detrick
COMPANY ADDRESS:	201 Beasley Dr., Suite 230 Fort Detrick, MD 21702-9229
LOCATION OF EQUIPMENT/PROCESS	
PREMISES NAME:	Fort Detrick
PREMISES ADDRESS:	8425 Navy Way Fort Detrick, MD, 21702
CONTACT INFORMATION FOR THIS PERMIT APPLICATION	
CONTACT NAME:	Peter Morano
JOB TITLE:	Design Phase Manager
PHONE NUMBER:	(845) 325-0887
EMAIL ADDRESS:	peter.morano@mortenson.com
DESCRIPTION OF EQUIPMENT OR PROCESS	
Two multiple chamber medical waste incinerators (MWI) to dispose of all laboratory, medical, and infectious waste generated on Fort Detrick's facility.	

Application is hereby made to the Department of the Environment for a Permit to Construct for the following equipment or process as required by the State of Maryland Air Quality Regulation, COMAR 26.11.02.09.

Check each item that you have submitted as part of your application package.

- [X] Application package cover letter describing the proposed project
- [X] Complete application forms (Note the number of forms included or NA if not applicable.)

  No. N/A Form
  No. 1 Form 5T
  No. 2 Form 5EP
  No. 8 Form 6
  No 2 Form 10
  No _____ Form 11
  No _____ Form 41
  No 1 Form 42
  No _____ Form 44

- [X] Vendor/manufacturer specifications/guarantees
- [X] Evidence of Workman's Compensation Insurance
- [X] Process flow diagrams with emission points
- [X] Site plan including the location of the proposed source and property boundary
- [X] Material balance data and all emissions calculations
- [ ] Material Safety Data Sheets (MSDS) or equivalent information for materials processed and manufactured.
- [ ] Certificate of Public Convenience and Necessity (CPCN) waiver documentation from the Public Service Commission (1)
- [X] Documentation that the proposed installation complies with local zoning and land use requirements (2)

(1) Required for emergency and non-emergency generators installed on or after October 1, 2001 and rated at 2001 kW or more.

(2) Required for applications subject to Expanded Public Participation Requirements.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us
Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR INCINERATORS

Permit to Construct ☒ Registration ☐

DO NOT WRITE IN THIS SPACE

Date Rec. Local | Date Red. State

Acknowledgement Sent
Date_____
By_____

Reviewed
Name_____
Date_____

Local
State

Returned to Local Jurisdiction
Date_____
By_____

Application Returned to Applicant
Date_____
By_____

Premises Number
1 2 | 3 4 5 6

Registration Number
7 | 8 9 10 11 | 12 13

1. Owner of Installation or Company Name
U.S. Army Garrison at Fort Detrick

Date of Application

Mailing Address
201 Beasley Dr., Suite 230

Telephone

City: Fort Detrick | State: MD | Zip Code: 21702-9229

2A. Premises Name if Different from Above

2B. Incinerator Location if Different From Above (give Street Address, City, County and Zip Code):
8425 Navy Way, Fort Detrick, MD, 21702

3. Owner, Agent or Authorized Company Official
Joseph Gortva
(Print/Type Name)
GORTVA.JOSEPH.J.1247027757 Digitally signed by GORTVA.JOSEPH.J.1247027757 Date: 2024.10.07 09:40:08 -04'00'
(Signature)
9255 Amber Drive, Fort Detrick, MD 21702
(Mailing Address, City/Town, State, Zip Code)

4A. New Construction Only
Begin October 1, 2025
Date Construction Completed June 4, 2027

4B. Existing Installation
Initial Operation Date
(14-15)

5. Installation or Contractor (New or Replacement Only)
Peter Morano
(Name or Company Title)
8484 Westpark Dr, Suite 150, McLean, VA, 22102, (845) 325-0887
(Mailing Address, City/Town, State, Zip Code, Telephone Number)

6. Equipment Manufacturer | Manufacturer's Serial or Catalog No.
Pennram Diversified Manufacturing Group

7. Total Number of Incinerators of Identical Design and Capacity at this Location: 2

8. Major Activity at this Location-Auto Dealer, Hospital, Apartment House, etc.
Biological Laboratory

9. Rated Capacity of Incinerator in lb/hr: 550
16-19

10. Incinerator Type (Mark only one with X)
Single Chamber ☐ (20-1) Multiple Chamber ☒ (20-2) Auxiliary Burner ☐ (21) Other ☐ (22) _____ Specify

11. Frequency of Burning
Hours/Day 8 (23 24) Days/Year 260 (25 26 27)

12. Amount of Waste Burned Per Operating Day: 3,846.2
Units: tons ☐ (32-1) lbs. ☒ (32-2) gal. ☐ (32-3)

13. Method of Charging Waste into Unit: Manual ☐ Automatic X

14. Type of Waste/Refuse Incinerated. Mark major type with ✗ -- all others with Check ✓.

Trash 100% Dry [ ] 33 | Refuse 20% Garbage [ ] 34 | Refuse 50% Garbage [ ] 35 | Garbage [ ] 36 | Animal or Animal Parts [ ] 37 | Municipal Refuse [ ] 38 | Infectious/ Pathological [X] 39

Does this waste contain Carcinogenic or Toxic Material? Y/**N** Industrial Process Waste [ ] 40 _____ Other [X] 41 Medicinal

15. Total Annual Auxiliary Fuels Used

Oil _____ (gallons) _____ Natural Gas 49.52 (ft^3)
42-47 (Grade) 48 49-55

LP Gas _____ (gallons) Other [ ] _____ specify fuel & units required
56-59 90-92

16. Stack Information: Height Above Ground (ft) 46.25 Inside Diameter at Top (in) 28
94-96 97-99

Exit Temperature (°F) 128 Gas Exit Velocity (ft/min) 692
100-103 104-107

17. Emission Control Devices

Gas Cleaning Form AMA-6 Must be Completed for Each Device Used and Attached to this Application.

None [ ] 108 | Settling Chamber or Baffles [ ] 109 | Simple Cyclone [ ] 110 | Multiple Cyclone [ ] 111 | Scrubber [X] 112 | Venturi Scrubber [X] 113 | Electrostatic Precipitator [ ] 114 | Bag-house [X] 115 | After-burner [ ] 116

Other [X] Carbon Adsorber 117-118 Specify Type

DO NOT WRITE BELOW THIS LINE

18. Actual Stack Emissions in Pounds per Operating Day

Particulate Matter [ ] 119-124 | Oxides of Sulfur [ ] 125-130 | Oxides of Nitrogen [ ] 131-136

Carbon Monoxide [ ] 137-142 | Volatile Organic Compounds [ ] 143-148

Other Pollutants Specify _____ Type/Amount

19. Inventory Date [ ] 180-183

20. Method Used to Determine Emissions

	Estimate	Emission Factor	Stack Test	Other
Particulate matter	[ ] 184-1	[ ] -2	[ ] -3	[ ] -4
Oxides of Nitrogen	[ ] 186-1	[ ] -2	[ ] -3	[ ] -4
Volatile Organics	[ ] 188-1	[ ] -2	[ ] -3	[ ] -4
Oxides of Sulfur	[ ] 185-1	[ ] -2	[ ] -3	[ ] -4
Carbon Monoxide	[ ] 187-1	[ ] -2	[ ] -3	[ ] -4

21. Premises Information Premises Name _____

Census Tract [ ] 243-248 | SIC No. [ ] 249-252 | MD Grid East [ ] 253-256 | MD Grid North [ ] 257-259

Owner: Private [ ] 260-0 | Local [ ] 260-1 | State [ ] 260-2 | Federal [ ] 260-3

Date Completed _____

Completed By _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us
Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR INCINERATORS

Permit to Construct ☒ Registration ☐

DO NOT WRITE IN THIS SPACE

Date Rec. Local Date Red. State

Acknowledgement Sent
Date
By

Reviewed
Name
Date

Local
State

Returned to Local Jurisdiction
Date
By

Application Returned to Applicant
Date
By

Premises Number
1 2 3 4 5 6

Registration Number
7 8 9 10 11 12 13

1. Owner of Installation or Company Name
U.S. Army Garrison at Fort Detrick

Date of Application

Mailing Address
201 Beasley Dr., Suite 230

Telephone

City Fort Detrick State MD Zip Code 21702-9229

2A. Premises Name if Different from Above

2B. Incinerator Location if Different From Above (give Street Address, City, County and Zip Code):
8425 Navy Way, Fort Detrick, MD, 21702

3. Owner, Agent or Authorized Company Official
Joseph Gortva
(Print/Type Name)
GORTVA.JOSEPH.J.1247027757 Digitally signed by GORTVA.JOSEPH.J.1247027757 Date: 2024.10.07 09:42:23 -04'00'
(Signature)
9255 Amber Drive, Fort Detrick, MD 21702
(Mailing Address, City/Town, State, Zip Code)

4A. New Construction Only
Begin October 1, 2025
Date Construction Completed June 4, 2027

4B. Existing Installation
Initial Operation Date
(14-15)

5. Installation or Contractor (New or Replacement Only)
Peter Morano
(Name or Company Title)
8484 Westpark Dr, Suite 150, McLean, VA, 22102, (845) 325-0887
(Mailing Address, City/Town, State, Zip Code, Telephone Number)

6. Equipment Manufacturer
Pennram Diversified Manufacturing Group

Manufacturer's Serial or Catalog No.

7. Total Number of Incinerators of Identical Design and Capacity at this Location: 2

8. Major Activity at this Location-Auto Dealer, Hospital, Apartment House, etc.
Biological Laboratory

9. Rated Capacity of Incinerator in lb/hr: 550
16-19

10. Incinerator Type (Mark only one with X)
Single Chamber ☐ (20-1) Multiple Chamber ☒ (20-2) Auxiliary Burner ☐ (21) Other ☐ (22) Specify

11. Frequency of Burning
Hours/Day 8 (23 24) Days/Year 260 (25 26 27)

12. Amount of Waste Burned Per Operating Day: 3,846.2
Units: tons ☐ (32-1) lbs. ☒ (32-2) gal. ☐ (32-3)

13. Method of Charging Waste into Unit: Manual ☐ Automatic X

14. Type of Waste/Refuse Incinerated. Mark major type with ✗ -- all others with Check ✓.

Trash 100% Dry [ ] 33 | Refuse 20% Garbage [ ] 34 | Refuse 50% Garbage [ ] 35 | Garbage [ ] 36 | Animal or Animal Parts [ ] 37 | Municipal Refuse [ ] 38 | Infectious/ Pathological [X] 39

Does this waste contain Carcinogenic or Toxic Material? Y/**N** Industrial Process Waste [ ] 40 _____ Other [X] 41 Medicinal

15. Total Annual Auxiliary Fuels Used

Oil _____ (gallons) _____ Natural Gas 49.52 (ft^3)
42-47 (Grade) 48 49-55

LP Gas _____ (gallons) Other [ ] _____ specify fuel & units required
56-59 90-92

16. Stack Information: Height Above Ground (ft) 46.25 Inside Diameter at Top (in) 28
94-96 97-99

Exit Temperature (°F) 128 Gas Exit Velocity (ft/min) 692
100-103 104-107

17. Emission Control Devices

Gas Cleaning Form AMA-6 Must be Completed for Each Device Used and Attached to this Application.

None [ ] 108 | Settling Chamber or Baffles [ ] 109 | Simple Cyclone [ ] 110 | Multiple Cyclone [ ] 111 | Scrubber [X] 112 | Venturi Scrubber [X] 113 | Electrostatic Precipitator [ ] 114 | Bag-house [X] 115 | After-burner [ ] 116

Other [X] Carbon Adsorber 117-118 Specify Type

DO NOT WRITE BELOW THIS LINE

18. Actual Stack Emissions in Pounds per Operating Day

Particulate Matter [ ] 119-124 | Oxides of Sulfur [ ] 125-130 | Oxides of Nitrogen [ ] 131-136

Carbon Monoxide [ ] 137-142 | Volatile Organic Compounds [ ] 143-148

Other Pollutants Specify _____ Type/Amount

19. Inventory Date [ ] 180-183

20. Method Used to Determine Emissions

	Estimate	Emission Factor	Stack Test	Other
Particulate matter	[ ] 184-1	[ ] -2	[ ] -3	[ ] -4
Oxides of Nitrogen	[ ] 186-1	[ ] -2	[ ] -3	[ ] -4
Volatile Organics	[ ] 188-1	[ ] -2	[ ] -3	[ ] -4
Oxides of Sulfur	[ ] 185-1	[ ] -2	[ ] -3	[ ] -4
Carbon Monoxide	[ ] 187-1	[ ] -2	[ ] -3	[ ] -4

21. Premises Information Premises Name _____

Census Tract [ ] 243-248 | SIC No. [ ] 249-252 | MD Grid East [ ] 253-256 | MD Grid North [ ] 257-259

Owner: Private [ ] 260-0 | Local [ ] 260-1 | State [ ] 260-2 | Federal [ ] 260-3

Date Completed _____

Completed By _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Air and Radiation Management Administration ● Air Quality Permits Program
1800 Washington Boulevard ● Baltimore, Maryland 21230
(410)537-3225 ● 1-800-633-6101● www.mde.maryland.gov

FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: U.S. Army Garrison at Fort Detrick

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
MWI1

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
Medical waste incinerator with APC system as described in the attached application

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☒ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	
Hours per day:	8	Spring Percent	
Days per week:	5	Summer Percent	
Weeks per year:	52	Fall Percent	

4. Emission Point Information

Height above ground (ft):	46.25	Length and width dimensions at top of rectangular stack (ft):	Length: N/A	Width: N/A	
Height above structures (ft):	14.25				
Exit temperature (ºF):	128	Inside diameter at top of round stack (ft):		2.33	
Exit velocity (ft/min):	692	Distance from emission point to nearest property line (ft):		~1,800 ft.	
Exhaust gas volumetric flow rate (acfm):	2,949	Building dimensions if emission point is located on building (ft)	Height 32'	Length 168' 8"	Width 83' 8"

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

- ☐ None
- ☒ Baghouse No. 1
- ☐ Cyclone No. _____
- ☐ Elec. Precipitator (ESP) No. _____
- ☐ Dust Suppression System No. _____
- ☒ Venturi Scrubber No. 1
- ☒ Spray Tower/Packed Bed No. 1
- ☒ Carbon Adsorber No. 1
  - ☐ Cartridge/Canister
  - ☒ Regenerative
- ☐ Thermal Oxidizer No. _____
  - ☐ Regenerative
- ☐ Catalytic Oxidizer No. _____
- ☐ Nitrogen Oxides Reduction No. _____
  - ☐ Selective ☐ Non-Selective
  - ☐ Catalytic ☐ Non-Catalytic
- ☐ Other No. _____
  Specify:

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	See attached calculations			
Particulate Matter (filterable as PM2.5)				
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)				
Oxides of Sulfur (SOx)				
Oxides of Nitrogen (NOx)				
Carbon Monoxide (CO)				
Lead (Pb)				
Greenhouse Gases (GHG)	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**
Carbon Dioxide (CO_2)	See attached calculations			
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				
List individual federal Hazardous Air Pollutants (HAP) below:	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**
	See attached calculations			

(Attach additional sheets as necessary.)

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Air and Radiation Management Administration ● Air Quality Permits Program
1800 Washington Boulevard ● Baltimore, Maryland 21230
(410)537-3225 ● 1-800-633-6101● www.mde.maryland.gov

FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: U.S. Army Garrison at Fort Detrick

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
MWI1

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
Medical waste incinerator with APC system as described in the attached application

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☒ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	
Hours per day:	8	Spring Percent	
Days per week:	5	Summer Percent	
Weeks per year:	52	Fall Percent	

4. Emission Point Information

Height above ground (ft):	46.25	Length and width dimensions at top of rectangular stack (ft):	Length: N/A	Width: N/A	
Height above structures (ft):	14.25				
Exit temperature (ºF):	128	Inside diameter at top of round stack (ft):		2.33	
Exit velocity (ft/min):	692	Distance from emission point to nearest property line (ft):		~1,800 ft.	
Exhaust gas volumetric flow rate (acfm):	2,949	Building dimensions if emission point is located on building (ft)	Height 32'	Length 168' 8"	Width 83' 8"

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

- ☐ None
- ☒ Baghouse No. 1
- ☐ Cyclone No. _____
- ☐ Elec. Precipitator (ESP) No. _____
- ☐ Dust Suppression System No. _____
- ☒ Venturi Scrubber No. 1
- ☒ Spray Tower/Packed Bed No. 1
- ☒ Carbon Adsorber No. 1
  - ☐ Cartridge/Canister
  - ☒ Regenerative
- ☐ Thermal Oxidizer No. _____
  - ☐ Regenerative
- ☐ Catalytic Oxidizer No. _____
- ☐ Nitrogen Oxides Reduction No. _____
  - ☐ Selective ☐ Non-Selective
  - ☐ Catalytic ☐ Non-Catalytic
- ☐ Other No. _____
  Specify:

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	See attached calculations			
Particulate Matter (filterable as PM2.5)				
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)				
Oxides of Sulfur (SOx)				
Oxides of Nitrogen (NOx)				
Carbon Monoxide (CO)				
Lead (Pb)				
Greenhouse Gases (GHG)	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**
Carbon Dioxide (CO_2)	See attached calculations			
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				
List individual federal Hazardous Air Pollutants (HAP) below:	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**
	See attached calculations			

(Attach additional sheets as necessary.)

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Air and Radiation Management Administration ● Air Quality Permits Program
1800 Washington Boulevard ● Baltimore, Maryland 21230
(410)537-3225 ● 1-800-633-6101● www.mde.maryland.gov

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Applicant Name: __U.S. Army Garrison at Fort Detrick_____

Step 1: Quantify premises-wide emissions of Toxic Air Pollutants (TAP) from new and existing installations in accordance with COMAR 26.11.15.04. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Class I or Class II?	Screening Levels (µg/m^3)			Estimated Premises Wide Emissions of TAP			
						Actual Total Existing TAP Emissions	Projected TAP Emissions from Proposed Installation	Premises Wide Total TAP Emissions	
			1-hour	8-hour	Annual	(lb/hr)	(lb/hr)	(lb/hr)	(lb/yr)
ex. ethanol	*64175*	*II*	*18843*	*3769*	*N/A*	*0.60*	*0.15*	*0.75*	*1500*
ex. benzene	*71432*	*I*	*80*	*16*	*0.13*	*0.5*	*0.75*	*1.00*	*400*
Aluminum	7429905	II	N/A	10	N/A	N/A	8.33e-04	8.33e-04	1.73
Antimony	7440360	II	N/A	5	N/A	N/A	8.5e-05	8.50e-05	0.177
Arsenic	7440382	I	N/A	0.1	N/A	N/A	8.99e-06	8.99e-06	0.019
Barium	7440393	II	N/A	5	N/A	N/A	5.69e-05	5.69e-05	0.118
Beryllium	7440417	I	N/A	0.0005	0.0004	N/A	1.06e-06	1.06e-06	0.002

(attach additional sheets as necessary.)

Note: Screening levels can be obtained from the Department's website (http://www.mde.maryland.gov) or by calling the Department.

Step 2: Determine which TAPs are exempt from further review. A TAP that meets either of the following Class I or Class II small quantity emitter exemptions is exempt from further TAP compliance demonstration requirements under Step 3 and Step 4.

Class II TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(a))
A Class II TAP is exempt from Step 3 and Step 4 if the Class II TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour, and any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3.

Class I TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(b))
A Class I TAP is exempt from Step 3 and Step 4 if the Class I TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour and 350 pounds per year, any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3, and any applicable annual screening level for the TAP must be greater than 1 µg/m^3.

If a TAP meets either the Class I or Class II TAP Small Quantity Emitter Exemption Requirements, no further review under Step 3 and Step 4 are required for that specific TAP.

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Step 3: Best Available Control Technology for Toxics Requirement (T-BACT, COMAR 26.11.15.05)
In the following table, list all TAP emission reduction options considered when determining T-BACT for the proposed installation. The options should be listed in order beginning with the most effective control strategy to the least effective strategy. Attach supporting documentation as necessary.

Target Pollutants	Emission Control Option	% Emission Reduction	Costs		T-BACT Option Selected? (yes/no)
			Capital	Annual Operating	
ex. ethanol and benzene	*Thermal Oxidizer*	*99*	*$50,000*	*$100,000*	*no*
ex. ethanol and benzene	*Low VOC materials*	*80*	*0*	*$100.000*	*yes*
See application text.					

(attach additional sheets as necessary)

Step 4: Demonstrating Compliance with the Ambient Impact Requirement (COMAR 26.11.15.06)
Each TAP not exempt in Step 2 must be individually evaluated to determine that the emissions of the TAP will not adversely impact public health. The evaluation consists of a series of increasingly non-conservative (and increasingly rigorous) tests. Once a TAP passes a test in the evaluation, no further analysis is required for that TAP. "Demonstrating Compliance with the Ambient Impact Requirement under the Toxic Air Pollutant (TAP) Regulations (COMAR 26.11.15.06)" provides guidance on conducting the evaluation. Summarize your results in the following table. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Screening Levels ($\mu g/m^3$)			Premises Wide Total TAP Emissions		Allowable Emissions Rate (AER) per COMAR 26.11.16.02A		Off-site Concentrations per Screening Analysis ($\mu g/m^3$)			Compliance Method Used?
		1-hour	8-hour	Annual	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	1-hour	8-hour	Annual	AER or Screen
ex. ethanol	*64175*	*18843*	*3769*	*N/A*	*0.75*	*1500*	*0.89*	*N/A*	*N/A*	*N/A*	*N/A*	*AER*
ex. benzene	*71432*	*80*	*16*	*0.13*	*1.00*	*400*	*0.04*	*36.52*	*1.5*	*1.05*	*0.12*	*Screen*
Aluminum	7429905	N/A	10	N/A	8.33e-04	1.73	3.58e-02	N/A	N/A	N/A	N/A	AER
Antimony	7440360	N/A	5	N/A	8.50e-05	0.177	1.79e-02	N/A	N/A	N/A	N/A	AER
Arsenic	7440382	N/A	0.1	N/A	8.99e-06	0.019	3.58e-04	N/A	N/A	N/A	N/A	AER
Barium	7440393	N/A	5	N/A	5.69e-05	0.118	1.79e-02	N/A	N/A	N/A	N/A	AER
Beryllium	7440417	N/A	0.0005	0.0004	1.06e-06	0.002	1.79E-06	1.46E-01	N/A	N/A	N/A	AER

(attach additional sheets as necessary)

If compliance with the ambient impact requirement cannot be met using the allowable emissions rate method or the screening analysis method, refined dispersion modeling techniques may be required. Please consult with the Department's Air Quality Permit Program prior to conducting dispersion modeling methods to demonstrate compliance.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Air and Radiation Management Administration ● Air Quality Permits Program
1800 Washington Boulevard ● Baltimore, Maryland 21230
(410)537-3225 ● 1-800-633-6101● www.mde.maryland.gov

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Applicant Name: ___U.S. Army Garrison at Fort Detrick_____

Step 1: Quantify premises-wide emissions of Toxic Air Pollutants (TAP) from new and existing installations in accordance with COMAR 26.11.15.04. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Class I or Class II?	Screening Levels (µg/m^3)			Estimated Premises Wide Emissions of TAP			
						Actual Total Existing TAP Emissions	Projected TAP Emissions from Proposed Installation	Premises Wide Total TAP Emissions	
			1-hour	8-hour	Annual	(lb/hr)	(lb/hr)	(lb/hr)	(lb/yr)
ex. ethanol	*64175*	*II*	*18843*	*3769*	*N/A*	*0.60*	*0.15*	*0.75*	*1500*
ex. benzene	*71432*	*I*	*80*	*16*	*0.13*	*0.5*	*0.75*	*1.00*	*400*
Chlorine	7782505	II	29	14.5	N/A	N/A	2.89e-04	2.89e-04	0.601
Cadmium	7440439	I	N/A	0.02	N/A	N/A	1.23e-06	1.23e-06	0.003
Chromium	7440473	II	N/A	5	N/A	N/A	7.10e-05	7.10e-05	0.148
Copper	7440508	II	N/A	2	N/A	N/A	7.56e-05	7.56e-05	0.157
Iron	7439896	II	N/A	1230	N/A	N/A	2.60e-03	2.60e-03	5.42

(attach additional sheets as necessary.)

Note: Screening levels can be obtained from the Department's website (http://www.mde.maryland.gov) or by calling the Department.

Step 2: Determine which TAPs are exempt from further review. A TAP that meets either of the following Class I or Class II small quantity emitter exemptions is exempt from further TAP compliance demonstration requirements under Step 3 and Step 4.

Class II TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(a))
A Class II TAP is exempt from Step 3 and Step 4 if the Class II TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour, and any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3.

Class I TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(b))
A Class I TAP is exempt from Step 3 and Step 4 if the Class I TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour and 350 pounds per year, any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3, and any applicable annual screening level for the TAP must be greater than 1 µg/m^3.

If a TAP meets either the Class I or Class II TAP Small Quantity Emitter Exemption Requirements, no further review under Step 3 and Step 4 are required for that specific TAP.

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Step 3: Best Available Control Technology for Toxics Requirement (T-BACT, COMAR 26.11.15.05)
In the following table, list all TAP emission reduction options considered when determining T-BACT for the proposed installation. The options should be listed in order beginning with the most effective control strategy to the least effective strategy. Attach supporting documentation as necessary.

Target Pollutants	Emission Control Option	% Emission Reduction	Costs		T-BACT Option Selected? (yes/no)
			Capital	Annual Operating	
ex. ethanol and benzene	*Thermal Oxidizer*	*99*	*$50,000*	*$100,000*	*no*
ex. ethanol and benzene	*Low VOC materials*	*80*	*0*	*$100.000*	*yes*
See application text.					

(attach additional sheets as necessary)

Step 4: Demonstrating Compliance with the Ambient Impact Requirement (COMAR 26.11.15.06)
Each TAP not exempt in Step 2 must be individually evaluated to determine that the emissions of the TAP will not adversely impact public health. The evaluation consists of a series of increasingly non-conservative (and increasingly rigorous) tests. Once a TAP passes a test in the evaluation, no further analysis is required for that TAP. "Demonstrating Compliance with the Ambient Impact Requirement under the Toxic Air Pollutant (TAP) Regulations (COMAR 26.11.15.06)" provides guidance on conducting the evaluation. Summarize your results in the following table. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Screening Levels ($\mu g/m^3$)			Premises Wide Total TAP Emissions		Allowable Emissions Rate (AER) per COMAR 26.11.16.02A		Off-site Concentrations per Screening Analysis ($\mu g/m^3$)			Compliance Method Used?
		1-hour	8-hour	Annual	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	1-hour	8-hour	Annual	AER or Screen
ex. ethanol	*64175*	*18843*	*3769*	*N/A*	*0.75*	*1500*	*0.89*	*N/A*	*N/A*	*N/A*	*N/A*	*AER*
ex. benzene	*71432*	*80*	*16*	*0.13*	*1.00*	*400*	*0.04*	*36.52*	*1.5*	*1.05*	*0.12*	*Screen*
Chlorine	7782505	29	14.5	N/A	2.89e-04	0.601	5.20e-02	N/A	N/A	N/A	N/A	AER
Cadmium	7440439	N/A	0.02	N/A	1.23e-06	0.003	7.17e-05	N/A	N/A	N/A	N/A	AER
Chromium	7440473	N/A	5	N/A	7.10e-05	0.148	1.79e-02	N/A	N/A	N/A	N/A	AER
Copper	7440508	N/A	2	N/A	7.56e-05	0.157	7.17e-03	N/A	N/A	N/A	N/A	AER
Iron	7439896	N/A	1230	N/A	2.60e-03	5.42	4.41	N/A	N/A	N/A	N/A	AER

(attach additional sheets as necessary)

If compliance with the ambient impact requirement cannot be met using the allowable emissions rate method or the screening analysis method, refined dispersion modeling techniques may be required. Please consult with the Department's Air Quality Permit Program prior to conducting dispersion modeling methods to demonstrate compliance.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Air and Radiation Management Administration ● Air Quality Permits Program
1800 Washington Boulevard ● Baltimore, Maryland 21230
(410)537-3225 ● 1-800-633-6101● www.mde.maryland.gov

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Applicant Name: ___U.S. Army Garrison at Fort Detrick_____

Step 1: Quantify premises-wide emissions of Toxic Air Pollutants (TAP) from new and existing installations in accordance with COMAR 26.11.15.04. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Class I or Class II?	Screening Levels (µg/m^3)			Estimated Premises Wide Emissions of TAP			
						Actual Total Existing TAP Emissions	Projected TAP Emissions from Proposed Installation	Premises Wide Total TAP Emissions	
			1-hour	8-hour	Annual	(lb/hr)	(lb/hr)	(lb/hr)	(lb/yr)
ex. ethanol	*64175*	*II*	*18843*	*3769*	*N/A*	*0.60*	*0.15*	*0.75*	*1500*
ex. benzene	*71432*	*I*	*80*	*16*	*0.13*	*0.5*	*0.75*	*1.00*	*400*
Dioxin Furans	N/A	I	N/A	N/A	3.0e-08	N/A	3.30e-10	3.30e-10	6.87E-07
Hydrogen Bromide	10035106	II	66.19	269.4	N/A	N/A	1.44e-02	1.44e-02	30.0
Hydrogen Chloride	7647010	II	29.83	165.27	0.7	N/A	7.00e-02	7.00e-02	146
Hydrogen Fluoride	7664393	II	16.37	4.09	N/A	N/A	1.00e-02	1.00e-02	20.8
Lead	7439921	II	N/A	0.5	N/A	N/A	6.50e-06	6.50e-06	0.014

(attach additional sheets as necessary.)

Note: Screening levels can be obtained from the Department's website (http://www.mde.maryland.gov) or by calling the Department.

Step 2: Determine which TAPs are exempt from further review. A TAP that meets either of the following Class I or Class II small quantity emitter exemptions is exempt from further TAP compliance demonstration requirements under Step 3 and Step 4.

Class II TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(a))
A Class II TAP is exempt from Step 3 and Step 4 if the Class II TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour, and any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3.

Class I TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(b))
A Class I TAP is exempt from Step 3 and Step 4 if the Class I TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour and 350 pounds per year, any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3, and any applicable annual screening level for the TAP must be greater than 1 µg/m^3.

If a TAP meets either the Class I or Class II TAP Small Quantity Emitter Exemption Requirements, no further review under Step 3 and Step 4 are required for that specific TAP.

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Step 3: Best Available Control Technology for Toxics Requirement (T-BACT, COMAR 26.11.15.05)
In the following table, list all TAP emission reduction options considered when determining T-BACT for the proposed installation. The options should be listed in order beginning with the most effective control strategy to the least effective strategy. Attach supporting documentation as necessary.

Target Pollutants	Emission Control Option	% Emission Reduction	Costs		T-BACT Option Selected? (yes/no)
			Capital	Annual Operating	
ex. ethanol and benzene	*Thermal Oxidizer*	*99*	*$50,000*	*$100,000*	*no*
ex. ethanol and benzene	*Low VOC materials*	*80*	*0*	*$100.000*	*yes*
See application text.					

(attach additional sheets as necessary)

Step 4: Demonstrating Compliance with the Ambient Impact Requirement (COMAR 26.11.15.06)
Each TAP not exempt in Step 2 must be individually evaluated to determine that the emissions of the TAP will not adversely impact public health. The evaluation consists of a series of increasingly non-conservative (and increasingly rigorous) tests. Once a TAP passes a test in the evaluation, no further analysis is required for that TAP. "Demonstrating Compliance with the Ambient Impact Requirement under the Toxic Air Pollutant (TAP) Regulations (COMAR 26.11.15.06)" provides guidance on conducting the evaluation. Summarize your results in the following table. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Screening Levels ($\mu g/m^3$)			Premises Wide Total TAP Emissions		Allowable Emissions Rate (AER) per COMAR 26.11.16.02A		Off-site Concentrations per Screening Analysis ($\mu g/m^3$)			Compliance Method Used?
		1-hour	8-hour	Annual	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	1-hour	8-hour	Annual	AER or Screen
ex. ethanol	*64175*	*18843*	*3769*	*N/A*	*0.75*	*1500*	*0.89*	*N/A*	*N/A*	*N/A*	*N/A*	*AER*
ex. benzene	*71432*	*80*	*16*	*0.13*	*1.00*	*400*	*0.04*	*36.52*	*1.5*	*1.05*	*0.12*	*Screen*
Dioxin Furans	N/A	N/A	N/A	3.0e-08	3.30e-10	6.87E-07	N/A	1.09e-05	N/A	N/A	N/A	AER
Hydrogen Bromide	10035106	66.19	269.4	N/A	1.44e-02	30.0	9.66e-01	N/A	N/A	N/A	N/A	AER
Hydrogen Chloride	7647010	29.83	165.27	0.7	7.00e-02	146	5.92e-01	2.55e+02	N/A	N/A	N/A	AER
Hydrogen Fluoride	7664393	16.37	4.09	N/A	1.00e-02	20.8	1.47e-02	N/A	N/A	N/A	N/A	AER
Lead	7439921	N/A	0.5	N/A	6.50e-06	0.014	1.79e-03	N/A	N/A	N/A	N/A	AER

(attach additional sheets as necessary)

If compliance with the ambient impact requirement cannot be met using the allowable emissions rate method or the screening analysis method, refined dispersion modeling techniques may be required. Please consult with the Department's Air Quality Permit Program prior to conducting dispersion modeling methods to demonstrate compliance.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Air and Radiation Management Administration ● Air Quality Permits Program
1800 Washington Boulevard ● Baltimore, Maryland 21230
(410)537-3225 ● 1-800-633-6101● www.mde.maryland.gov

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Applicant Name: _U.S. Army Garrison at Fort Detrick_

Step 1: Quantify premises-wide emissions of Toxic Air Pollutants (TAP) from new and existing installations in accordance with COMAR 26.11.15.04. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Class I or Class II?	Screening Levels (µg/m^3)			Estimated Premises Wide Emissions of TAP			
						Actual Total Existing TAP Emissions	Projected TAP Emissions from Proposed Installation	Premises Wide Total TAP Emissions	
			1-hour	8-hour	Annual	(lb/hr)	(lb/hr)	(lb/hr)	(lb/yr)
ex. ethanol	*64175*	*II*	*18843*	*3769*	*N/A*	*0.60*	*0.15*	*0.75*	*1500*
ex. benzene	*71432*	*I*	*80*	*16*	*0.13*	*0.5*	*0.75*	*1.00*	*400*
Manganese	7439965	II	N/A	2	N/A	N/A	1.56e-04	1.56e-04	0.324
Mercury	7439976	II	0.3	0.1	N/A	N/A	1.23e-05	1.23e-05	0.026
Nickel	7440020	I	N/A	1	N/A	N/A	1.46e-04	1.46e-04	0.303
Silver	7440224	II	N/A	0.1	N/A	N/A	4.70e-05	4.70e-05	0.098
Thallium	7440280	II	N/A	0.2	N/A	N/A	3.03e-04	3.03e-04	0.629

(attach additional sheets as necessary.)

Note: Screening levels can be obtained from the Department's website (http://www.mde.maryland.gov) or by calling the Department.

Step 2: Determine which TAPs are exempt from further review. A TAP that meets either of the following Class I or Class II small quantity emitter exemptions is exempt from further TAP compliance demonstration requirements under Step 3 and Step 4.

Class II TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(a))
A Class II TAP is exempt from Step 3 and Step 4 if the Class II TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour, and any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3.

Class I TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(b))
A Class I TAP is exempt from Step 3 and Step 4 if the Class I TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour and 350 pounds per year, any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3, and any applicable annual screening level for the TAP must be greater than 1 µg/m^3.

If a TAP meets either the Class I or Class II TAP Small Quantity Emitter Exemption Requirements, no further review under Step 3 and Step 4 are required for that specific TAP.

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Step 3: Best Available Control Technology for Toxics Requirement (T-BACT, COMAR 26.11.15.05)
In the following table, list all TAP emission reduction options considered when determining T-BACT for the proposed installation. The options should be listed in order beginning with the most effective control strategy to the least effective strategy. Attach supporting documentation as necessary.

Target Pollutants	Emission Control Option	% Emission Reduction	Costs		T-BACT Option Selected? (yes/no)
			Capital	Annual Operating	
ex. ethanol and benzene	*Thermal Oxidizer*	*99*	*$50,000*	*$100,000*	*no*
ex. ethanol and benzene	*Low VOC materials*	*80*	*0*	*$100.000*	*yes*
See application text.					

(attach additional sheets as necessary)

Step 4: Demonstrating Compliance with the Ambient Impact Requirement (COMAR 26.11.15.06)
Each TAP not exempt in Step 2 must be individually evaluated to determine that the emissions of the TAP will not adversely impact public health. The evaluation consists of a series of increasingly non-conservative (and increasingly rigorous) tests. Once a TAP passes a test in the evaluation, no further analysis is required for that TAP. "Demonstrating Compliance with the Ambient Impact Requirement under the Toxic Air Pollutant (TAP) Regulations (COMAR 26.11.15.06)" provides guidance on conducting the evaluation. Summarize your results in the following table. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Screening Levels ($\mu g/m^3$)			Premises Wide Total TAP Emissions		Allowable Emissions Rate (AER) per COMAR 26.11.16.02A		Off-site Concentrations per Screening Analysis ($\mu g/m^3$)			Compliance Method Used?
		1-hour	8-hour	Annual	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	1-hour	8-hour	Annual	AER or Screen
ex. ethanol	*64175*	*18843*	*3769*	*N/A*	*0.75*	*1500*	*0.89*	*N/A*	*N/A*	*N/A*	*N/A*	*AER*
ex. benzene	*71432*	*80*	*16*	*0.13*	*1.00*	*400*	*0.04*	*36.52*	*1.5*	*1.05*	*0.12*	*Screen*
Manganese	7439965	N/A	2	N/A	1.56e-04	0.324	7.17e-03	N/A	N/A	N/A	N/A	AER
Mercury	7439976	0.3	0.1	N/A	1.23e-05	0.026	1.08E-03	N/A	N/A	N/A	N/A	AER
Nickel	7440020	N/A	1	N/A	1.46e-04	0.303	3.58e-03	N/A	N/A	N/A	N/A	AER
Silver	7440224	N/A	0.1	N/A	4.70e-05	0.098	3.58e-04	N/A	N/A	N/A	N/A	AER
Thallium	7440280	N/A	0.2	N/A	3.03e-04	0.629	7.17e-04	N/A	N/A	N/A	N/A	AER

(attach additional sheets as necessary)

If compliance with the ambient impact requirement cannot be met using the allowable emissions rate method or the screening analysis method, refined dispersion modeling techniques may be required. Please consult with the Department's Air Quality Permit Program prior to conducting dispersion modeling methods to demonstrate compliance.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Air and Radiation Management Administration ● Air Quality Permits Program
1800 Washington Boulevard ● Baltimore, Maryland 21230
(410)537-3225 ● 1-800-633-6101● www.mde.maryland.gov

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Applicant Name: __U.S. Army Garrison at Fort Detrick_____

Step 1: Quantify premises-wide emissions of Toxic Air Pollutants (TAP) from new and existing installations in accordance with COMAR 26.11.15.04. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Class I or Class II?	Screening Levels (µg/m^3)			Estimated Premises Wide Emissions of TAP			
						Actual Total Existing TAP Emissions	Projected TAP Emissions from Proposed Installation	Premises Wide Total TAP Emissions	
			1-hour	8-hour	Annual	(lb/hr)	(lb/hr)	(lb/hr)	(lb/yr)
ex. ethanol	*64175*	*II*	*18843*	*3769*	*N/A*	*0.60*	*0.15*	*0.75*	*1500*
ex. benzene	*71432*	*I*	*80*	*16*	*0.13*	*0.5*	*0.75*	*1.00*	*400*
Total PCBs	1336363	I	N/A	26.60	0.01	N/A	1.28e-05	1.28e-05	0.027

(attach additional sheets as necessary.)

Note: Screening levels can be obtained from the Department's website (http://www.mde.maryland.gov) or by calling the Department.

Step 2: Determine which TAPs are exempt from further review. A TAP that meets either of the following Class I or Class II small quantity emitter exemptions is exempt from further TAP compliance demonstration requirements under Step 3 and Step 4.

Class II TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(a))
A Class II TAP is exempt from Step 3 and Step 4 if the Class II TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour, and any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3.

Class I TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(b))
A Class I TAP is exempt from Step 3 and Step 4 if the Class I TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour and 350 pounds per year, any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3, and any applicable annual screening level for the TAP must be greater than 1 µg/m^3.

If a TAP meets either the Class I or Class II TAP Small Quantity Emitter Exemption Requirements, no further review under Step 3 and Step 4 are required for that specific TAP.

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Step 3: Best Available Control Technology for Toxics Requirement (T-BACT, COMAR 26.11.15.05)
In the following table, list all TAP emission reduction options considered when determining T-BACT for the proposed installation. The options should be listed in order beginning with the most effective control strategy to the least effective strategy. Attach supporting documentation as necessary.

Target Pollutants	Emission Control Option	% Emission Reduction	Costs		T-BACT Option Selected? (yes/no)
			Capital	Annual Operating	
ex. ethanol and benzene	*Thermal Oxidizer*	*99*	*$50,000*	*$100,000*	*no*
ex. ethanol and benzene	*Low VOC materials*	*80*	*0*	*$100.000*	*yes*
See application text.					

(attach additional sheets as necessary)

Step 4: Demonstrating Compliance with the Ambient Impact Requirement (COMAR 26.11.15.06)
Each TAP not exempt in Step 2 must be individually evaluated to determine that the emissions of the TAP will not adversely impact public health. The evaluation consists of a series of increasingly non-conservative (and increasingly rigorous) tests. Once a TAP passes a test in the evaluation, no further analysis is required for that TAP. "Demonstrating Compliance with the Ambient Impact Requirement under the Toxic Air Pollutant (TAP) Regulations (COMAR 26.11.15.06)" provides guidance on conducting the evaluation. Summarize your results in the following table. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Screening Levels ($\mu g/m^3$)			Premises Wide Total TAP Emissions		Allowable Emissions Rate (AER) per COMAR 26.11.16.02A		Off-site Concentrations per Screening Analysis ($\mu g/m^3$)			Compliance Method Used?
		1-hour	8-hour	Annual	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	1-hour	8-hour	Annual	AER or Screen
ex. ethanol	*64175*	*18843*	*3769*	*N/A*	*0.75*	*1500*	*0.89*	*N/A*	*N/A*	*N/A*	*N/A*	*AER*
ex. benzene	*71432*	*80*	*16*	*0.13*	*1.00*	*400*	*0.04*	*36.52*	*1.5*	*1.05*	*0.12*	*Screen*
Total PCBs	1336363	N/A	26.60	0.01	1.28e-05	0.027	9.53e-02	3.65	N/A	N/A	N/A	AER

(attach additional sheets as necessary)

If compliance with the ambient impact requirement cannot be met using the allowable emissions rate method or the screening analysis method, refined dispersion modeling techniques may be required. Please consult with the Department's Air Quality Permit Program prior to conducting dispersion modeling methods to demonstrate compliance.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation U.S. Army Garrison at Fort Detrick	**Telephone No.** (845) 325 - 0887		**Date of Application**
2. Mailing Address 201 Beasley Dr., Suite 230	**City** Fort Detrick, MD	**Zip Code** 21702-9229	**County** Frederick
3. Equipment Location U.S. Army Garrison at Fort Detrick	**City/Town or P.O.** Frederick, Maryland, 21702		**County** Frederick
4. Signature of Owner or Operator GORTVA.JOSEPH.J.1247027757 Digitally signed by GORTVA.JOSEPH.J.1247027757 Date: 2024.10.07 09:46:08 -04'00'	**Title** Fort Detrick DPW		**Print or Type Name** Joseph Gortva

5. Application Type: **Alteration** ☐ **New Construction** ☒ X

6. Date Construction is to Start: October 1, 2025 **Completion Date (Estimate):** June 4, 2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone ☐ **Multiple Cyclone** ☐ **Afterburner** ☐ **Electrostatic Precipitator** ☐

Scrubber ☒ X ___**Wet Scrubber**_____ (type) **Other** ☐ _____ (type)

8. Gas Cleaning Equipment Manufacturer Envitech **Model No.** **Collection Efficiency (Design Criteria)**

9. Type of Equipment which Control Equipment is to Service:

Medical Waste Incinerator

10. Stack Test to be Conducted:

Yes ☒ X **No** ☐ _**TBD**_____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment _____

Estimated Erection Cost _____

12. The Following Shall Be Design Criteria:

	INLET	OUTLET
Gas Flow Rate	____12,857_____ ACFM*	___2,825_____ACFM*
Gas Temperature	_____1,900_____ °F	____91_____°F
Gas Pressure	_____406_____ INCHES W.G.	_____397_____INCHES W.G.
	PRESSURE DROP ____0.6 inHg_____	
Dust Loading	_____0.1604__ GRAINS/ACFD**	_____0.0494_GRAINS/ACFD**
Moisture Content OR Wet Bulb Temperature	_____8.5_ % _____ °F	_____3.2_____% _____°F

Liquid Flow Rate _____ GALLONS/MINUTE
(Wet Scrubber)

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	_____	_____
10 to 44 Microns	_____	_____
Larger than 44 Microns	____	_____

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

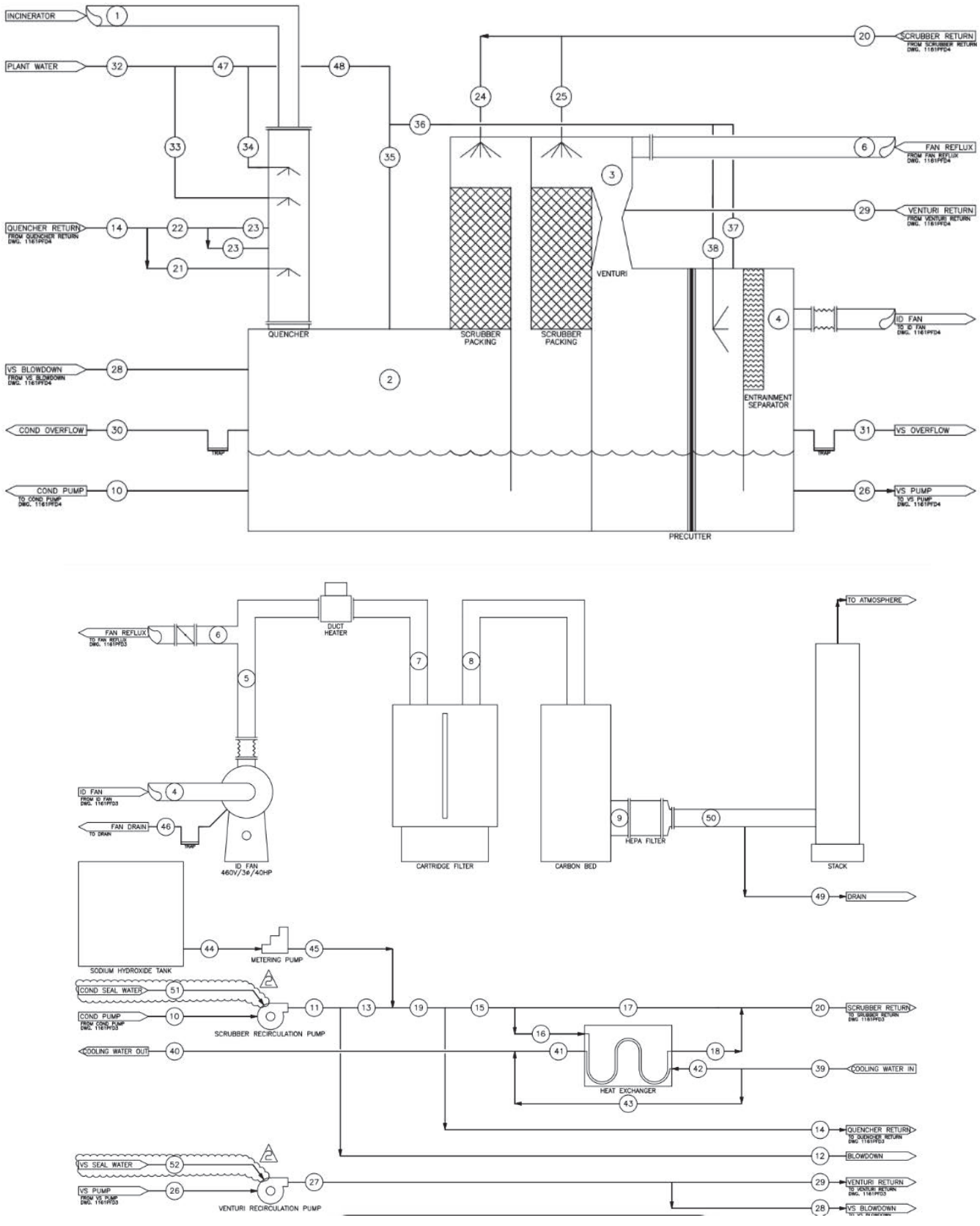
Capacity of Afterburner _____ BTUHR

Diameter (or area) of Afterburner Throat_____

Combustion Chamber_____ _____ Operating Temperature at Afterburner _____ °F
(diameter) (length)

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.



Date Received: Local _____ _____ **State** _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date_____

By _____

Application Returned to Applicant:

Date_____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: | | | | | | |

PREMISES NUMBER: | | | | | | | |

Emission Calculations Revised By _____ **Date** _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation	Telephone No.	Date of Application
U.S. Army Garrison at Fort Detrick	(845) 325 - 0887	

2. Mailing Address	City	Zip Code	County
201 Beasley Dr., Suite 230	Fort Detrick, MD	21702-9229	Frederick

3. Equipment Location	City/Town or P.O.	County
U.S. Army Garrison at Fort Detrick	Frederick, Maryland, 21702	Frederick

4. Signature of Owner or Operator	Title	Print or Type Name
GORTVA.JOSEPH.J.1247027757 Digitally signed by GORTVA.JOSEPH.J.1247027757 Date: 2024.10.07 09:46:39 -04'00'	Fort Detrick DPW	Joseph Gortva

5. Application Type: **Alteration** [ ] **New Construction** [X]

6. Date Construction is to Start: October 1, 2025 **Completion Date (Estimate):** June 4, 2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone [ ] **Multiple Cyclone** [ ] **Afterburner** [ ] **Electrostatic Precipitator** [ ]

Scrubber [X] **___Wet Scrubber_____** (type) **Other** [ ] _____ (type)

8. Gas Cleaning Equipment Manufacturer	Model No.	Collection Efficiency (Design Criteria)
Envitech		

9. Type of Equipment which Control Equipment is to Service:

Medical Waste Incinerator

10. Stack Test to be Conducted:

Yes [X] **No** [ ] **_TBD_** (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment _____

Estimated Erection Cost _____

12. The Following Shall Be Design Criteria:

	INLET	OUTLET
Gas Flow Rate	____12,857_____ ACFM*	___2,825_____ACFM*
Gas Temperature	_____1,900_____ °F	____91_____°F
Gas Pressure	_____406_____ INCHES W.G.	_____397_____INCHES W.G.
	PRESSURE DROP ____0.6 inHg_____	
Dust Loading	_____0.1604__ GRAINS/ACFD**	_____0.0494_GRAINS/ACFD**
Moisture Content OR Wet Bulb Temperature	_____8.5_ % _____ °F	_____3.2_____% _____°F

Liquid Flow Rate _____ GALLONS/MINUTE
(Wet Scrubber)

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	_____	_____
10 to 44 Microns	_____	_____
Larger than 44 Microns	____	_____

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

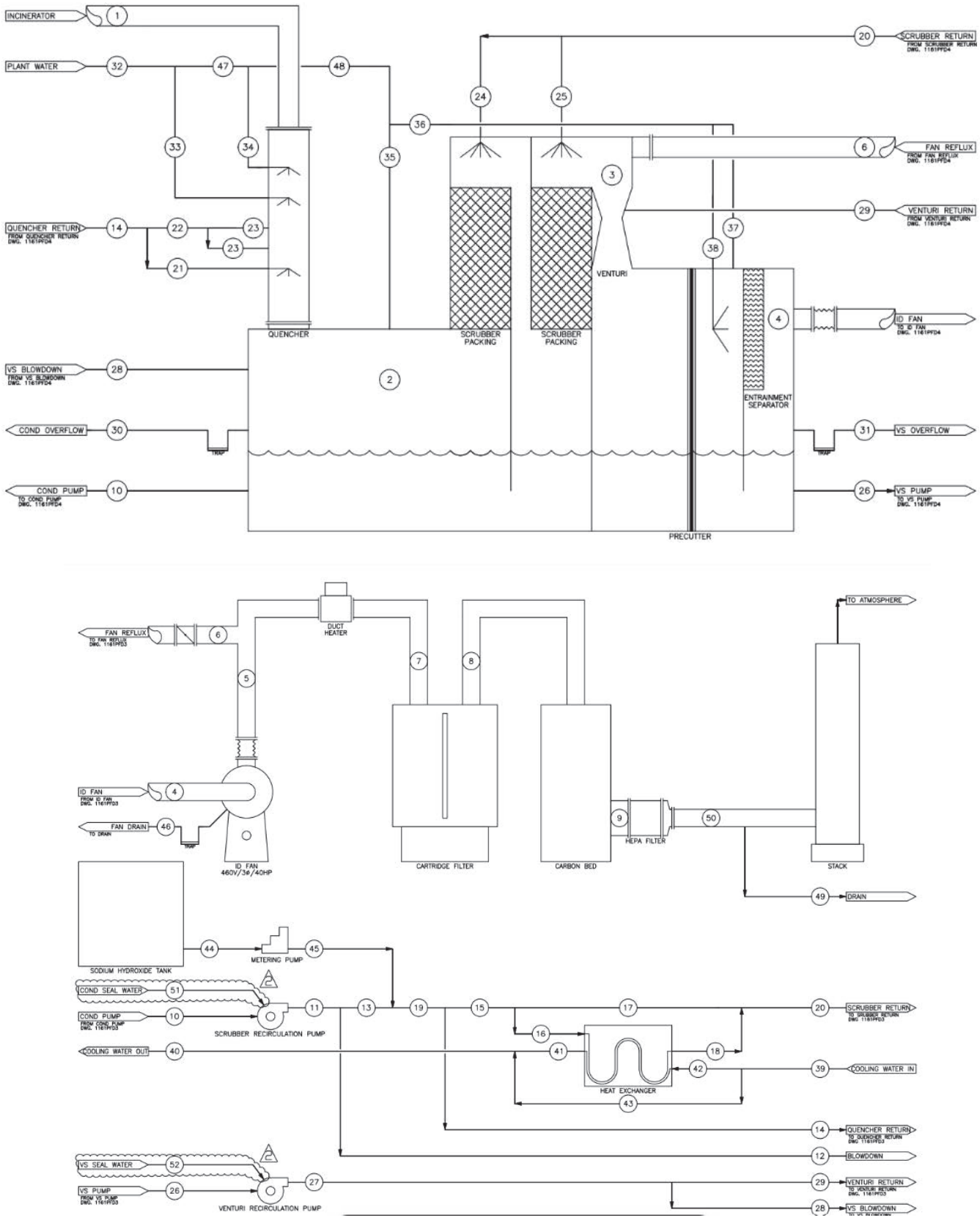
Capacity of Afterburner _____ BTUHR

Diameter (or area) of Afterburner Throat_____

Combustion Chamber_____ _____ Operating Temperature at Afterburner _____ °F
(diameter) (length)

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.



Date Received: Local _____ _____ **State** _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date_____

By _____

Application Returned to Applicant:

Date_____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: | | | | | | |

PREMISES NUMBER: | | | | | | | |

Emission Calculations Revised By _____ **Date** _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation U.S. Army Garrison at Fort Detrick	**Telephone No.** (845) 325 - 0887		**Date of Application**
2. Mailing Address 201 Beasley Dr., Suite 230	**City** Fort Detrick, MD	**Zip Code** 21702-9229	**County** Frederick
3. Equipment Location U.S. Army Garrison at Fort Detrick	**City/Town or P.O.** Frederick, Maryland, 21702		**County** Frederick
4. Signature of Owner or Operator GORTVA.JOSEPH.J.1247027757 Digitally signed by GORTVA.JOSEPH.J.1247027757 Date: 2024.10.07 09:47:14 -04'00'	**Title** Fort Detrick DPW		**Print or Type Name** Joseph Gortva

5. Application Type: **Alteration** ☐ **New Construction** ☒

6. Date Construction is to Start: October 1, 2025 **Completion Date (Estimate):** June 4, 2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone ☐ **Multiple Cyclone** ☐ **Afterburner** ☐ **Electrostatic Precipitator** ☐

Scrubber ☒ ___Venturi Scrubber_____ (type) **Other** ☐ _____ (type)

8. Gas Cleaning Equipment Manufacturer Envitech **Model No.** **Collection Efficiency (Design Criteria)**

9. Type of Equipment which Control Equipment is to Service:

Medical Waste Incinerator

10. Stack Test to be Conducted:

Yes ☒ **No** ☐ _TBD_____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment _____

Estimated Erection Cost _____

12. The Following Shall Be Design Criteria:

	INLET	OUTLET
Gas Flow Rate	____2,825_____ ACFM*	___3,395_____ACFM*
Gas Temperature	_____91_____ °F	____88_____°F
Gas Pressure	_____397_____ INCHES W.G.	_____366_____INCHES W.G.

PRESSURE DROP ____2.3 inHg_____

Dust Loading	_____0.0494_____ GRAINS/	_____0.0257_____GRAINS/ACFD**
Moisture Content OR	ACFD** _____3.2_____ %	_____3.3_____%
Wet Bulb Temperature	_____ °F	_____°F

Liquid Flow Rate _____ GALLONS/MINUTE
(Wet Scrubber)

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	_____	_____
10 to 44 Microns	_____	_____
Larger than 44 Microns	____	_____

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

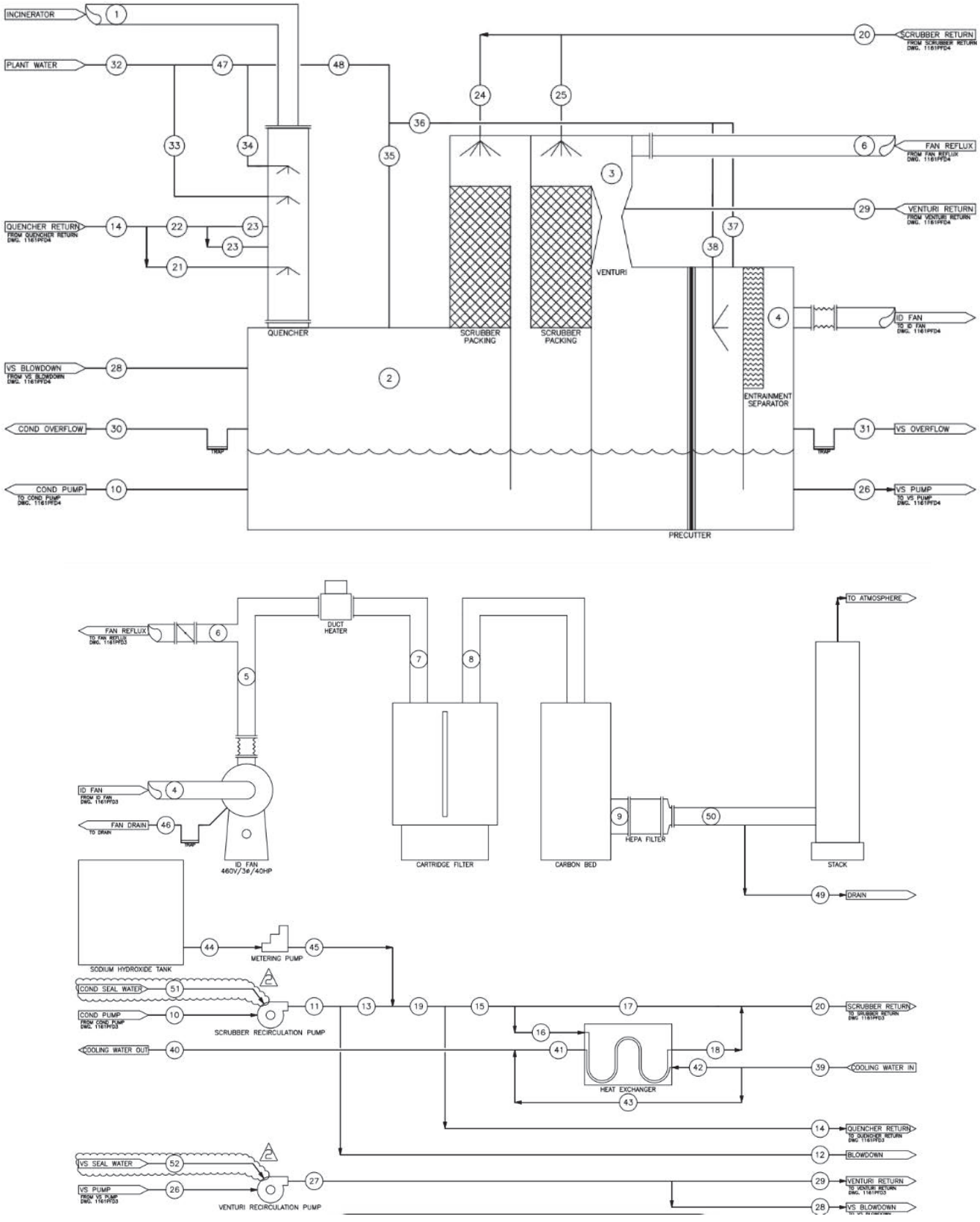
Capacity of Afterburner _____ BTUHR

Diameter (or area) of Afterburner Throat_____

Combustion Chamber_____ _____ Operating Temperature at Afterburner _____ °F
(diameter) (length)

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.



Date Received: Local _____ _____ State _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date_____

By _____

Application Returned to Applicant:

Date_____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: | | | | | | |

PREMISES NUMBER: | | | | | | | |

Emission Calculations Revised By _____ Date _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation	Telephone No.	Date of Application
U.S. Army Garrison at Fort Detrick	(845) 325 - 0887	

2. Mailing Address	City	Zip Code	County
201 Beasley Dr., Suite 230	Fort Detrick, MD	21702-9229	Frederick

3. Equipment Location	City/Town or P.O.	County
U.S. Army Garrison at Fort Detrick	Frederick, Maryland, 21702	Frederick

4. Signature of Owner or Operator	Title	Print or Type Name
GORTVA.JOSEPH.J.1247027757 Digitally signed by GORTVA.JOSEPH.J.1247027757 Date: 2024.10.07 09:47:55 -04'00'	Fort Detrick DPW	Joseph Gortva

5. Application Type: **Alteration** [ ] **New Construction** [X]

6. Date Construction is to Start: October 1, 2025 **Completion Date (Estimate):** June 4, 2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone [ ] **Multiple Cyclone** [ ] **Afterburner** [ ] **Electrostatic Precipitator** [ ]

Scrubber [X] ___Venturi Scrubber_____ (type) **Other** [ ] _____ (type)

8. Gas Cleaning Equipment Manufacturer | **Model No.** | **Collection Efficiency (Design Criteria)**

Envitech

9. Type of Equipment which Control Equipment is to Service:

Medical Waste Incinerator

10. Stack Test to be Conducted:

Yes [X] **No** [ ] _TBD_____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment _____

Estimated Erection Cost _____

12. The Following Shall Be Design Criteria:

	INLET	OUTLET
Gas Flow Rate	____2,825_____ ACFM*	___3,395_____ACFM*
Gas Temperature	_____91_____ °F	____88_____°F
Gas Pressure	_____397_____ INCHES W.G.	_____366_____INCHES W.G.

PRESSURE DROP ____2.3 inHg_____

Dust Loading	_____0.0494_____ GRAINS/	_____0.0257_____GRAINS/ACFD**
Moisture Content OR	ACFD** _____3.2_____ %	_____3.3_____%
Wet Bulb Temperature	_____ °F	_____°F

Liquid Flow Rate _____ GALLONS/MINUTE
(Wet Scrubber)

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	_____	_____
10 to 44 Microns	_____	_____
Larger than 44 Microns	____	_____

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

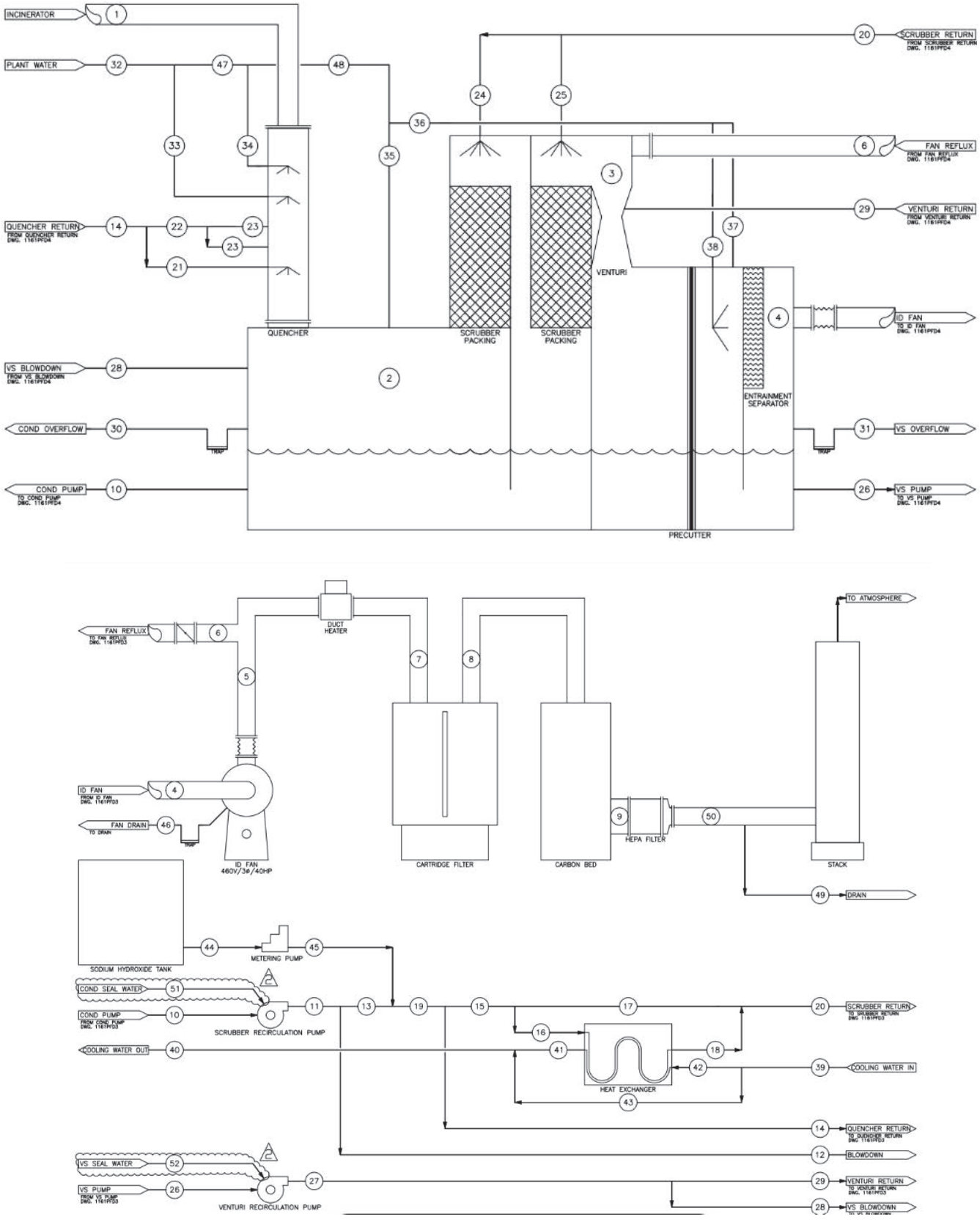
Capacity of Afterburner _____ BTUHR

Diameter (or area) of Afterburner Throat_____

Combustion Chamber_____ _____ Operating Temperature at Afterburner _____ °F
(diameter) (length)

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.



Date Received: Local _____ _____ State _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date_____

By _____

Application Returned to Applicant:

Date_____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: | | | | | | |

PREMISES NUMBER: | | | | | | | |

Emission Calculations Revised By _____ Date _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation	Telephone No.	Date of Application
U.S. Army Garrison at Fort Detrick	(845) 325 - 0887	

2. Mailing Address	City	Zip Code	County
201 Beasley Dr., Suite 230	Fort Detrick, MD	21702-9229	Frederick

3. Equipment Location	City/Town or P.O.	County
U.S. Army Garrison at Fort Detrick	Frederick, Maryland, 21702	Frederick

4. Signature of Owner or Operator	Title	Print or Type Name
GORTVA.JOSEPH.J.1247027757 Digitally signed by GORTVA.JOSEPH.J.1247027757 Date: 2024.10.07 09:48:47 -04'00'	Fort Detrick DPW	Joseph Gortva

5. Application Type: **Alteration** [ ] **New Construction** [X]

6. Date Construction is to Start: October 1, 2025 **Completion Date (Estimate):** June 4, 2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone [ ] **Multiple Cyclone** [ ] **Afterburner** [ ] **Electrostatic Precipitator** [ ]

Scrubber [ ] _____ (type) **Other** [X] __Carbon Adsorber_____ (type)

8. Gas Cleaning Equipment Manufacturer	Model No.	Collection Efficiency (Design Criteria)
Envitech		

9. Type of Equipment which Control Equipment is to Service:

Medical Waste Incinerator

10. Stack Test to be Conducted:

Yes [X] **No** [ ] _TBD_____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment _____

Estimated Erection Cost _____

12. The Following Shall Be Design Criteria:

	INLET	OUTLET
Gas Flow Rate	____2,912_____ ACFM*	___2,949_____ACFM*
Gas Temperature	_____135_____ °F	____128_____°F
Gas Pressure	_____416_____ INCHES W.G.	____407_____INCHES W.G.
	PRESSURE DROP ____0.3 inHg_____	
Dust Loading	_____0.0061___ GRAINS/ACFD**	_____0.0000 - 0.0080_GRAINS/ACFD**
Moisture Content OR Wet Bulb Temperature	_____3.3_____ % _____ °F	_____3.3_____% _____°F

Liquid Flow Rate _____ GALLONS/MINUTE
(Wet Scrubber)

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	_____	_____
10 to 44 Microns	_____	_____
Larger than 44 Microns	____	_____

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

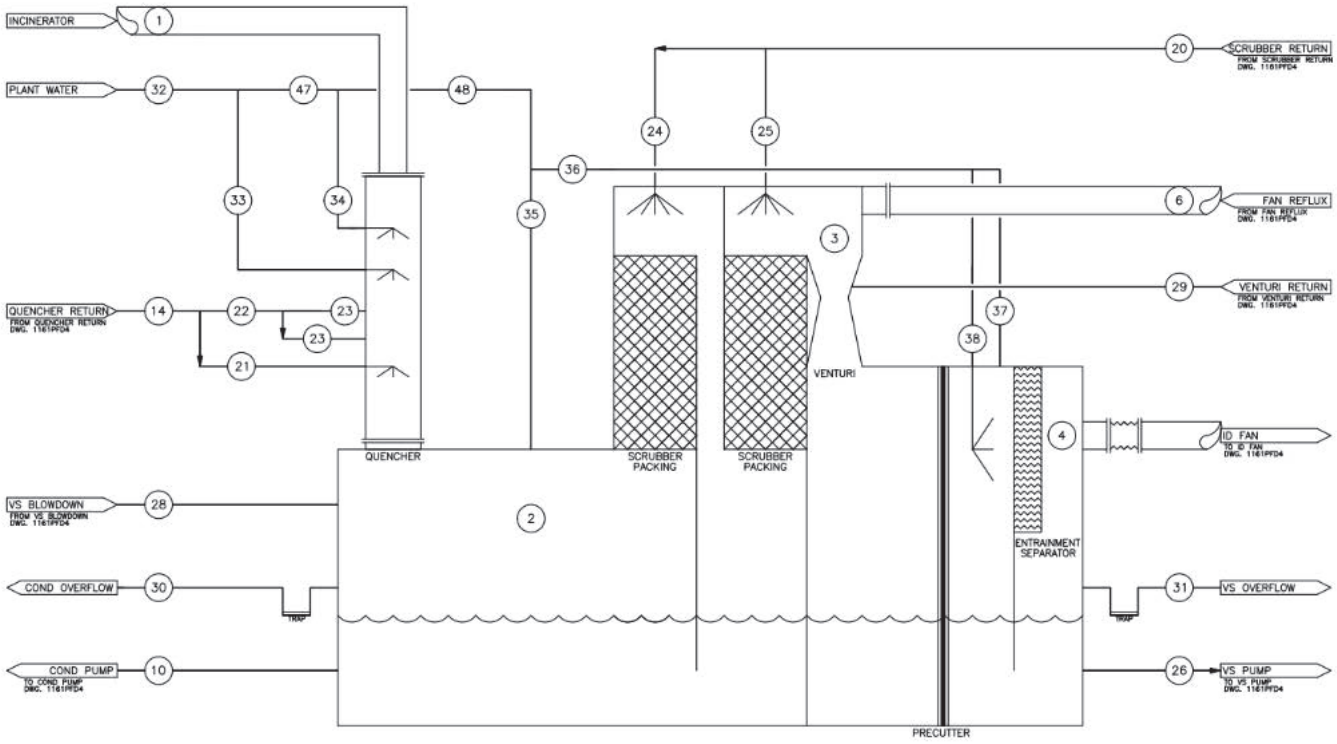
Capacity of Afterburner _____ BTUHR

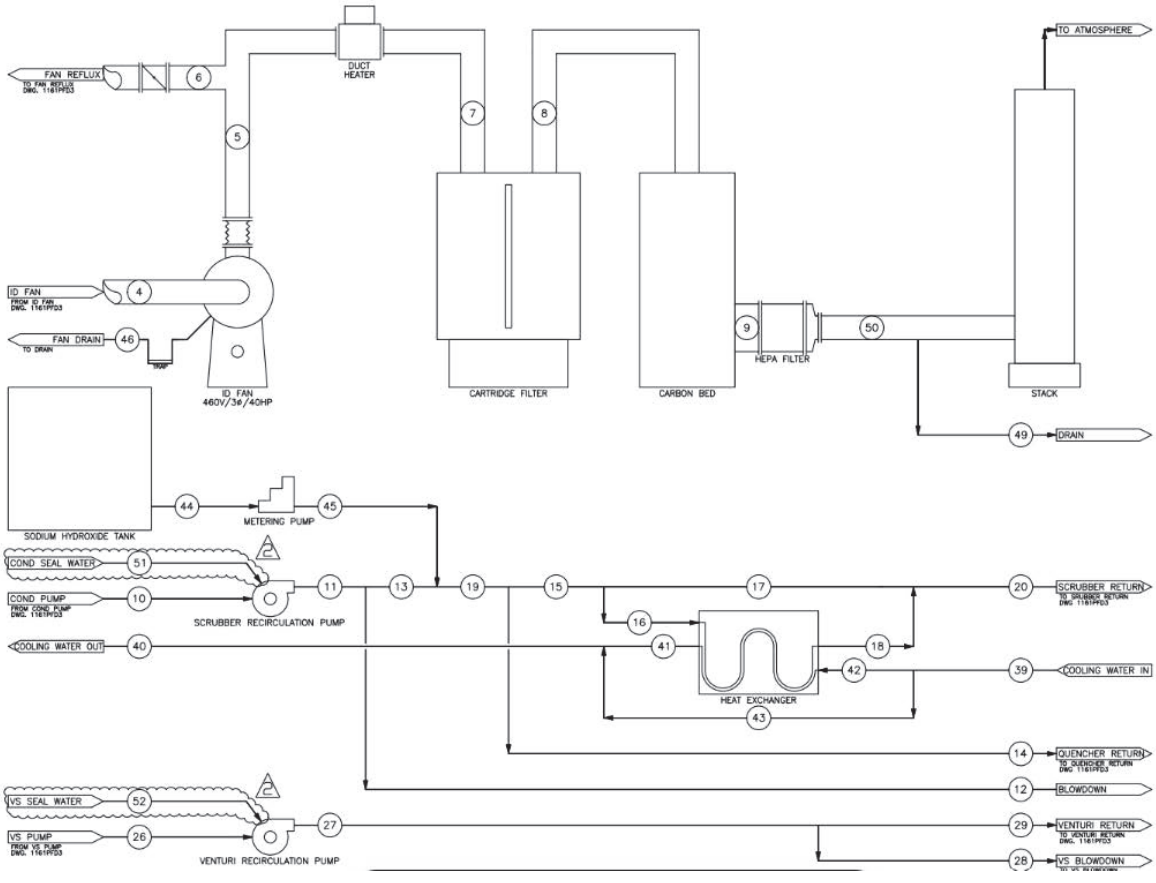
Diameter (or area) of Afterburner Throat_____

Combustion Chamber_____ _____ Operating Temperature at Afterburner _____ °F
(diameter) (length)

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.





Date Received: Local _____ _____ State _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date_____

By _____

Application Returned to Applicant:

Date_____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: | | | | | | |

PREMISES NUMBER: | | | | | | | |

Emission Calculations Revised By _____ Date _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation	Telephone No.	Date of Application
U.S. Army Garrison at Fort Detrick	(845) 325 - 0887	

2. Mailing Address	City	Zip Code	County
201 Beasley Dr., Suite 230	Fort Detrick, MD	21702-9229	Frederick

3. Equipment Location	City/Town or P.O.	County
U.S. Army Garrison at Fort Detrick	Frederick, Maryland, 21702	Frederick

4. Signature of Owner or Operator	Title	Print or Type Name
GORTVA.JOSEPH.J.1247027757 Digitally signed by GORTVA.JOSEPH.J.1247027757 Date: 2024.10.07 09:49:46 -04'00'	Fort Detrick DPW	Joseph Gortva

5. Application Type: **Alteration** [ ] **New Construction** [X]

6. Date Construction is to Start: October 1, 2025 **Completion Date (Estimate):** June 4, 2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone [ ] **Multiple Cyclone** [ ] **Afterburner** [ ] **Electrostatic Precipitator** [ ]

Scrubber [ ] _____ (type) **Other** [X] __Carbon Adsorber_____ (type)

8. Gas Cleaning Equipment Manufacturer	Model No.	Collection Efficiency (Design Criteria)
Envitech		

9. Type of Equipment which Control Equipment is to Service:

Medical Waste Incinerator

10. Stack Test to be Conducted:

Yes [X] **No** [ ] _TBD_____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment _____

Estimated Erection Cost _____

12. The Following Shall Be Design Criteria:

	INLET	OUTLET
Gas Flow Rate	____2,912_____ ACFM*	___2,949_____ACFM*
Gas Temperature	_____135_____ °F	____128_____°F
Gas Pressure	_____416_____ INCHES W.G.	____407_____INCHES W.G.
	PRESSURE DROP ____0.3 inHg_____	
Dust Loading	_____0.0061___ GRAINS/ACFD**	_____0.0000 - 0.0080_GRAINS/ACFD**
Moisture Content OR Wet Bulb Temperature	_____3.3_____ % _____ °F	_____3.3_____% _____°F

Liquid Flow Rate _____ GALLONS/MINUTE
(Wet Scrubber)

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	_____	_____
10 to 44 Microns	_____	_____
Larger than 44 Microns	____	_____

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

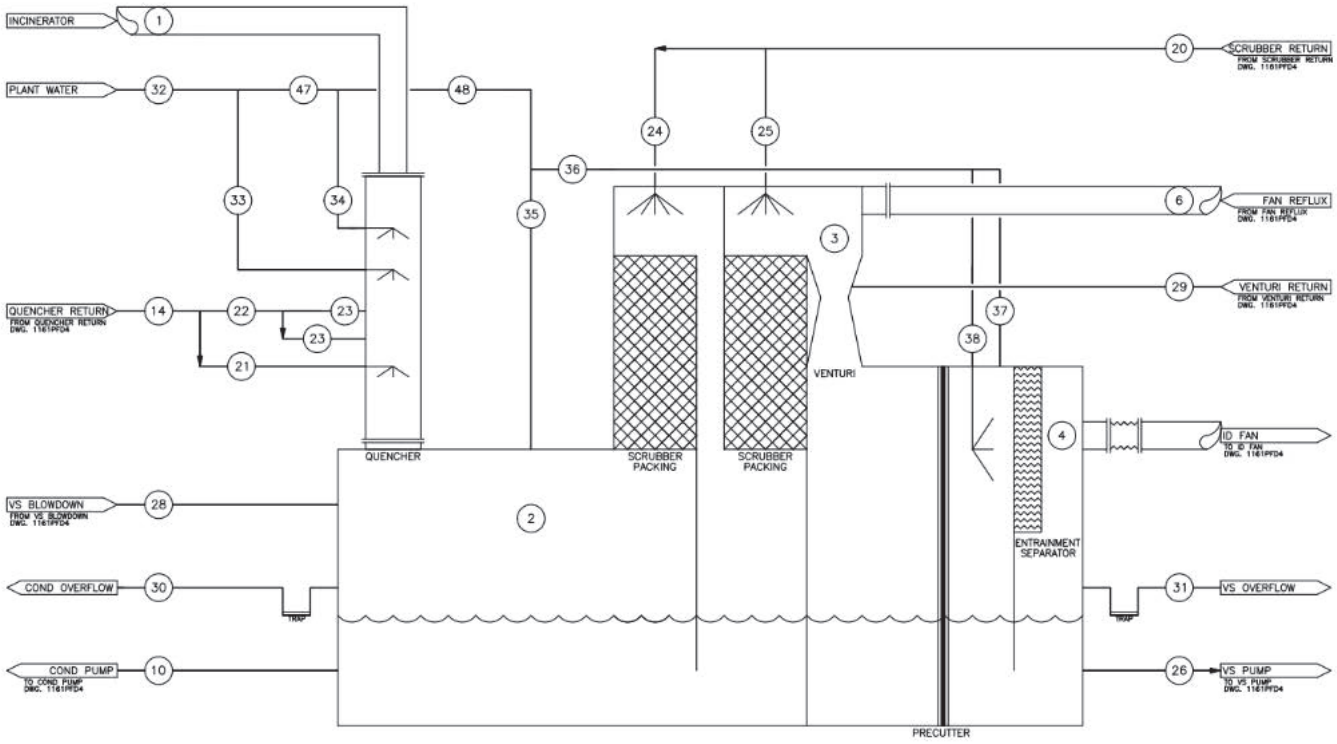
Capacity of Afterburner _____ BTUHR

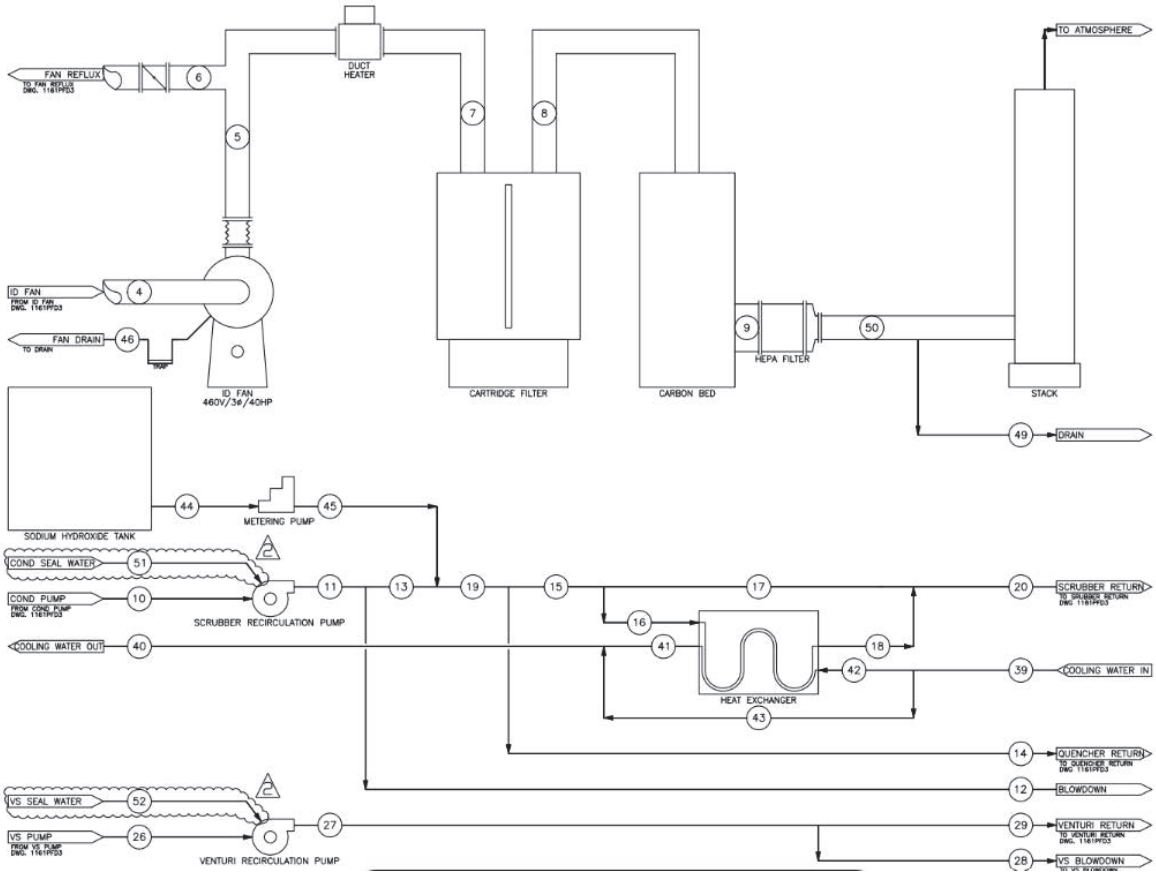
Diameter (or area) of Afterburner Throat_____

Combustion Chamber_____ _____ Operating Temperature at Afterburner _____ °F
(diameter) (length)

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.





Date Received: Local _____ _____ State _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date_____

By _____

Application Returned to Applicant:

Date_____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: | | | | | | |

PREMISES NUMBER: | | | | | | | |

Emission Calculations Revised By _____ Date _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation	Telephone No.	Date of Application
U.S. Army Garrison at Fort Detrick	(845) 325 - 0887	

2. Mailing Address	City	Zip Code	County
201 Beasley Dr., Suite 230	Fort Detrick, MD	21702-9229	Frederick

3. Equipment Location	City/Town or P.O.	County
U.S. Army Garrison at Fort Detrick	Frederick, Maryland, 21702	Frederick

4. Signature of Owner or Operator	Title	Print or Type Name
GORTVA.JOSEPH.J.1247027757 Digitally signed by GORTVA.JOSEPH.J.1247027757 Date: 2024.10.07 09:50:52 -04'00'	Fort Detrick DPW	Joseph Gortva

5. Application Type: **Alteration** [ ] **New Construction** [X]

6. Date Construction is to Start: October 1, 2025 **Completion Date (Estimate):** June 4, 2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone [ ] **Multiple Cyclone** [ ] **Afterburner** [ ] **Electrostatic Precipitator** [ ]

Scrubber [ ] _____ (type) **Other** [X] ____Cartridge Filter_____ (type)

8. Gas Cleaning Equipment Manufacturer	Model No.	Collection Efficiency (Design Criteria)
Envitech		

9. Type of Equipment which Control Equipment is to Service:

Medical Waste Incinerator

10. Stack Test to be Conducted:

Yes [X] **No** [ ] __TBD_____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment _____

Estimated Erection Cost _____

12. The Following Shall Be Design Criteria:

	INLET	OUTLET
Gas Flow Rate	2,889 ACFM*	2,912 ACFM*
Gas Temperature	136 °F	135 °F
Gas Pressure	421 INCHES W.G.	416 INCHES W.G.

PRESSURE DROP 0.3 inHg

Dust Loading	0.0257 GRAINS/	0.0061 GRAINS/ACFD**
Moisture Content OR Wet Bulb Temperature	ACFD** 3.3 %	3.3 %
	°F	°F

Liquid Flow Rate _____ GALLONS/MINUTE
(Wet Scrubber)

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	_____	_____
10 to 44 Microns	_____	_____
Larger than 44 Microns	____	_____

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

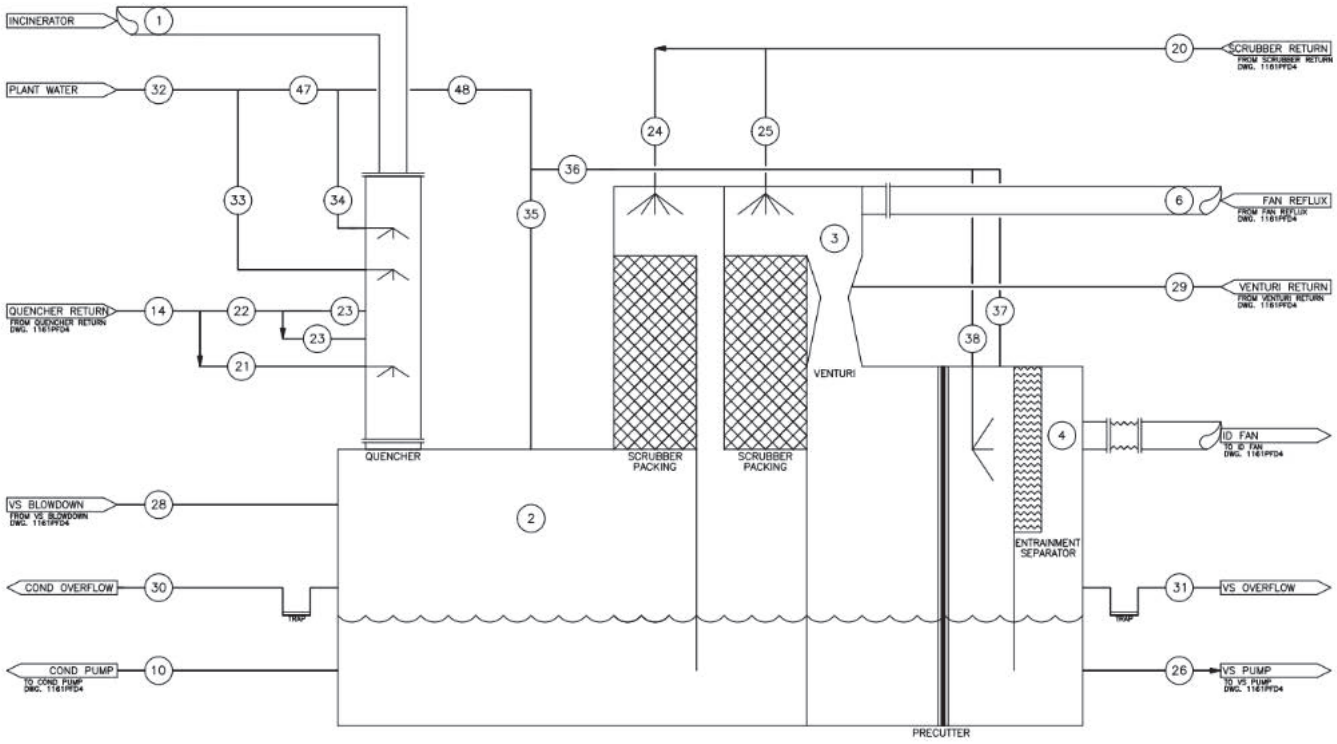
Capacity of Afterburner _____ BTUHR

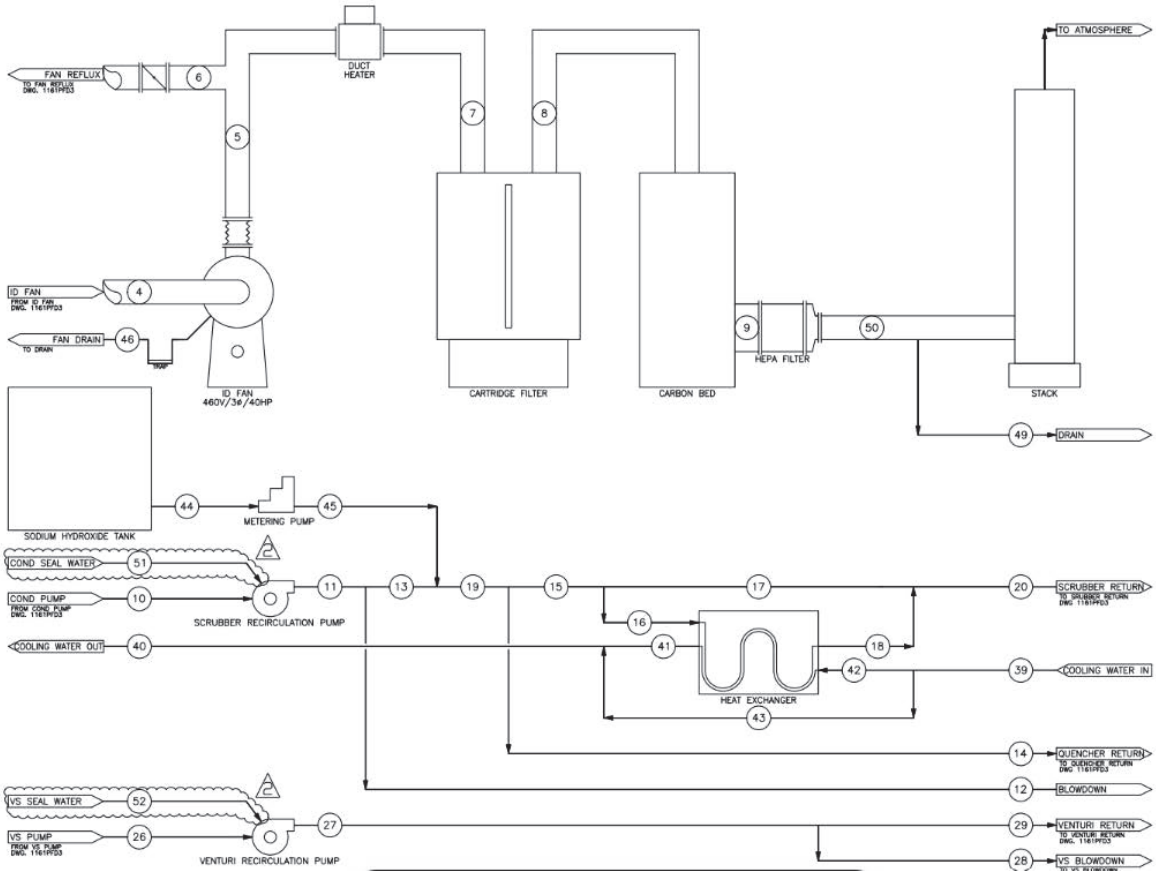
Diameter (or area) of Afterburner Throat_____

Combustion Chamber_____ _____ Operating Temperature at Afterburner _____ °F
(diameter) (length)

Retention Time of Gases _____1.0+ sec_____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.





Date Received: Local _____ _____ State _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date_____

By _____

Application Returned to Applicant:

Date_____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: | | | | | | |

PREMISES NUMBER: | | | | | | | |

Emission Calculations Revised By _____ Date _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation	Telephone No.	Date of Application
U.S. Army Garrison at Fort Detrick	(845) 325 - 0887	

2. Mailing Address	City	Zip Code	County
201 Beasley Dr., Suite 230	Fort Detrick, MD	21702-9229	Frederick

3. Equipment Location	City/Town or P.O.	County
U.S. Army Garrison at Fort Detrick	Frederick, Maryland, 21702	Frederick

4. Signature of Owner or Operator	Title	Print or Type Name
GORTVA.JOSEPH.J.1247027757 Digitally signed by GORTVA.JOSEPH.J.1247027757 Date: 2024.10.07 09:52:11 -04'00'	Fort Detrick DPW	Joseph Gortva

5. Application Type: **Alteration** [ ] **New Construction** [X]

6. Date Construction is to Start: October 1, 2025 **Completion Date (Estimate):** June 4, 2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone [ ] **Multiple Cyclone** [ ] **Afterburner** [ ] **Electrostatic Precipitator** [ ]

Scrubber [ ] _____ (type) **Other** [X] ____Cartridge Filter_____ (type)

8. Gas Cleaning Equipment Manufacturer	Model No.	Collection Efficiency (Design Criteria)
Envitech		

9. Type of Equipment which Control Equipment is to Service:

Medical Waste Incinerator

10. Stack Test to be Conducted:

Yes [X] **No** [ ] __TBD_____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment _____

Estimated Erection Cost _____

12. The Following Shall Be Design Criteria:

	INLET	OUTLET
Gas Flow Rate	2,889 ACFM*	2,912 ACFM*
Gas Temperature	136 °F	135 °F
Gas Pressure	421 INCHES W.G.	416 INCHES W.G.

PRESSURE DROP 0.3 inHg

Dust Loading	0.0257 GRAINS/	0.0061 GRAINS/ACFD**
Moisture Content OR Wet Bulb Temperature	ACFD** 3.3 %	3.3 %
	°F	°F

Liquid Flow Rate _____ GALLONS/MINUTE
(Wet Scrubber)

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	_____	_____
10 to 44 Microns	_____	_____
Larger than 44 Microns	____	_____

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

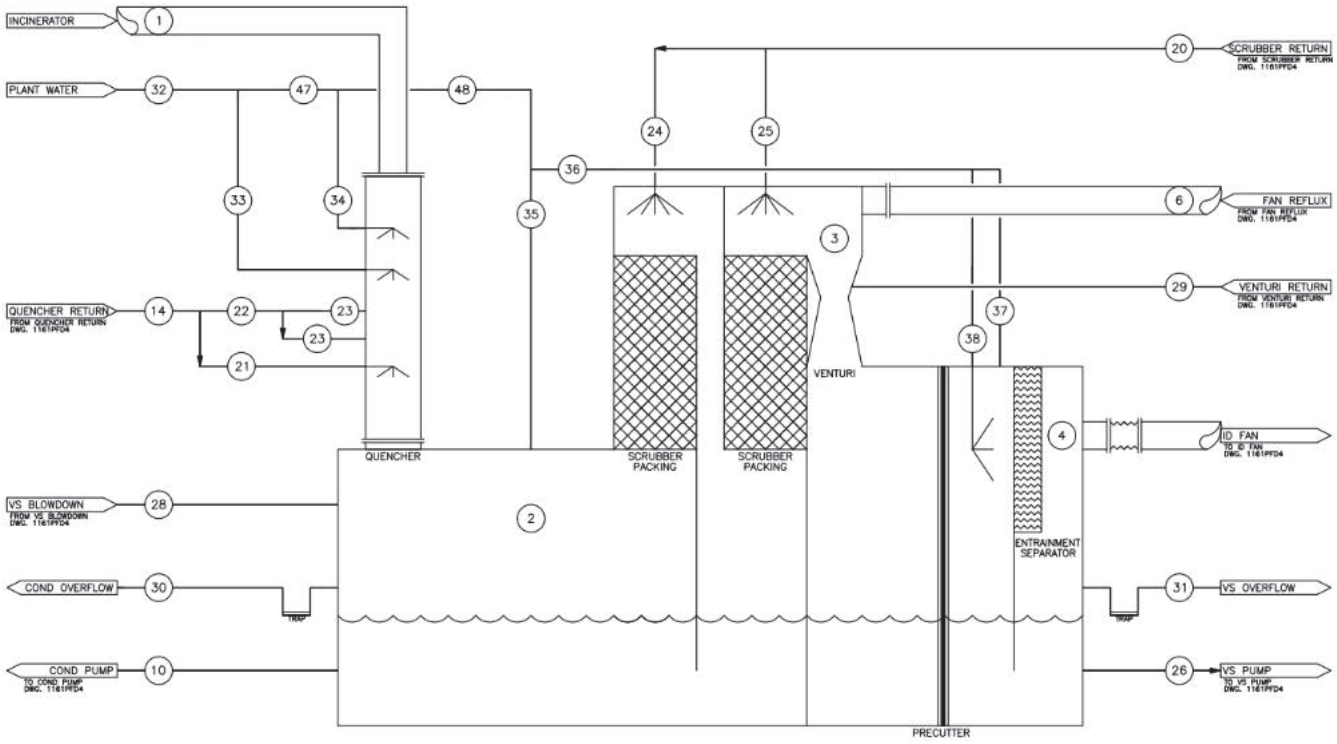
Capacity of Afterburner _____ BTUHR

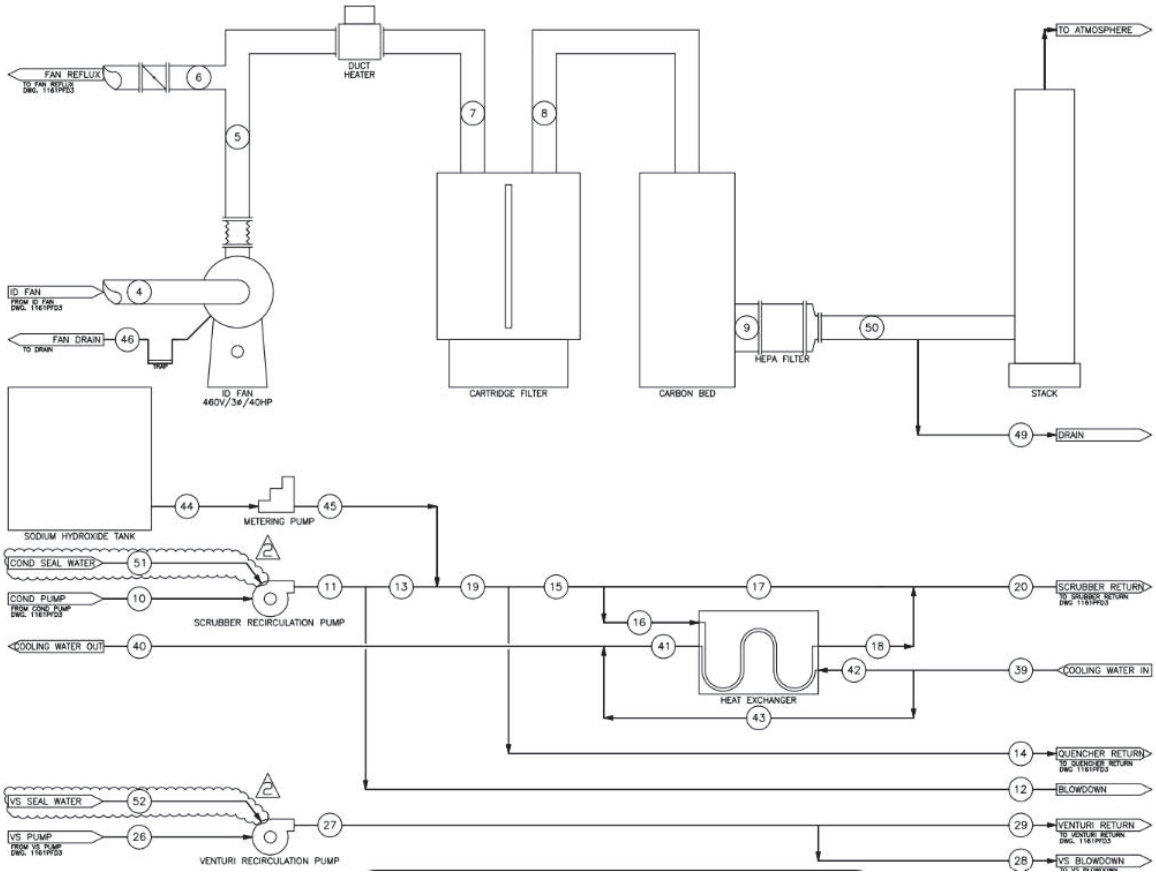
Diameter (or area) of Afterburner Throat_____

Combustion Chamber_____ _____ Operating Temperature at Afterburner _____ °F
(diameter) (length)

Retention Time of Gases _____1.0+ sec_____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.





Date Received: Local _____ _____ State _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date_____

By _____

Application Returned to Applicant:

Date_____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: | | | | | | |

PREMISES NUMBER: | | | | | | | |

Emission Calculations Revised By _____ Date _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Air and Radiation Management Administration ● Air Quality Permits Program
1800 Washington Boulevard ● Baltimore, Maryland 21230
(410)537-3230 ● 1-800-633-6101● www.mde.state.md.us

Mail application to

MDE/ARMA
1800 Washington Blvd, Suite 720
Baltimore, MD 21230-1720

Air Quality Permit to Construct & Registration Application for

EMERGENCY GENERATOR

You must check off all of the following items to be able to use this application form

☒ This generator is a dedicated emergency backup generator, and will not be used for peak or load shaving.
☐ This generator is powered by an internal combustion engine, not a turbine
☐ This generator's engine is at least 500 brake horsepower (373 kilowatts)
(Smaller emergency engines do not need a permit)

AND

You must check off one of the following items to be able to use this application form

☒ I do not need a CPCN Exemption because the generator is rated at 2000 kW or less
☐ I do not need a CPCN Exemption because the generator was installed before October 1, 2001
☐ I have a CPCN Exemption from the Public Service Commission for this generator
(Contact the Public Service Commission at 410.767.8131)

1) Business/Institution/Facility where the equipment will be located ☒ **Check if this is a federal facility**

Business/Institution/Facility Name:			Phone:
U.S. Army Garrison at Fort Detrick			(845) 325-0887
Contact Person's Name:		Email Address:	
Peter Morano		petermorano@mortenson.com	
Street Address:			
8425 Navy Way			
City:	State:	Zip Code:	County:
Fort Detrick	MD	21702	Frederick

2) Owner ☒ **Check if different from above. If checked, complete the following:**

Name:		Phone:
Joseph Gortva		Joseph.j.gortva.civ@army.mil
Mailing Address:		
9255 Amber Drive		
City:	State:	Zip Code:
Fort Detrick	MD	21702

3) Installer ☐ **Check if different from above. If checked, complete the following:**

Contact Name:	Contact Company:	Phone:

4) Equipment Information

Manufacturer / Model: Caterpillar G3512 Generator

Installation Date: October 1, 2025

☒ Yes ☐ No This generator will be operated as part of an emergency demand response program.

Number Installed:	Number Removed:	Stack Height (feet, estimated):	Stack Diameter (inches, estimated):
1	0	TBD	TBD

Engine Make / Model:	EPA Tier Certified:	Engine Horsepower :	Engine Manufacture Date:	Fuel Type:
Caterpillar G3512	Tier 4	1000 kW	TBD	Natural Gas

5) Required Attachments (check that you've included them)

☐ Vendor literature

☐ CPCN Exemption from the Public Service Commission
(not needed for generators installed before October 1, 2001, or rated at 1500 kW or less)

6) Workers Compensation Information (Environmental Article §1-202)

Workers insurance policy or binder number: _____

☐ Check if self-employed or otherwise exempt from this requirement

"I CERTIFY UNDER PENALTY OF LAW THAT THE INFORMATION SUBMITTED IN THIS REQUEST FOR COVERAGE IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

GORTVA.JOSEPH.J.1247027757 Digitally signed by GORTVA.JOSEPH.J.1247027757 Date: 2024.10.07 09:54:16 -04'00' | Chief, DPW Environmental Division | 10/7/2024

Owners Signature | **Printed Name and Title** | **Date**

LEAVE BLANK
MDE USE ONLY

☐ Permit
☐ Registration (Less than 1,000 brake horsepower & installed prior to 11/24/03)

Permit/Registration Number: _____ - _____ - _____ - _____

AI: _____

Emissions

	Sox	Nox	CO	VOC	PM	PM-10
Stack	_____	_____	_____	_____	_____	_____
Fugitive	_____	_____	_____	_____	_____	_____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230

410-537-3000 • 1-800-633-6101 • http://www.mde.state.md.us

CERTIFICATION OF WORKERS' COMPENSATION INSURANCE COVERAGE

INTRODUCTION

Section 1-202 of the Environment Article provides that the applicant for a permit or license to engage in any activity in which the applicant may employ a "covered employee", as defined in §9-101 of the Labor and Employment Article of the Annotated Code of Maryland ("LE"), shall provide to the Maryland Department of the Environment (the "Department") the policy or binder number of a valid workers' compensation insurance policy that has been issued to the applicant. Such a filing is required before the Department may issue any such license or permit.

Alternatively, the applicant shall file a Certificate of Compliance issued by the Maryland Workers' Compensation Commission only in cases where the applicant is either:
(a) A sole proprietorship with no employees;
(b) A partnership with no employees other than individual partners;
(c) A Farm Corporation, a Maryland Close Corporation, a Professional Corporation or a Limited Liability Company with no employees other than corporate officers or limited liability company members who have elected, under LE §9-206, to be excluded from workers' compensation coverage;
(d) A business that is an employer on only "casual employees" as provided under LE §9-205 and defined in Maryland Law; or
(e) A business that is the owner of a Class F (Tractor) vehicle who meets the requirements of exclusion as defined under LE §9-218.

Accordingly, as an applicant for a license or permit before the Department, the undersigned hereby certifies that the following is true and accurate to the best of his knowledge. This document will be incorporated by reference into the application that it supports. Check one of the appropriate lines below, entering the name and address of your insurance provider, and your insurance policy or binder number, if applicable. If certification is made that the applicant is eligible for a Certificate of Compliance, the reason or reasons listed above must be specified.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

CERTIFICATION

_X_ I certify that the applicant is covered by workers' compensation insurance as required by Title 9 of the Labor and Employment Article.

Name of Insurance Provider: Federal Employees' Compensation Act (FECA) Claims Administration

Federal government - self insured.

Address of Insurance Provider:

Federal government

Insurance Policy or Binder Number:

Federal government - self insured.

____ I certify that the applicant is eligible to apply for a Certificate of Compliance from the Maryland Workers' Compensation Commission for the reason or reasons listed on the line below. I hereby request that the Maryland Department of the Environment provide to me an application form for said certificate.

Reason(s) for eligibility to receive Certificate of Compliance:

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and with all attachments hereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

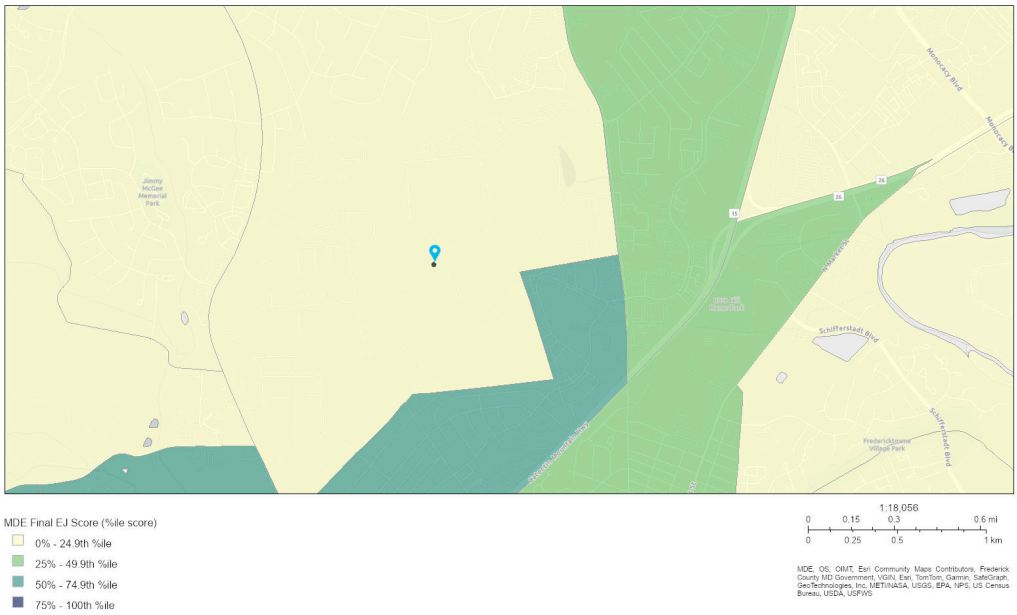
Name & Title (Please Print)	Phone Number
Joseph Gortva, Chief DPW Env Division	301-619-3196
Signature	Date Signed
	10/7/2024

MDE Screening Report - 8300 Research Plaza

Area of Interest (AOI) Information

Jul 18 2024 15:10:22 Eastern Daylight Time

Tabloid ANSI B Landscape



Summary

Name	Count	Area(mi²)	Length(mi)
MDE Final EJ Score (%ile score)	1	N/A	N/A
Overburdened Communities Combined Score	1	N/A	N/A
Overburdened Pollution Environmental Score (%ile score)	1	N/A	N/A
Overburdened Exposure Score (%ile score)	1	N/A	N/A
Overburdened Sensitive Population (%ile score)	1	N/A	N/A
Socioeconomic/Demographic Score 2020 (Percentile score) (Underserved Community)	1	N/A	N/A
Air Emissions Facilities	0	N/A	N/A
Sulfur Dioxide (2010)	0	N/A	N/A
Ozone (2015)	1	N/A	N/A
Fine Particles (2012)	1	N/A	N/A
Biosolids FY 2020 and Current Permit Details	0	N/A	N/A
Biosolids FY2010 - 2014 Permit Details	0	N/A	N/A
Biosolids FY2009 Expired Permit Details	0	N/A	N/A
Biosolids FY 2020 and Current Permits Distribution By Acreage	1	N/A	N/A
Biosolids FY2015 - 2019 Permits Distribution By Acreage	1	N/A	N/A
Biosolids FY2010 - 2014 Permits Distribution By Acreage	1	N/A	N/A
Biosolids FY2009 Permits Expired Distribution By Acreage	1	N/A	N/A
Biosolids FY 2020 and Current Permit Distribution By Percent Coverage	1	N/A	N/A
Biosolids FY2015 - 2019 Permit Distribution By Percent Coverage	1	N/A	N/A
Biosolids FY2010 - 2014 Permit Distribution By Percent Coverage	1	N/A	N/A
Biosolids FY2009 Expired Permit Distribution By Percent Coverage	1	N/A	N/A
Concentrated Animal Feeding Operations (CAFOs)	0	N/A	N/A
Composting Facilities	0	N/A	N/A
Food Scrap Acceptors	0	N/A	N/A
Landfills	0	N/A	N/A
Correctional Facilities	0	N/A	N/A
Industrial Food Suppliers	0	N/A	N/A
Residential Colleges	0	N/A	N/A
Non-Residential Colleges	0	N/A	N/A
Hospitals	0	N/A	N/A
High Schools	0	N/A	N/A
Grocery Stores	0	N/A	N/A
10 Miles from Landfill	5	N/A	N/A
10 Miles from Composting Facility	1	N/A	N/A
General Composting Facilities Tier 2 (MD)	0	N/A	N/A
Commercial Anaerobic Digester (MD)	0	N/A	N/A
Out of State Facilities	0	N/A	N/A
30 mile buffer (Maryland)	2	N/A	N/A
30 Mile Buffer (Out of State)	0	N/A	N/A
Land Restoration Facilities	0	N/A	N/A
Determinations (points)	0	N/A	N/A
Determinations (areas)	0	N/A	N/A
Entities	0	N/A	N/A
Active Coal Mine Sites	0	N/A	N/A
Historic Mine Facilities	0	N/A	N/A

All Permitted Solid Waste Acceptance Facilities	0	N/A	N/A
Municipal Solid Waste Acceptance Facilities	0	N/A	N/A
Maryland Dam Locations	0	N/A	N/A
Maryland Pond Locations	0	N/A	N/A
Surface Water Intakes	0	N/A	N/A
Wastewater Discharge Facilities	0	N/A	N/A
Drinking Water	0	N/A	N/A
Clean Water	0	N/A	N/A

MDE Final EJ Score (%ile score)

#	Census tract identifier	Geographic Area Name	Total Population	Final EJ Score Percent (for this tract)	Final EJ Score Percentile (Distribution across Maryland)	Area(mi²)
1	24021751201	Census Tract 7512.01, Frederick County, Maryland	5850	24.45	22.21	N/A

Overburdened Communities Combined Score

#	GEOID20	Geographic_Area_Name	TotalPop	Overburd_Exposure_Percent	Overburd_Exposure_Percentile	Overburd_Poll_Enviro_Percent	Overburd_Poll_Enviro_Percentile	Sensitive_Population_Percent
1	24021751201	Census Tract 7512.01, Frederick County, Maryland	5,850	43.51	32.81	7.15	47.92	56.21

#	Sensitive_Population_Percentile	OverburdenedAllPercent	OverburdenedAllPercentile	Area(mi²)
1	42.17	29.80	42.38	N/A

Overburdened Pollution Environmental Score (%ile score)

#	GEOID20	Geographic_Area_Name	RentalsOccupiedPre79Percent	Percentile	PercentRMP	PercentRMPEJ	PercentHazWaste	PercentHazWasteEJ
1	24021751201	Census Tract 7512.01, Frederick County, Maryland	7.15	41.22	13.81	17.03	10.52	17.25

#	PercentSuperFundNPL	PercentSuperFundNPLEJ	PercentHazWW	PercentHazWWEJ	BrownFPercent	Percentile_1	PercentPowerPlants	Percentile_12
1	25.88	22.27	6.94	5.95	0.00	0.00	0.00	0.00

#	PercentCAFOS	Percentile_12_13	PercentActiveMines	Percentile_12_13_14	PollutionEnvironmentalPercent	PollnEnvironmentalPercentile	Area(mi²)
1	0.00	0.00	0.00	0.00	7.15	47.92	N/A

Overburdened Exposure Score (%ile score)

#	GEOID20	Geographic_Area_Name	Total_Pop	PercentNATA_Cancer	Percentile_NATA_Cancer	PercentNATA_Resp_HI	Percentile_NATA_Resp_HI	PercentNATA_Diesel
1	24021751201	Census Tract 7512.01, Frederick County, Maryland	5,850.00	60.00	18.92	60.00	12.50	25.20

#	Percentile_NATA_Diesel	PercentNATA_PM25	PercentileNATA_PM25	PercentOzone	PercentileOzone	PercentTraffic	PercentileTraffic	PercentTRI
1	13.03	94.96	16.65	91.13	13.40	0.14	2.09	0.00

#	PercentileTRI	PercentHazWasteLF	Percentile_HazWasteLF	PollutionExposurePercent	PollutionExposurePercentile	Area(mi²)
1	0.00	16.67	95.49	43.51	32.81	N/A

Overburdened Sensitive Population (%ile score)

#	GEOID20	Geographic_Area_Name	PerAstma	PercentileAst	PerMyo	PercentileMyo	PerLow	PercentileLow
1	24021751201	Census Tract 7512.01, Frederick County, Maryland	29.80	48.46	30.90	48.19	70.20	90.91

#	PercentBroad	PercentileBroad	PercentSens	PercentileSens	Area(mi²)
1	5.21	36.77	34.03	56.08	N/A

Socioeconomic/Demographic Score 2020 (Percentile score) (Underserved Community)

#	Census tract identifier	Geographic Area Name	Total Population	Percent Poverty	Percent Minority	Percent Limited English Proficiency	Demographic Score (Percent for this tract)	Demographic Score (Percentile Distribution acoss Maryland)	Area(mi²)
1	24021751201	Census Tract 7512.01, Frederick County, Maryland	5,850	10.87	27.44	1.05	13.12	26.39	N/A

Ozone (2015)

#	STATEFP10	COUNTYFP10	COUNTYNS10	GEOID10	NAME10	Ozone NAA Area	8-Hr Ozone (2015) Designation	8-HR Ozone (2015) Classification	8-Hr Ozone (2015) Status	Area(mi²)
1	24	021	01711211	24021	Frederick	Washington DC-MD-VA	Nonattainment	Moderate	*No Data*	N/A

Fine Particles (2012)

#	STATEFP10	COUNTYFP10	COUNTYNS10	GEOID10	NAME10	PM2.5 (2012) Status	Area(mi²)
1	24	021	01711211	24021	Frederick	Attainment/Unclassifiable	N/A

Biosolids FY 2020 and Current Permits Distribution By Acreage

#	County Name	FY2020andAfter	Area(mi²)
1	Frederick	2,894.50	N/A

Biosolids FY2015 - 2019 Permits Distribution By Acreage

#	County Name	FY2015to2019	Area(mi²)
1	Frederick	2,068.60	N/A

Biosolids FY2010 - 2014 Permits Distribution By Acreage

#	County Name	FY2010to2014	Area(mi²)
1	Frederick	2,639.00	N/A

Biosolids FY2009 Permits Expired Distribution By Acreage

#	County Name	FY2009	Area(mi²)
1	Frederick	152.70	N/A

Biosolids FY 2020 and Current Permit Distribution By Percent Coverage

#	County Name	FY2020andAfter	Area(mi²)
1	Frederick	2,894.50	N/A

Biosolids FY2015 - 2019 Permit Distribution By Percent Coverage

#	County Name	FY2015to2019	Area(mi²)
1	Frederick	2,068.60	N/A

Biosolids FY2010 - 2014 Permit Distribution By Percent Coverage

#	County Name	FY2010to2014	Area(mi²)
1	Frederick	2,639.00	N/A

Biosolids FY2009 Expired Permit Distribution By Percent Coverage

#	County Name	FY2009	Area(mi²)
1	Frederick	152.70	N/A

10 Miles from Landfill

#	County	Type	Facility_N	ADDRESS	FILL	SITE__ACRE	AI_No_	Owner_Type
1	FREDERICK	WIF	EASTALCO Industrial WasteLF	5601 Manor Wood Road, Frederick MD 21703.	10.2	20.00	8,459.00	PRI
2	FREDERICK	WIF	Essroc Industrial WasteLF	4120 Buckeystown Pike, Buckeystown MD 21717	25	50.00	69,053.00	PRI
3	FREDERICK	WIN	Fort Detrick IncineratorComplex	9031 Reichs Ford Road Frederick MD	-	1.00	1,827.00	FED
4	FREDERICK	WMF	Site B Municipal Landfill -VE	9031 Reichs Ford Road, Frederick MD 21704.	58	184.00	37,448.00	CTY
5	FREDERICK	WPT	Site B Solid WastePF&TS	9031 Reichs Ford Road, Frederick MD 21704.	58	184.00	37,448.00	CTY

#	MD_GRID__E	PERMITNUMB	EXPIRATION	Area(mi²)
1	650 /535	2014-WIF-0537	11/29/2019, 7:00 PM	N/A
2	672 /547	2010-WIF-0640	1/21/2017, 7:00 PM	N/A
3	678 /582	2010-WIN-0341	11/28/2015, 7:00 PM	N/A
4	702 /561	2013-WMF-0582	6/10/2018, 8:00 PM	N/A
5	702 /561	2011-WPT-0604	7/24/2016, 8:00 PM	N/A

10 Miles from Composting Facility

#	County	Facility	Address	Accepts_Fo	Location_o	Area(mi²)
1	*No Data*	Frederick County Department of Solid Waste Management	9031 Reichs Ford Rd, Frederick, MD 21704	No	9031 Reichs Ford Rd, Frederick, MD 21704	N/A

30 mile buffer (Maryland)

#	Facility_Name_1	Facility_Contact_1	Contact_Phone	Contact_Email_1	Contact_2	Contact_2_Phone	Contact_2_Email	URL	Area(mi²)
1	Composting Facility at Alpha Ridge Landfill	Bureau of Environmental Services	(410) 313-6444	*No Data*	*No Data*	*No Data*	*No Data*	https://www.howardcountymd.gov/public-works/composting-facility	N/A
2	Key City Compost at Utica Bridge Farm	Phil Westcott	(240) 608-0283	info@keycompost.com	*No Data*	*No Data*	*No Data*	https://www.keycompost.com/	N/A

APPENDIX D. AREA MAP AND PROCESS FLOW DIAGRAM

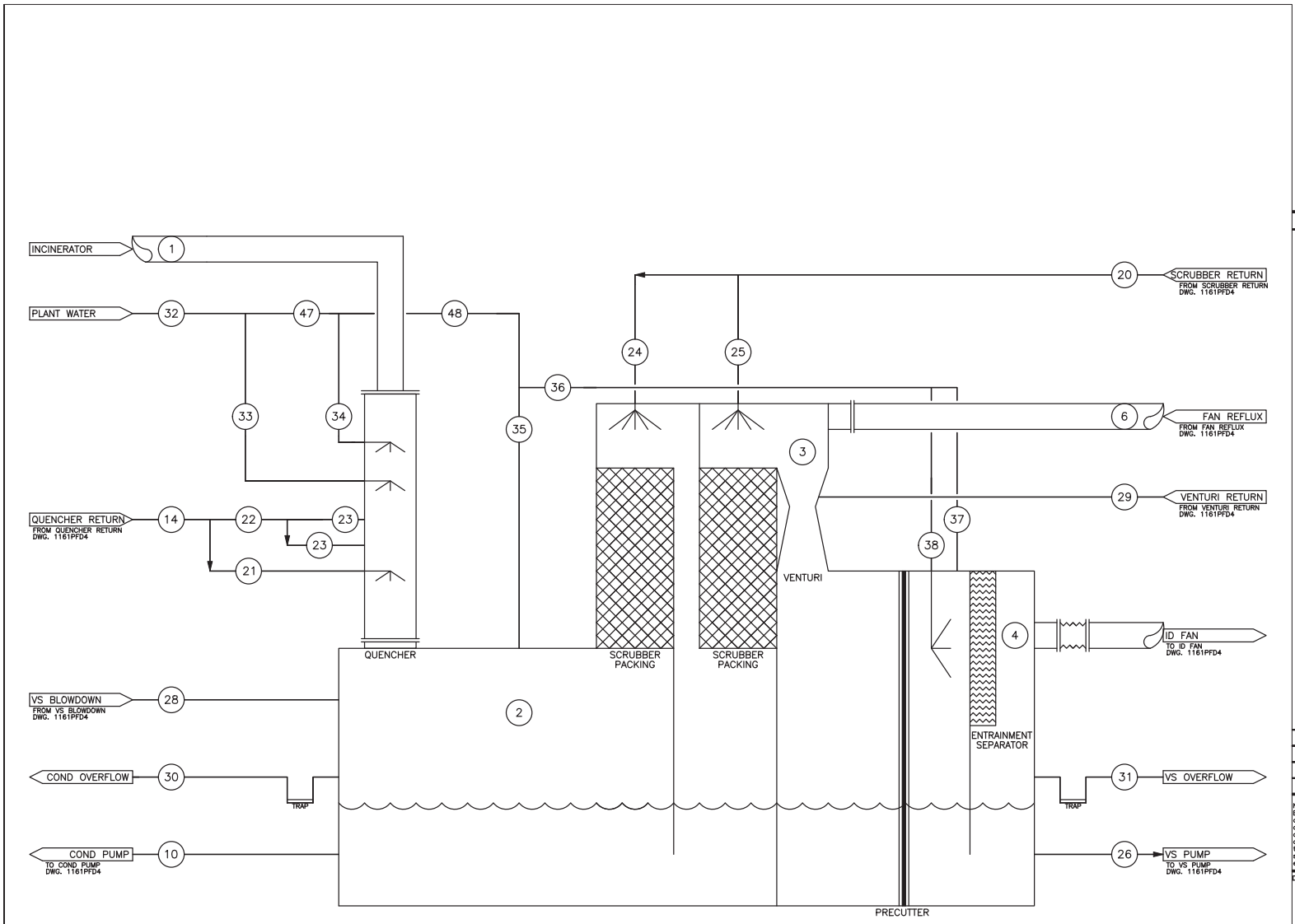
MISS UTILITY

SHEET ID: C-100	FORT DETRICK AIR FORCE BASE, MD MEDICAL WASTE INCINERATOR BUILDING (MWIB) PROJECT NO. 24111006 SITE LOCATION AND VICINITY MAP	US ARMY CORPS OF ENGINEERS NORTH ATLANTIC, BALTIMORE DISTRICT ARCADIS 2101 L ST NW, SUITE 200 WASHINGTON, DC 20037 DESIGNED BY: BM DRAWN BY: BM CHECKED BY: JB SUBMITTED BY: SUBMITTED BY: SIZE: ANSI D ISSUE DATE: 09/16/2024 SOLICITATION NO.: W912DR23R0014 CONTRACT NO.: W912DR24C0008

MARK	DESCRIPTION	DATE

US Army Corps of Engineers ®

50% INTERIM ITR / NOT FOR CONSTRUCTION / CUI



Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

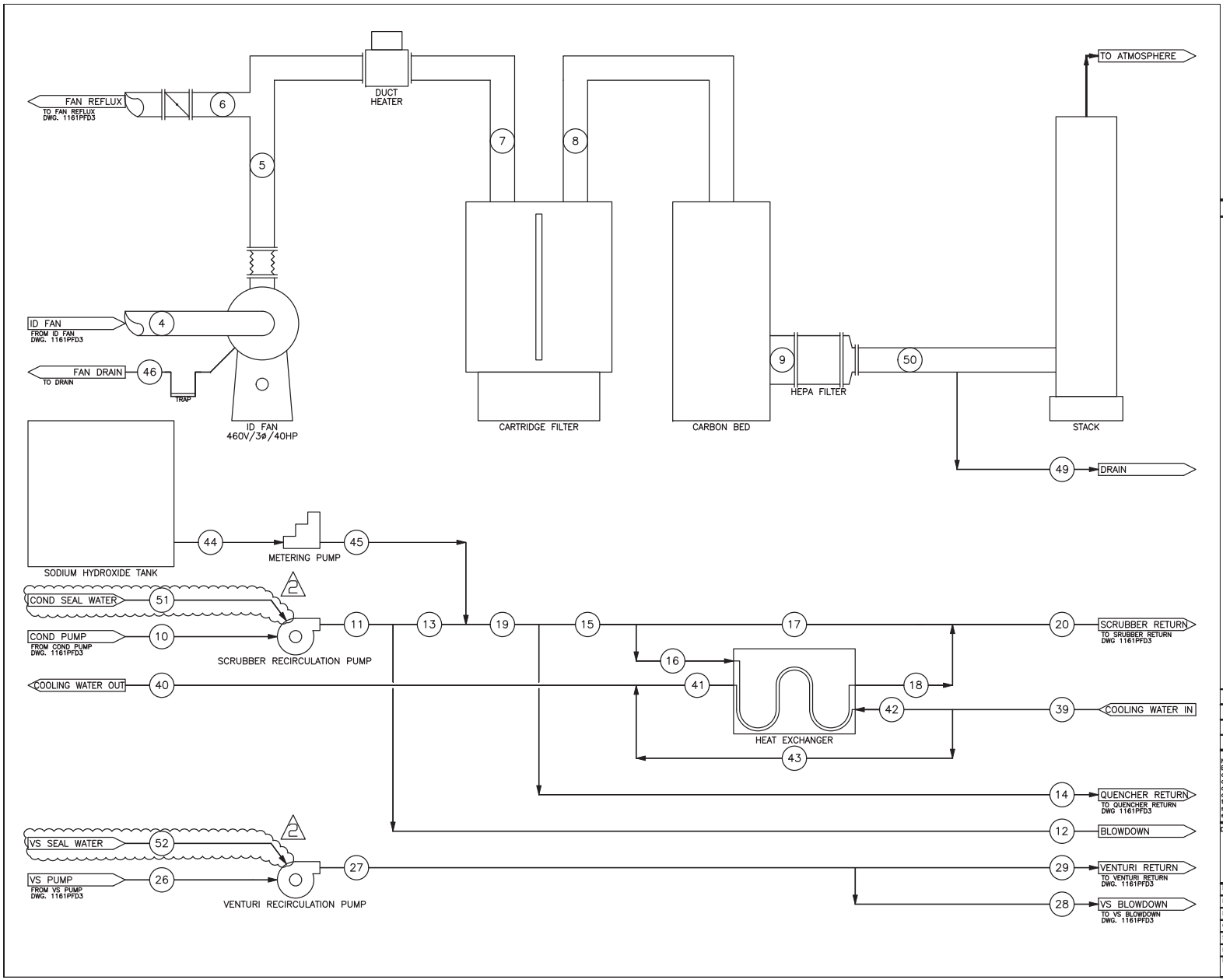
U.S. ARMY CORPS
OF ENGINEERS
FORT DETRICK, MD
*
INCINERATOR
SCRUBBER
SYSTEM

No.	Revision/Issue	DATE
2	EMISSION RANGES	9/11/2024
1	PER COMMENTS	9/5/2024
0	INITIAL RELEASE	7/29/2024

Drawing Title

PROCESS FLOW
DIAGRAM

Date	9/11/2024	Tolerances:
Proj. Engr.	BV	Fractional ±
Drawn By	JB	Angular ±
Checked By	GA	Decimal .XXX± .XX ± .X ±
Scale	NTS	
Rev	2	
File Name	1161PFD	Sheet 3 of 4



Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

U.S. ARMY CORPS OF ENGINEERS
FORT DETRICK, MD
*
INCINERATOR SCRUBBER SYSTEM

No.	Revision/Issue	DATE
2	EMISSION RANGES	9/11/2024
1	PER COMMENTS	9/5/2024
0	INITIAL RELEASE	7/29/2024

Drawing Title

PROCESS FLOW DIAGRAM

Date	9/11/2024	Tolerances:
Proj. Engr.	BV	Fractional ±
Drawn By	JB	Angular ±
Checked By	GA	Decimal .XXX± .XX ± .X ±
Scale	NTS	
Rev	2	
File Name	1161PFD	Sheet 4 of 4

APPENDIX E. MANUFACTURER PERFORMANCE GUIDELINES

Maximum Case Conditions

STREAM NUMBER	1	2	3	4	5	6	7	8	9	50****
Components, lb/hr										
H2O	985	6916	367	417	417	42	376	376	376	376
CO2	1020	1030	1012	1125	1125	112	1012	1012	1012	1012
O2	1435	1435	1435	1594	1594	159	1435	1435	1435	1435
N2	9060	9060	9060	10067	10067	1007	9060	9060	9060	9060
HCl	10.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 - 0.07
SO2	2.00	0.83	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01 - 0.20
NOx	1.65	1.65	1.65	1.83	1.83	0.18	1.65	1.65	1.65	1.65
CO	0.12	0.12	0.12	0.13	0.13	0.01	0.12	0.12	0.12	0.12
HF	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 - 0.04
Gas Total	12514	18447	11876	13205	13205	1321	11885	11885	11885	11885
TSS	3.40	1.47	1.05	0.60	0.60	0.06	0.54	0.12	0.02	0.00 - 0.17
Total, lb/hr	12517	18449	11878	13206	13206	1321	11885	11885	11885	11885
HCl Conc., $ppm_{(vd)}$	699.8	291.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 5.1
SO2 Conc., $ppm_{(vd)}$	79.7	33.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5 - 8.1
NOx Conc., $ppm_{(vd)}$ †	140	140	140	140	140	140	140	140	140	140
CO Conc., $ppm_{(vd)}$ †	11	11	11	11	11	11	11	11	11	11
Total PM, mg/dscm	360	156	112	57	57	57	57	13	3	0 - 18
Pb, mg/dscm††	2.12420	0.90963	0.65170	0.36808	0.36808	0.36808	0.36808	0.08133	0.01620	0.00033 - 0.00069
Cd, mg/dscm††	0.15990	0.06868	0.04920	0.02779	0.02779	0.02779	0.02779	0.00615	0.00124	0.00003 - 0.00013
Hg, mg/dscm††	3.1221	1.3709	1.3731	1.3594	1.3594	1.3594	1.3594	1.3594	0.0001	0.0001 - 0.0013
TCDD/TCDF, ng/dscm††	240	239	240	237	237	237	237	237	0.028	0.028 - 0.035
Gas FlowRate, dscfm	2516	2517	2513	2792	2792	279	2513	2513	2513	2513
Gas FlowRate, scfm	2857	4982	2644	2941	2941	294	2647	2647	2647	2647
Gas FlowRate, acfm	12857	6092	2825	3394	3117	312	2889	2912	2948	2949
Gas Temp, F	1900	178	91	88	118	118	136	135	133	128
Upstream Press, in.W.C.	-1.0	-5.5	-9.8	-40.8	13.7	13.7	13.7	9.7	3.2	1.2
Gas Press, in.Hg	29.8	29.5	29.2	26.9	30.9	30.9	30.9	30.6	30.2	29.9
Avg Molecular Weight	28.0	23.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8
Humidity, lb H2O/lb DG	0.085	0.600	0.032	0.033	0.033	0.033	0.033	0.033	0.033	0.033
Gas Density, lb/ft3	0.016	0.050	0.070	0.065	0.071	0.071	0.069	0.068	0.067	0.067
PM Concentration, gr/dscf	0.1604	0.0687	0.0494	0.0257	0.0257	0.0257	0.0257	0.0061	0.0017	0.0000 - 0.0080

STREAM NUMBER	10	11	12	13	14	15	16	17	18	19	20
Temperature, F	167	167	167	167	167	167	167	167	86	167	86
Pressure, psig	0.3	41.6	32.9	32.9	30.6	32.1	32.1	32.1	28.9	32.1	28.9
Density, lb/ft3	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	63.3	61.9	63.3
Max Process Water FlowRate, gpm	285	285	6	282	66	216	216	216	211	282	211
Avg Process Water FlowRate, gpm	237	238	3	235	55	180	180	0	176	235	176
TSS, lb/hr	300	301	4	297	70	227	227	0	227	297	227
Total Mass Flowrate, lb/hr	118176	118426	1382	117043	27421	89665	89665	0	89665	117086	89665
TSS, ppm	2544	2544	2544	2544	2543	2543	2543	2543	2543	2543	2543
TDS, ppm	24413	24347	24348	24347	24447	24447	24447	24447	24453	24447	24453
pH	8.5	8.5	8.5	8.5	8.6	8.6	8.6	8.6	8.9	8.6	8.9

STREAM NUMBER	21	22	23***	24	25	26	27	28	29	30	31
Temperature, F	167	167	167	86	86	89	89	89	89	167	89
Pressure, psig	24.0	22.8	25.1	8.1	8.1	0.3	33.7	27.4	3.1	0.3	0.3
Density, lb/ft3	61.9	61.9	61.9	63.3	63.3	62.0	62.1	62.1	62.1	61.9	62.0
Max Process Water FlowRate, gpm	22	44	22	106	106	43	43	2	42	57	36
Avg Process Water FlowRate, gpm	18	37	18	88	88	35	36	1	35	0	0
TSS, lb/hr	23	47	23	114	114	22	22	1	22	0	0
Total Mass Flowrate, lb/hr	9049	18372	9186	44832	44832	17664	17914	451	17463	0	0
TSS, ppm	2543	2543	2543	2543	2543	1235	1235	1235	1235	2544	1235
TDS, ppm	24447	24447	24447	24453	24453	7	7	7	7	24413	7
pH	8.6	8.6	8.6	8.9	8.9	3.8	3.8	3.8	3.8	8.5	3.8

STREAM NUMBER	32	33	34**	35	36	37	38*	39	40	41	42	43	46	47	48	49	51	52
Temperature, F	70	70	70	70	70	70	70	70	114	114	70	70	88	70	70	82	70	70
Pressure, psig	50.0	50.0	50.0	50.0	50.0	50.0	50.0	40.0	20.0	20.0	40.0	40.0	0.5	50.0	50.0	0.5	30.0	30.0
Max Process Water FlowRate, gpm	47.5	0.6	47.5	45.0	30.0	30.0	7.0	375.0	378.0	378.0	375.0	375.0	0.6	47.5	45.0	0.8	1.0	1.0
Avg Process Water FlowRate, gpm	0.4	0.0	0.0	0.0	0.4	0.3	0.1	325.0	327.6	327.6	325.0	0.0	0.3	0.4	0.4	0.3	0.5	0.5
H2O, lb/hr	208	0	0	0	208	150	58	162430	162430	162430	162430	162430	150	208	208	111	250	250

STREAM NUMBER	44	45
Temperature, F	70	70
Pressure, psig	0.9	60.0
Max 50% Sodium Hydroxide Flowrate, gph	6.6	6.6
Avg 50% Sodium Hydroxide Flowrate, gph	3.30	3.30
Total, lb/hr	43	43

* Operates 1 min/hour.

** Assumes x4 quencher evaporation rate.

*** Stream 23 represents the upstream flow conditions at one (of two) quencher inlet tangential nozzle.

**** Provided emission values are estimates and are not a guarantee of performance. See performance guarantee metrics in Envitech's Proposal No. 40065, Rev. 2.

† Concentration is assumed to be at the Maryland emissions limit. This compound is not targeted or treated by the A.P.C. system.

†† Inlet concentration is per AP-42 emissions factors and based upon a 550 lb/hr incinerator burn rate.

Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

U.S. ARMY CORPS OF ENGINEERS
FORT DETRICK, MD
*
INCINERATOR SCRUBBER SYSTEM

No.	Revision/Issue	DATE
2	EMISSION RANGES	9/11/2024
1	PER COMMENTS	9/5/2024
0	INITIAL RELEASE	7/29/2024

Drawing Title

PROCESS FLOW DIAGRAM

Date	9/11/2024
Proj. Engr.	BV
Drawn By	JB
Checked By	GA
Scale	NTS
Rev	2
File Name	1161PFD

Tolerances:
Fractional ±
Angular ±
Decimal XXX± .XX ± .X ±

Sheet 1 of 4

Average Case Conditions

STREAM NUMBER	1	2	3	4	5	6	7	8	9	50****
Components, lb/hr										
H2O	780	4630	224	256	256	26	231	231	231	231
CO2	820	826	819	910	910	91	819	819	819	819
O2	1200	1200	1200	1333	1333	133	1200	1200	1200	1200
N2	7200	7200	7200	8000	8000	800	7200	7200	7200	7200
HCl	10.00	3.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 - 0.06
SO2	1.00	0.31	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00 - 0.20
NOx	1.32	1.32	1.32	1.46	1.46	0.15	1.32	1.32	1.32	1.32
CO	0.10	0.10	0.10	0.11	0.11	0.01	0.10	0.10	0.10	0.10
HF	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 - 0.04
Gas Total	10013	13861	9444	10502	10502	1050	9452	9452	9452	9452
TSS	3.40	1.63	1.17	0.72	0.72	0.07	0.65	0.13	0.03	0.00 - 0.14
Total, lb/hr	10016	13863	9446	10503	10503	1050	9452	9452	9452	9452
HCl Conc., $ppm_{(vd)}$	874.5	265.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 5.1
SO2 Conc., $ppm_{(vd)}$	49.8	15.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2 - 8.1
NOx Conc., $ppm_{(vd)}$ †	140	140	140	140	140	140	140	140	140	140
CO Conc., $ppm_{(vd)}$ †	11	11	11	11	11	11	11	11	11	11
Total PM, mg/dscm	451	217	155	86	86	86	86	18	4	0 - 18
Pb, mg/dscm††	2.65478	1.26393	0.90498	0.55092	0.55092	0.55092	0.55092	0.11372	0.02276	0.00045 - 0.00069
Cd, mg/dscm††	0.19984	0.09528	0.06822	0.04153	0.04153	0.04153	0.04153	0.00858	0.00172	0.00004 - 0.00013
Hg, mg/dscm††	3.9019	1.7140	1.7157	1.6985	1.6985	1.6985	1.6985	1.6985	0.0002	0.0002 - 0.0013
TCDD/TCDF, ng/dscm††	299	299	300	297	297	297	297	297	0.035	0.035 - 0.035
Gas FlowRate, dscfm	2013	2013	2011	2235	2235	223	2011	2011	2011	2011
Gas FlowRate, scfm	2291	3663	2091	2326	2326	233	2094	2094	2094	2094
Gas FlowRate, acfm	9839	4455	2200	2646	2430	243	2271	2289	2318	2318
Gas Temp, F	1800	175	82	81	110	110	132	131	129	125
Upstream Press, in. W.C.	-1.0	-5.5	-9.8	-40.8	13.7	13.7	13.7	9.7	3.2	1.2
Gas Press, in. Hg	29.8	29.5	29.2	26.9	30.9	30.9	30.9	30.6	30.2	29.9
Avg Molecular Weight	28.1	24.3	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Humidity, lb H2O/lb DG	0.084	0.502	0.024	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Gas Density, lb/ft3	0.017	0.052	0.072	0.066	0.072	0.072	0.069	0.069	0.068	0.068
PM Concentration, gr/dscf	0.2005	0.0954	0.0685	0.0383	0.0383	0.0383	0.0383	0.0085	0.0016	0.0000 - 0.0080

STREAM NUMBER	10	11	12	13	14	15	16	17	18	19	20
Temperature, F	144	144	144	144	144	144	144	144	82	144	82
Pressure, psig	0.3	41.6	32.9	32.9	30.6	32.1	32.1	32.1	28.9	32.1	28.9
Density, lb/ft3	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	62.9	61.9	62.9
Max Process Water FlowRate, gpm	285	285	5	282	66	216	216	216	213	282	213
Avg Process Water FlowRate, gpm	237	238	3	235	55	180	180	0	177	235	177
TSS, lb/hr	311	311	3	308	72	236	236	0	236	308	236
Total Mass Flowrate, lb/hr	118092	118342	1297	117045	27411	89659	89659	0	89659	117070	89659
TSS, ppm	2636	2636	2636	2636	2636	2636	2636	2636	2636	2636	2636
TDS, ppm	14434	14400	14400	14400	14482	14482	14482	14482	14473	14482	14473
pH	7.2	7.2	7.2	7.2	7.7	7.7	7.7	7.7	7.5	7.7	7.5

STREAM NUMBER	21	22	23***	24	25	26	27	28	29	30	31
Temperature, F	144	144	144	82	82	81	81	81	81	144	81
Pressure, psig	24.0	22.8	25.1	8.1	8.1	0.3	33.8	27.5	3.1	0.3	0.3
Density, lb/ft3	61.9	61.9	61.9	62.9	62.9	62.1	62.2	62.2	62.2	61.9	62.1
Max Process Water FlowRate, gpm	22	44	22	106	106	43	43	2	42	54	36
Avg Process Water FlowRate, gpm	18	37	18	89	89	35	36	1	35	0	0
TSS, lb/hr	24	48	24	118	118	22	22	1	22	0	0
Total Mass Flowrate, lb/hr	9046	18366	9183	44829	44829	17688	17938	451	17487	0	0
TSS, ppm	2636	2636	2636	2636	2636	1255	1255	1255	1255	2636	1255
TDS, ppm	14482	14482	14482	14473	14473	7	7	7	7	14434	7
pH	7.7	7.7	7.7	7.5	7.5	3.8	3.8	3.8	3.8	7.2	3.8

STREAM NUMBER	32	33	34**	35	36	37	38*	39	40	41	42	43	46	47	48	49	51	52
Temperature, F	70	70	70	70	70	70	70	70	103	103	70	70	81	70	70	68	70	70
Pressure, psig	35.3	35.3	35.3	35.3	35.3	35.3	35.3	40.0	20.0	20.0	40.0	40.0	0.5	35.3	35.3	0.0	30.0	30.0
Max Process Water FlowRate, gpm	45.0	0.6	30.8	45.0	30.0	30.0	7.0	375.0	377.2	377.2	375.0	375.0	0.6	45.0	45.0	0.0	1.0	1.0
Avg Process Water FlowRate, gpm	0.4	0.0	0.0	0.0	0.4	0.3	0.1	325.0	326.9	326.9	325.0	0.0	0.3	0.4	0.4	0.0	0.5	0.5
H2O, lb/hr	208	0	0	0	208	150	58	162430	162430	162430	162430	162430	150	208	208	111	250	250

STREAM NUMBER	44	45
Temperature, F	70	70
Pressure, psig	0.9	60.0
Max 50% Sodium Hydroxide Flowrate, gph	3.9	3.9
Avg 50% Sodium Hydroxide Flowrate, gph	1.95	1.95
Total, lb/hr	25	25

* Operates 1 min/hour.

** Assumes x4 quencher evaporation rate.

*** Stream 23 represents the upstream flow conditions at one (of two) quencher inlet tangential nozzle.

**** Provided emission values are estimates and are not a guarantee of performance. See performance guarantee metrics in Envitech's Proposal No. 40065, Rev. 2.

† Concentration is assumed to be at the Maryland emissions limit. This compound is not targeted or treated by the A.P.C. system.

†† Inlet concentration is per AP-42 emissions factors and based upon a 550 lb/hr incinerator burn rate.

Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

U.S. ARMY CORPS OF ENGINEERS
FORT DETRICK, MD
*
INCINERATOR SCRUBBER SYSTEM

No.	Revision/Issue	DATE
2	EMISSION RANGES	9/11/2024
1	PER COMMENTS	9/5/2024
0	INITIAL RELEASE	7/29/2024

Drawing Title

PROCESS FLOW DIAGRAM

Date	9/11/2024	Tolerances:
Proj. Engr.	BV	Fractional ±
Drawn By	JB	Angular ±
Checked By	GA	Decimal XXX± .XX ± .X ±
Scale	NTS	
Rev	2	
File Name	1161PFD	Sheet 2 of 4

Pennram Diversified Manufacturing Corporation

P.O. Box 695 Williamsport Pennsylvania 17703 0695 USA
(570) 327-2802 fax (570) 326-5650 **e-mail: pennram@pennram.com**

Plant Locations: 1315 West Third St., Williamsport, PA 17701
234 Park Dr., Montgomery, PA 17752

Cost / Specification Proposal No. 223027-01 June 8, 2023

Mortenson
8484 Westpark Drive, Suite 150
McLean, VA 22102
Attn: McKenna Mohagen via e-mail: mckenna.mohagen@mortenson.com

Re: 2x 550 lbs /hr Ft. Detrick medical waste incinerators, revised for reduced residence time

McKenna,
Given that the incinerator likely will be installed post construction of the building our plan herein is to skid mount the incinerator and its structural supports to W12-50# wide flange beam skid. The chambers will be installed on the skid frame by crane as the chambers are removed from the truck. The skid will then be rigged into position on rolling dollies, then using jacks and other rigging equipment the skid /frame will be lowered to the floor in final position. The skid/ frame will not interfere with routine operation on the incinerator. If need be we can revisit this solution at a later date if it turns out that a crane can simply set the chambers into position before building construction takes place. Please note that the automatic ash removal system requires a recessed pit into the incinerator room floor approximately 20 ft x 8 ft x 35" depth. Additionally a service tunnel/recess in the floor is also required under the incinerator approximately 3 ft x 12 ft x 54" depth. Sample Photo:

We are offering a custom manufactured model C550 incinerator rated **550 lbs/hr of 9,000 btu/lb medical / hospital waste,** operating at 1800°F, and up to 24 hours per day, with

automatic feed with cart dumper device, and automatic ash removal. The incinerator operation is fully automatic. The system is equipped with time proven reliable components. All doors are safety interlocked and provided with provisions for padlocks. Burners and hydraulics require a key for operation for security purposes. The system as proposed is fired with natural gas and electric as required by the customer 480/3/60. Waste reduction of medical waste is up to 99% of combustible materials, by weight.

Design highlights:

- Heavy duty construction with 3/8" & 1/2" shell structure lined with 8" of refractory and insulation: And with an 1/8" outer jacket over 3" air gap between shell and jacket. The air jacket is aspirated by combustion air resulting in preheated combustion air, improved efficiency, and cooler shell surface temperatures.
- Multi-port, 40x, full modulated combustion air system resulting in typical CO emissions of 0-10 ppm, and very low particulate emission rates, as well as increase fuel efficiency
- Waste feeder with air lock and nominally air tight guillotine fire door provides improved control of combustion of high energy wastes. Waste feeder is slightly inclined into incinerator to promote drainage of liquids into the combustion chamber. A safety cage with interlocked sliding door houses the cart tipper to prevent contact with personnel.
- Touch screen controls provide multiple access coded set up screens to adjust *ALL* system operating parameters with out special program know how, computer, or interface device. See Appendix A for *SAMPLE* screen shots from similar project.
- The control panel features a "wet/dry waste" selector switch for selection of waste types, for example: animal remains being wet or heavy plastic content being dry. This switch selection signals the PLC to alter the operation of primary chamber burner and under fire air operating characteristics according to the waste type selected. This is to aid in fuel efficiency and to control rate of volatilization of the high plastic content, limiting of combustion air and burner firing rate, according to switch selection.
- Hydraulically actuated wet ash removal system allows 24/7 operation of the incinerator its automated ash removal. Ashes are damp for dust control but without free liquids in the ash.
- Burner fuel trains meeting highest standards of AGA, FM, IRI, NFPA inclusive of pre-purge, electronic ignition, UV flame supervision, dual gas valves, proof of closure switches, proven low fire start, high and low gas pressure switches, air proving switch, and full modulation of combustion air and fuel.

The specifications contained herein are considered accurate for proposal purposes, however at time of final engineering we reserve the right to make changes to improve the package performance or correct preliminary proposal engineering.

Capacity Statement: The stated hourly capacity is based on 9000 btu waste of average loose density. Higher density wastes, or waste with high moisture content, or waste with higher heating value may reduce effective hourly capacity.

Note: Incinerator has double wall shell for cooler shell temperature and improved efficiency.

Maximum Daily(16 hrs) Capacities: C550 - 550 lbs/hr x 24 hours = 13,200 lbs

Remaining ashes shall be sterile and biologically inert.

We are pleased to offer the following for your consideration:

Item #1 - One (1) 550 lb/hr medical waste incineration system:

1.0 Equipment

1.0 550 lbs/hr incinerator capacity.
1.1 Incinerator primary chamber with two level hearth.
1.2 Secondary chamber with 1 second+ residence time at 1800°F.
1.3 Incinerator hydraulic airlock waste feed system with platform scale, airlock/loader with 20 cu. ft. hopper, fire door, hopper lid, hydraulic pump, cylinders, cart up-ender, eight matching carts
1.4 40 ft linear exhaust duct to connect to APC skid from bypass stack tee, and 40 ft vertical bypass stack stack, with positive seal stack cap, with OSHA type access platform and ladder above roof line rated at 120 mph minimum wind load, PA structural engineer stamped drawing provided, with MecaStack design data criteria document.
1.5 NEMA 4X PLC control system with NEMA 4 touch screen interface(HMI) to operate incinerator controls, and interface to APC system. Remote HMI and addition local controls located at the incinerator.
1.6 Wet type ash removal conveyor.
1.7 Offer with breakdown for freight service, installation assist (during building construction), supervision of installation, operator training.

2.0 C-550 Equipment specification

2.1.0 Incinerator Primary Combustion Chamber:

2.1.1 Two(2) 1,500,000 btu Selas™ modulating natural gas burners, or equal. Both air and gas shall fully modulate. Turndown ratio of burner(s) is 10:1 minimum. Burner is equipped

with a spark ignited intermittent gaseous pilot on proven low fire start. The pilot is proven by means of UV scanning in concert with Honeywell™ electronic flame control and supervision. The fuel train(s) shall be equipped with 2x main fuel valve with POC switches, fuel modulator with proven LFS, hi and lo gas pressure switches, air proving switch and manual ball valve, as well as metering orifice. Combustion air shall modulate closed when burner is not in use. Pilot / lo fire air remains active during operation of incinerator while burner is on or off.

Primary burner interlocks:

a. System on.
b. Primary temperature burner operating limits.
c. Primary chamber unload door proven closed.
d. Primary chamber load door proven closed.
e. Primary burner off-on-auto switch in on or auto position.
f. Remote burner switch in on position.
g. Start up pre-purge interlock.
h. Stack cap and scrubber interlocks.

2.1.2 Combustion air piped to the primary chamber at a modulated maximum rate of 290 scfm air at 6" w.c. static pressure and piping equipped with a modulating butterfly damper to connected to the primary combustion air manifold which is actuated by a Honeywell™ modulating motor to provide hi & lo pressure operation of the combustion air supply.

Primary combustion air interlocks:

a. Primary temperature operating limits.
b. Primary chamber access door proven closed.
c. Charge fire door proven closed.
d. Post load delay timer.
e. Scrubber/ stack cap interlocks.

2.1.3 Four (4) combustion air manifolds with a total 24 combustion air input jets. Combustion air manifolds and air jets shall be embedded in the hearth of the primary chamber. Combustion air manifold shall be internal for preheating of combustion air and shall be fabricated of tube and channel shapes. Manifolds and interconnect air piping shall be fabricated with sch. 10 pipe, std. tees, & 90° ells.

2.1.4 Chamber heat release shall not exceed 15,000 btu/ cubic foot/ hour.
2.1.5 Approximately 379 cu ft chamber volume.
2.1.6 48 w. x 24 h. charge opening.

2.1.7 24 x 48 access door opening with hinged, interlocked refractory lined door.

2.1.8 34+ sq. ft. overall hearth area.
2.1.9 48 x 24 x 1/4" stainless steel ash chute submerged below water line of ash conveyor.

2.1.10 Approximate overall chamber shell dimensions: 200" length x 91" diam x 100" height. Approximate weight 42,000 lbs. This chamber will be fabricated and shipped in one(1) piece.
2.1.11 Primary chamber lined with 6" 2550°F refractory and 2" 1900° insblok board insulation. Refractory shall be time proven Harbison-Walker - MC-25 plus.

2.1.12 Shell constructed of 3/8" ASTM A-36 plate steel. And with an 1/8" outer jacket over 3" air gap between shell and jacket. The air jacket is aspirated by combustion air resulting in preheated combustion air, improved efficiency, and cooler shell surface temperatures.

2.1.13 Sandblast prep and high(1200°F.) temperature, zinc based primer and finish.
2.1.14 Refractory fastened to shell with 310 stainless steel anchors.
2.1.15 Internal ash transfer ram

2.1.16 10.75" diameter, 3/8" wall thickness steel tube, 3000° plastic refractory lined /carbon steel ash rams, hydraulically operated.
2.1.17 All hydraulics and position sensors located outside of the primary chamber shell. An air tight seal to the primary chamber shall be maintained by the ash ram - hydraulic cylinder linkage.

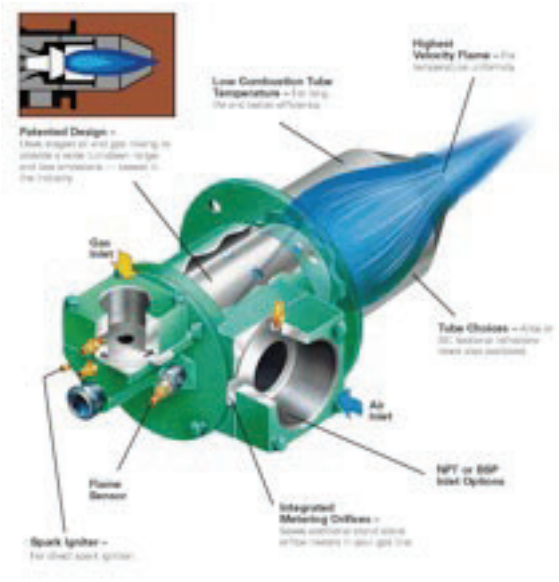
2.1.18 Ash ram assemblies are cantilevered on structural carriages and roll on four(4) steel 6" diameter x 2.25" wheels, mounted to 1-1/4" axles.

2.2.0 Incinerator Secondary Combustion Chamber:

2.2.1 One (1) 2,800,000 btu/hr Selas™ modulating natural gas burner. Both air and gas shall fully modulate. Turndown ratio of burners is 10:1 minimum. Burner is equipped with a spark ignited intermittent gaseous pilot or low fire start. The pilot is proven by means of UV scanning in concert with Honeywell™ electronic flame control and supervision. The fuel train(s) shall be equipped with 2x main fuel valve with POC switches, fuel modulator with proven LFS, hi and lo gas pressure switches, and manual ball valve.
Combustion air shall modulate closed when burner is not in use. Pilot / lo fire air remains active during operation of incinerator while burner is on or off.

Secondary burner interlocks
a. System on.

b. Secondary temperature burner operating limit.
c. Secondary burner off-on-auto switch in on or auto position.
d. Remote burner switch in on position.
e. Start up pre-purge interlock.



2.2.2 15 HP backward inclined combustion air blower driven to generate 2600 scfm combustion air at 15" w.c. static pressure to supply intermediate pressure combustion air to the fuel burners, and the primary and secondary chamber combustion air manifold; And equipped with (5) modulating butterfly dampers which are actuated by (5) Honeywell™ modulating motors to provide modulated combustion air to the primary burners, the secondary burner, and to the secondary combustion air manifold. This fan shall be equipped with inlet silencer as to reduce the noise level.

2.2.3 Internal combustion air manifold with total 48 combustion air input jets. Combustion air manifold and air jets shall be embedded in the refractory lining of the secondary chamber. The combustion air manifold is a minimum of XX square feet of heating surface and employs wasted energy lost through the secondary chamber shell to preheat secondary combustion air. The combustion air manifold shall be fabricated of 1/4" minimum A36 steel plate. Air jets shall be arranged for optimum combustion air turbulence. Air jets shall be fabricated of 1" schedule 80 pipe minimum.

2.2.4 144 cu. ft. secondary chamber volume.
2.2.5 1.0+ second secondary chamber residence time @ 1800°F.
2.2.6 Dimension: 75" O.D. x 120" L.

2.2.7 Chamber lined with 6" 2550°F refractory+ 2" board insulation.
2.2.8 Shell constructed of 3/8" ASTM A-36 plate steel.
2.2.9 Sandblast prep and finish with high temperature industrial rust inhibiting primer and finish coating (blue).

2.2.10 Refractory fastened to shell with 310 stainless steel anchors.

2.2.11 An OSHA type platform or platforms for access of the secondary chamber to provide access to stack thermocouple, secondary chamber access door, and burner and air controls shall be provided. Access by stair or OSHA type caged ladder.

2.3.0 Incinerator Waste Feeder and cart tipper: Other hopper sizes available.
2.3.1 32 cu. ft. hopper approximately 24" h x 48" w x 48" l with hopper opening 42" x 44"
2.3.2 Sufficient stroke to push waste 36" beyond fire door.
2.3.3 Spray mist system for fire protection and post feed cycle rinse.

2.3.4 10.25" thick refractory lined fire door with dual heat shield.
2.3.5 Hinge type hopper lid with rope gasket.
2.3.6 Fire door sealed with rope seals.

2.3.7 Approximate overall length: 120"
2.3.8 Automatic reverse and recycle and upon ram jam or fire door failure to close.
2.3.9 Auto or manual operation of loader.

2.3.10 Sandblast and finish with high(750°F.) temperature industrial coating(specify color.)
2.3.11 10 HP hydraulic pump.
2.3.12 1/2" x 0.049" **stainless steel** hydraulic tubing.

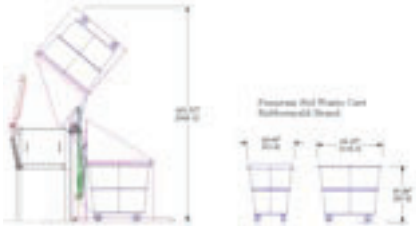
2.3.13 2250 psi hydraulic hose.
2.3.14 Water Glycol based hydraulic fluid.
2.3.15 System operates at 1000 psi.

2.3.16 Self contained pre-piped, pre-wired hydraulic system:

2.3.16.1 Automatic charging interlocks:
2.3.16.2 Charge timer.
2.3.16.3 Shutdown mode timer.
2.3.16.4 Primary temperature limit (high only).
2.3.16.5 Secondary temperature limits (high and low).
2.3.16.6 Charge hopper proven closed (hopper is closed by operator after filling by pressing hopper close button).
2.3.16.7 Hydraulic system manual-auto switch in auto position.
2.3.16.8 Proven Stack Cap and APC limits

2.5.21 A cart dumping device is provided to lift customer's carts and rotate contents into the waste feed hopper. For safety reasons this device is operated by pressing and holding control

panel push buttons to raise and lower the device. The cart dumping device will be custom designed to suit the customers waste handling method. This cart dumping device is fully interlocked to hopper lid and automated to the extent possible.



2.5.22 The auto feeder assembly is inclined 1° into the primary chamber for purposes of liquid drainage.

2.5.23 The cart tipper will be built to accommodate (tip) the 800 lb capacity Rubbermaid or equal carts, a total of eight(8) carts, without lids, are provided.

2.4.0 Incinerator Stack and bypass valve:

2.4.1 Dimensions: 28” I.D. x 36” O.D. x 40 ft total height.
2.4.2 Lined with nominal 3.75” 2500°F insulating refractory.
2.4.3 Shell constructed of 3/8” carbon steel plate and flanged on 8 ft intervals. Additionally and allowance for 40 linear ft of horizontal duct of similar construction is allowed for tie in to APC and vertical stack system.

2.4.4 Fail open stack cap, closed for APC/waste burning operation.

2.4.5 Emergency vent cap is hydraulically operated and equipped with needle valving for speed control.
2.4.6 Flanges bolted by (24) 1/2-13 x 1-1/4” A325 structural bolts.
2.4.7 Sandblast prep and high(1200°F.) temperature, silicone based primer and finish.
2.4.8 Cap fabricated of 316 stainless steel if so equipped with scrubber..
2.4.9 Base of incinerator bypass stack is a tee section piped to the APC.
2.4.10 Service ladder, OSHA type cage and OSHA type service platform with hot dip galvanize finish.

2.5.0 Wet Ash Conveyor:

2.5.1 Tank and Chute construction:
1/4" 316 stainless steel plate.
2.5.2 Incline and structural construction:
1/4" 316 stainless steel plate.
2.5.3 Approximate overall installed dimensions:
192" length, 34.5" width, 108" height

2.5.4 Three (3) Hydraulic motor driven drive shafts / with 4 idlers in chain path.
2.5.5 Conveyor supplied conveyor forward / auto / reverse three position switch, conveyor emergency stop mushroom button, float operated valve for tank water level control.

2.5.6 Conveyor major drive components: six(6) hydraulic motor drives operating at 1300 psi maximum having a combined output of 18,000 in lbs torque, 2-7/16" drive shafts with C131 15t drive sprockets, (14) pillow block bearing units for 2" idler shafts, C131 riveted drag chain with 1/2" A36 steel paddles, drive chain and drag chain tensioning system.
2.5.7 Incline and structure with hot dip galvanize finish.
2.5.8 The conveyor tank is filled with water to seal the ash chute and wet the ash to prevent dust conditions. The conveyor with lift ash material up an incline and deposit the material into a waste container or dumpster. The clearance under the outlet of the conveyor is 73" for maximum container height of a nominal 72". The conveyor runs for a adjustable timed period after every charge of waste into the incinerator.

2.6.0 Incinerator Control System:

2.6.1 Nema 4X Stainless Steel enclosure.
2.6.2 PLC with HMI/Touchscreen interface.
2.6.3 Control of loader & cart upender, secondary burner, primary burners, Honeywell flame controls, temperature controls, combustion air blower, safety and operating interlocks.
2.6.4 Panel includes power distribution breakers, motor starters, HMI display modules,
2.6.5 High and low voltage components isolated.

2.6.6 Control Cabinet Switches:
2.6.6.1 System Start (key lock switch)
2.6.6.2 System Emergency Stop
2.6.6.3Hydraulic Pump off/auto (key lock switch)
2.6.6.4Hydraulic System Emergency Stop
2.6.6.5 Hopper Lid Open/Close
2.6.6.6 Primary Burner on/off/auto(key lock switch) x 2
2.6.6.7 Secondary Burner on/off/auto (key lock switch)
2.6.6.8Hydraulic System manual/auto
2.6.6.9 Fire Door open/close
2.6.6.10 Charge Ram retract/extend
2.6.6.11 Raise/ Rotate Cart Upender
2.6.6.12 Reverse Rotate / Lower Cart Upender
2.6.6.13 Stack Cap Open/Auto/Close
2.6.6.14 APC controls interface
2.6.6.15 Combustion Air Blower on/off/auto
2.6.6.15 Stack Cap open/auto/close

2.6.8 Control Cabinet Displayed Data, **(on Touch Screen)**
2.6.8.1 Primary Temperature
2.6.8.2 Secondary Temperature
2.6.8.3 Time remaining in cycle (until next load)
2.6.8.4 Primary Burner Firing Rate (0-100%)
2.6.8.5 Secondary Burner Firing Rate (0-100%)
2.6.8.6 Secondary Combustion Air Input Rate (0-100%)
2.6.8.7 Hydraulic Pressure
2.6.9 Honeywell flame monitoring equipment.
2.6.10 Sqr D IEC rated motor controls.
2.6.11 Circuit breakers for each motor and control circuit.
2.6.12 The touch screen screen size is 12.1" & NEMA 4 rated.

The benefit are that :
Operators have a much better understanding of what is transpiring within the incinerator system.
The touch screen offers guiding messages to the operator if he/she is attempting a process which violates the program.

The screen records over 1000 “events” of alarms, start ups, manual burner operation, and many other tell tale items that will substantially aid in fuel savings, service, and to communicating an over all history of the machines operation.

There are several screen displays including base screen, history log, input status, output status, and more can be developed to meet each clients needs.

There are additional screens not shown in this sample where the operator enters burner, and combustion air on/off set points, burner modulation range, combustion air input modulation range, charge ram stroke, charge ram control pressures, etc.

Screen also displays:
- 1 Primary Temperature
- 2 Secondary Temperature
- 3 Time remaining to the next load cycle
- 4 Burner firing rate
- 5 Hydraulic Pressure
- 6 Combustion air input rate.
- 7 Charge ram position.
- 8 Burner Enable time remaining.
- 9 Blower Enable time remaining.

See appendix A for sample set up screen shots from a similar project.

2.9.0 Emission Performance corrected to 7% O2:

2.9.1 Particulate ≤ 0.08 grains/dscf waste per hour

2.9.2 CO ≤ 20 ppmdv hourly average

2.9.3 Visible emission average less than 1% average opacity. (not visible).

5.0 Five sets of operator & maintenance manuals to be provided on Thumb Drives.

- all program data for programmable devices
- printout of actual programs
- all pressure, timer, switch, regulator, etc recorded settings
- electrical schematics with part numbers
- piping schematic with part numbers
- hydraulic schematic with part numbers
- burner and combustion air piping schematic with part numbers
- systems description
- alarm listing and corrective procedure
- system overview drawings
- technical bulletin of every device included in system
- In English, with limited translation on some technical bulletins in other languages.
- spare parts listing and price (price as off production of manual)

9.7 Delivery: †
Drawings & engineering 8-10 weeks.
Manufacturing 46-58 weeks.
Shipping 1-2 weeks
Installation 2 weeks
Training 2 weeks.

† The above schedule represents a good faith estimate of delivery milestones. In the current economic environment, of substantial supply chain disruptions, labor shortages, port congestion, shipping cancellations by steam lines, and other issues, we can not guarantee an absolute ship date, nor completion date. We are not able to accept any contract from any customer with liquidated damages for late deliveries. We make every effort to maintain schedules subject to conditions beyond our control.

12.0 Utility information for each system:
Preliminary system weight:
58+/- tons, nominal 2,100 lbs /sqr ft load on 2 x 28 ft W12-50# skids

Electrical loads: 480/3/60 60amp circuit + earth ground
- Combustion air blower 15 hp
- Hydraulic Pump 10 hp
- Control transformer 3 kva 480 x 120, single phase

Natural Gas:
5,800,000 btu/hr maximum load (5,800 cu ft/hr @ 1.5 psi) Note this load represents required service size, actual hourly consumption is approximately 30% of this rate.

Water service: 1/2" connection, 60-100 psi, water use is intermittent for:
- Replenish water lost to evaporation in the ash conveyor
- Cooling spray in primary chamber
- Automatic fire suppression in waste feed air lock hopper, triggered by temperature in hopper.
- Intermittent post load hopper rinse.

Expected water consumption less than 100 gallons per day.

Compressed Air or Bottled CO2:
The stack cap is operated by air over Hydraulic system, we can run it with a CO2 bottle or compressed air. It uses typically only a few cubic ft per day of compressed air or inter gas. One complete open / close cycle of the stack cap requires less than 0.5 cu ft of compressed air or inert gas.

15.0 Equipment Sub-Vendors:

The following manufacturers are Pennram standard. In some cases we may be flexible in use of "other" brand names. However, note that as we, Pennram, are responsible for warranty and performance of the incinerator, we reserve the right to use vendors of proven reliability with long term Pennram experience.

15.1 Steel Supplier:	High Steel Service Center, Metals USA, Nivert Metals
15.2 Refractory Liner:	Harbison Walker Refractory
15.3 Burner Components:	North American, Selas
15.4 Fuel Valves (Gaseous):	Honeywell
15.5 Fuel Valves (liquid):	Asco
15.6 Pilot solenoid valves	Asco
15.7 Water solenoid valves	Asco
15.8 Air solenoid valves	Asco
15.9 Comb. Air Damper Motors	Honeywell
15.10 Temperature Controls	Honeywell
15.11 Programmable Logic Controller:	IDEC
15.12 Burner Supervision	Honeywell
15.13 Flame Monitor	Honeywell (UV scanner)
15.14 Control Panel Nema 4X:	Hoffmann Engineering
15.15 Power Dist/ Circuit Brkrs:	Square D Company
15.16 Motor Starters:	Square D Company
15.17 Panel Switches & Lamps:	Square D Company / IDEC
15.18 Proximity Sensors:	Reed Switch Developments Inc.
15.19 Limit Sensors:	Square D Company
15.20 Combustion Air Blower:	Cincinnati
15.21 Air Compressor:	Ingersol Rand
15.22 Waste Oil Pumps:	ARO
15.23 Electric Motors:	Weg
15.24 Hydraulic Pump:	Permco
15.25 Hydraulic Valves:	Vickers
15.26 Hydraulic Cylinders:	Sheffer Corporation
15.27 Gas Pressure Regulators:	Fisher Regulator Controls, North American
15.28 Pre Engineered Building:	Shenango Steel Buildings, Inc.
15.29 Waste Carts:	Rubbermaid

APC Inlet flows to Envitech:
The APC vendor would flow/treat gases of *maximum* 12,300 lbs/hr mass flow / 11,200 acfm volumetric flow @ 1700°F, this is all inputs on 100%.

Or *steady state* flow rate of *average* 7,500 lbs/hr mass flow / 6,800 acfm volumetric flow @ 1700°F, this with burners modulated back, and combustion air running 70%.

The APC system MUST be capable of 2.5:1 turn down ratio, and able to maintain steady exhaust pressure on incinerator of nominal negative 0.15-0.35" w.c. by adjustment of draft damper, variable throat, or ID fan speed or other means. A control output representing draft/ID Fan control in the form of a 4-20mA current signal will be continuously supplied to APC vendor at our terminal strip based on range of 0.0-1.0" w.c.. Contact will be supplied indicating the APC system is to run / stop. APC system must supply Pennram a contact signal that APC is "ready for use" to enable closure of our stack cap.

The APC system heat exchanger must be able to handle temperature fluctuations up to 1950°F

END OF SPECIFICATION

Prepared By:

Andrew C. Hooker
President & GM
Pennram Diversified Manufacturing Corporation

Made in U.S.A.

June 16, 2023

Contractor
Atlanta, GA 30339, USA

Dear Contractor:

Envitech is pleased to offer this proposal for two (2) new identical state-of-the-art medical waste incinerator Air Pollution Control (APC) systems installed in a new building to be built at Fort Detrick, Maryland. The Medical Waste Incinerator Building (MWIB) will be built on a vacant 5-acre, greenfield site located on the northwest portion of the National Interagency Biodefense Campus. One Incinerator/APC will be functioning 24/7 for processing approximately 1 million pounds of waste per year. The second system is redundant and used in case the first system fails or is shut down for maintenance. The systems are to be designed to handle 1 million pounds of laboratory, medical and infectious waste through the two, 550 lb/hour incinerators and associated Air Pollution Control (APC) equipment. The systems are guaranteed to meet the US EPA hospital, medical, and infectious waste (HMIWI) MACT standard for a new, large waste incinerator category.

Envitech is the leading supplier of medical waste incinerator gas cleaning systems. Experience includes 35 medical waste incinerator gas cleaning systems which is over half of the units that have been installed in the United states. Appendix B includes a Power Point on qualifications and stack test data to validate Envitech's experience for meeting qualification requirements.

Please feel free to call me if you have any questions.

Sincerely,

Andrew C. Bartocci
National Sales Manger

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

Table of Contents

CONFIDENTIALITY NOTICE 4
1.0 Scope of Supply 5
1.1 Equipment 5
1.2 Optional Equipment 5
1.3 Equipment and services not included or provided by others 5
2.0 Price 6
2.1 Equipment 6
2.2 Optional Equipment 6
2.3 Equipment Startup and Training 6
3.0 Exceptions and Clarifications 7
4.0 Shipping and Payment Terms 7
4.1 Delivery Time 7
4.2 Shipping 7
4.3 Payment Schedule 8
4.4 Validity 8
5.0 System Design 9
5.1 Design Basis 9
5.2 Design Considerations 10
5.3 Principles of Operation 10
5.4 System Component Specification 12
5.4.1 Evaporative quencher 12
5.4.2 Condenser/absorber with liquid cooling circuit 12
5.4.3 Venturi scrubber and entrainment separator 13
5.4.4 Induced draft fan, reflux damper, and stack 13
5.4.5 Instrumentation and control system 14
5.4.6 Pumps 16
5.4.7 Pre-assembled equipment skid 16
5.4.8 Chemical storage tank 16
5.4.9 Exhaust gas reheater duct and particulate polishing filter 17
5.4.10 Carbon bed adsorber 17
5.6 Operating Parameters and Utilities Consumptions 18
6.0 Performance Guarantee and Warranty 20
6.1 Performance Guarantee 20
6.2 System Warranty 20
6.3 Performance Warranty 21

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

7.0 Operation and Maintenance Manuals 23
8.0 Training and Start-up 23
9.0 Revision History 23
Appendix A: Standard Service Rate Sheet and Terms and Conditions 24
Appendix B: Drawings 25

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

CONFIDENTIALITY NOTICE

Envitech is pleased to provide this proposal to evaluate the goods and services which we offer. This proposal contains strictly confidential information that Envitech values and protects. We therefore ask that you not use any information in this proposal for any other purpose, copy it in any way, or disclose it to third parties, without our consent, and that you return all copies to us upon request (including any electronic versions).

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

1.0 Scope of Supply

1.1 Equipment

Two (2) identical Envitech state-of-the-art medical waste incinerator air pollution control systems cleaning system, including the following scope of supply for each system:

1. One (1) evaporative quencher
2. One (1) condenser/absorber with liquid cooling circuit
3. One (1) Venturi scrubber and entrainment separator
4. One (1) induced draft fan, reflux damper, and stack
5. One (1) lot of instrumentation & control system
6. One (1) pre-assembled equipment skid
7. One (1) chemical storage tank serving both APC systems.
8. One (1) exhaust gas re-heater duct and particulate polishing filter
9. One (1) carbon bed adsorber
10. One (1) lot of electronic Operation and Maintenance Manuals

1.2 Optional Equipment

The proposed scrubber system can be provided with the following options.

1. Option 1: One (1) DAS supporting one primary and one back-up MWI/APC system.
2. Option 2: Additional Operation and Maintenance Manuals.

1.3 Equipment and services not included or provided by others

- Installation.
- Upstream incinerator and interconnect ductwork to the scrubber.
- Off-skid piping & wiring.
- Re-assembly of shop-assembled equipment broken down for shipment.
- Touch-up painting as required after installation.
- Cooling water supply.
- CEMs unit.
- DAS – Provided as an option.
- Supply of instrument air for incinerator, scrubber, and cartridge filter.
- Supply of softened water or water treatment system.
- Testing by an independent third party required to establish performance.

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

Travel time is an additional cost. Airfare is billed at cost plus 15%. Estimated installation supervision, start-up, and training services are provided in Section 2.1.

3.0 Exceptions and Clarifications

1. Installation supervision, start-up services, and any other requested on-site services are provided on a time and material basis at Envitech's standard rates. Estimates are provided in Section 2.1.

4.0 Shipping and Payment Terms

4.1 Delivery Time

The design submittal will be phased for specific deliverables per the estimated schedule below.

Full design submittal for approval:	From receipt of order with down payment
30% submittal: P&ID, PFD, schedule, GA, ITP's, long lead-time items	4 to 6 weeks
60% submittal: equipment drawings, equipment/ instrument/valve submittals	8 to 10 weeks
90% submittal: electrical submittals	12 to 16 weeks
Delivery to carrier:	30 to 34 weeks from release for fabrication of long lead-time items

4.2 Shipping

Price is F.O.B. point of shipment, freight by others. Estimated freight is provided in Section 2.1. If Envitech arranges the freight, freight charges are billed at cost plus 15%.

4.3 Payment Schedule

Payment will be per a mutually agreed milestone schedule of values. Envitech standard payment schedule is indicated below.

- 35% Upon purchase order
- 35% Upon drawing submittal
- 25% Notification of readiness to ship per values to be provided later.
- 5% Upon acceptance, not to exceed 45 days after notification of ready to shipment

All milestone invoices to be paid net 30 days from receipt of invoice.

4.4 Validity

Quote is valid for 90 days, subject to material escalation at the time of release for fabrication.

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

5.0 System Design

5.1 Design Basis

The APC systems are designed to operate at the inlet flue gas parameters below when the incinerator processes 550 lb/hr of medical wate.

Inlet Gas Condition	Design	Maximum
Gas Flow Rate, dscfm	2,013	2,875
Gas Flow Rate, scfm	2,291	3,064
Gas Flow Rate, acfm	9,964	12,572
Gas Temp, °F	1,800	1,700
Upstream Pressure., in.W.C.	-1	-1
Gas Composition, lb/hr		
H_2O	780	529
CO_2	820	1,354
O_2	1,200	1,833
N_2	7,200	10,066
HCl	10	15.5
SO_2	1	3.1
Total	10,011	13,800
PM, gr/dscf	0.23	0.23

The design basis particle size distribution (PSD) is indicated below:

Aerodynamic Diameter µmA	Ash Mass % <
0.20	9.00
0.30	16.00
0.40	23.00
0.50	29.00
0.60	35.00
0.70	40.00
0.80	44.00
0.90	47.00
1.00	50.00
1.50	63.00
2.00	72.00
3.00	83.00
4.00	88.00
5.00	91.00

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

5.2 Design Considerations

None noted.

5.3 Principles of Operation

The Envitech medical waste Incinerator air pollution control systems were developed by Envitech through years of research and is highly efficient in controlling emissions from medical waste incinerators. It is designed to take advantage of water vapor condensation effects to enhance particle collection and to suppress the scrubber "steam plume." Some of the water vapor condenses on the particles causing their mass and diameter to increase, which makes them easier to collect. The rest of the condensing vapor sweeps particles with it as it moves toward the cold surfaces of the packing material. To a lesser extent, thermal forces resulting from the temperature gradient between the gas and the cold surface also enhance particle collection.

Hot flue gas from the incinerator is first cooled to saturation in an evaporative quencher. The quencher is a low pressure drop Venturi which removes particulate greater than 5 microns diameter. The gas then passes through the condenser/absorber (C/A) for acid gas removal and sub-cooling. A dilute caustic solution is metered into the C/A by an electronic metering pump to neutralize acid gases. Process water is recycled through a liquid cooling circuit consisting of a plate and frame heat exchanger (HEX). Cooling water is supplied is by others.

After leaving the C/A, the gas passes through a high-efficiency Venturi scrubber for fine particle removal and an entrainment separator for liquid drop removal. Water to the Venturi is recycled from the entrainment separator sump. A blowdown stream from the C/A sump and the entrainment separator sump purges fly ash and reaction products collected by the scrubber.

After the entrainment separator, the gas passes through an induced draft fan. The incinerator draft is controlled by a gas reflux duct and damper. The scrubber system is designed for the maximum gas flow condition. When the gas flow from the incinerator decreases, clean gas from the exhaust side of the fan is recycled to the Venturi scrubber inlet to make up the difference in flow. The recycled, clean gas passes through an electrically actuated damper which is modulated to maintain the incinerator primary chamber draft pressure.

After the fan, the gas passes through an exhaust gas re-heat duct to raise the gas temperature to slightly above saturation. This eliminates the potential for condensation build-up in the downstream equipment. The heater is controlled by a silicon-controlled rectifier (SCR). After the heater, the gas passes through a particulate polishing filter to remove residual sub-micron fly ash and condensed metals that were not removed by the upstream Venturi. A rotary airlock is used for automatic particulate removal. After the filter, the gas passes through a carbon bed adsorber for removal of dioxins and furans. The gas exits the system through an interconnect duct and stack.

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

5.4 System Component Specification

Each APC system includes the items listed below except there is one chemical storage tank serving both scrubbers as noted below.

5.4.1 Evaporative quencher

One (1) Envitech evaporative spray quencher complete, including:

Component	Description
Top section	Hastelloy C276
Body	AL6XN
Water distributor	Hastelloy C276
Orientation	Vertical
High temperature breeching and expansion joint to the scrubber system	By others

5.4.2 Condenser/absorber with liquid cooling circuit

One (1) counter-current packed bed condenser/absorber (C/A) with water distributor, packing support, and packing. Packing will be wet-film, random dumped. One (1) liquid cooling circuit consisting of one (1) plate and frame heat exchanger (HEX). Cooling water is by others.

Component	Description
C/A vessel	FRP
Packing	GF-PP
Water distributor	CPVC
Spray nozzles	Polypropylene
HEX	
Type	Plate and frame
Plates	Titanium
Frame	Carbon steel
Cooling water	By others

5.4.3 Venturi scrubber and entrainment separator

One (1) high-efficiency Envitech Venturi scrubber and entrainment separator complete including items below. The entrainment separator is a horizontal, cross flow design and contains one stage of primary separation blades and one stage of high efficiency waveform mist eliminators.

Component	Description
Vessel shell	FRP
Venturi throat	Fixed
Entrainment separator body	FRP
Primary entrainment separator blades	FRP
Secondary waveform mist eliminators	Polypropylene
Waveform wash distributor	CPVC
Waveform wash spray nozzles	Polypropylene

5.4.4 Induced draft fan, reflux damper, and stack

One (1) induced draft fan, reflux damper, and stack complete, including items below.

Component	Description
Induced draft fan	
Quantity	1
Housing	CS-Rubber lined
Wheel	Al6XN
Motor, HP (connected)	60
Vibration switch	1
VFD	1
Reflux damper	
Duct	FRP
Damper	Al6XN
Actuator	1
Stack	
Material of construction	FRP
Stack height	40 ft
Stack structural support	By Others

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

5.4.5 Instrumentation and control system

The scrubber system is designed for semi-automatic operation and includes instrumentation a control system with HMI display. The instruments will be pre-mounted where possible into pre-assembled piping, valves and fittings on the scrubber skid. Pre-mounted instruments will be wired to a junction box located on the skid. Wiring diagrams will be provided. An APC control system with HMI display is provided and will communicate with the incinerator control system.

An option price is given for a DAS system supporting one (1) Redundant CEMS (CO and O2), monitoring one (1) Incinerator in accordance with 40CFR Part 60, 40CFR Part 63 Subpart EEE and the State of Maryland regulatory requirements. The DAS scope includes a primary and a backup MWI/APC system.

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

Instrument or Control	Quantity
Level transmitters	3
pH probe & transmitter	1
Conductivity probes & transmitter	1
Differential pressure transmitters	3
Thermocouples & transmitters	7
Flow transmitters	4
Flow indicator	1
Pressure gauges	12
Sequence of operations	Included
Shop-wiring of instruments to a junction box with wiring diagrams	Included
APC Control system with HMI display	Included
DAS supporting one primary and one back-up MWI/APC system including the following: • 2-Allen Bradley CompactLogix PLCs (Each PLC will have 1-CPU, 1-Power Supply, 1-8 Ch. Analog Input Module and 1-ProSoft Modbus) • 2-Lots of Allen Bradley CompactLogix PLC programming • 1-VIM Standard DAS Computer (tower configuration) • 1-VIM Standard Client Workstation Computer • 1-Weintek Touch Screen Operator Interface Terminal – programmed • 1-VIM Standard QR Code Scanner • 1-Studio 5000 Lite PLC Programming Software License • 1-CEMLink™6 Software License • 1-SQL Server 2019 Software License • 1-Lot CEMLink™ 6 DAS Software Package • 1-Lot VIM Standard Modbus Interface • 1-Lot VIM Standard 40CFR Part 60 Data Validation Package • 1-Lot VIM Standard 40CFR Part 63 Subpart EEE Data Validation Package • 1-Lot VIM Standard Reporting Package • 1-Site-specific Engineering & Design Packet • 1-Electronic Copy CEMLink™ 6 User Manual • 4-Days On-Site Startup, Commissioning & Training • Remote FAT support (16 hours max) • 2-Days Customer Witnessed FAT Test Support at VIM's Glen Burnie, MD facility	Option

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

5.4.6 Pumps

One (1) lot of pumps complete, including:

Component	Description
One (1) quencher and C/A recirculation pump	316SS x 15HP
One (1) Venturi scrubber recirculation pump	316SS x 5 HP
One (1) chemical metering pump	316SS liquid end

5.4.7 Pre-assembled equipment skid

One (1) pre-assembled equipment skid with pre-assembled piping, valves and fittings complete, including items below. Recirculation pumps, HEX, and ID fan are pre-mounted on the equipment skid. Instruments are pre-mounted where possible into pre-assembled piping, valves, and fittings and pre-wired to a junction box mounted on the skid. All off-skid piping and wiring are by others. Chemical metering pumps are shipped without pre-piping.

Component	Description
Equipment skid	CS-painted
Process water piping	CPVC
Fresh water piping	CS & CPVC
Pre-wiring of pre-mounted instruments to junction box located on the skid	Included
Mounting of recirculation pumps	Included
Mounting of HEX	Included
Mounting of ID fan	Included
Re-assembly on site of items broken down for shipment	By others
All off skid piping, valves, & fittings	By others

5.4.8 Chemical storage tank

One (1) double walled chemical storage tank serving both scrubbers complete, including items below.

Component	Description
Quantity	1 both scrubbers
Capacity	500
MOC	HDLPE
Double walled	Yes
Heater, 480V 1-3PH	1/8kW
Insulation	Included
Level transmitter	1
Thermocouple & transmitter	1

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

5.4.9 Exhaust gas reheater duct and particulate polishing filter

One (1) exhaust gas reheater duct and continuous-duty, reverse pulse, cartridge type filter with top or front air inlet and baffle impingement plates to provide even air distribution over the cartridge filters complete, including items below.

Component	Description
Exhaust gas re-heater duct with a silicon-controlled rectifier (SCR) controller	316SS/FRP
Re-heater duct structural support	By Others
Reverse pulse, cartridge type filter	CS-Painted T316-Optional
Interconnect duct to carbon bed adsorber	FRP

5.4.10 Carbon bed adsorber

One (1) carbon bed adsorber complete, including items below.

Component	Description
Carbon bed adsorber	FRP
Media	Included
Interconnect duct from adsorber to stack	FRP
Loading of media on site	By installation contractor

5.6 Operating Parameters and Utilities Consumptions

Following are estimated operating parameters and utilities consumptions.

Operating Parameter/Utility	Values
System inlet pressure, in. WC	-1
System pressure drop, in. WC, avg (max)	51 (62)
Heat rejection, MM BTU/hr, avg (max)	5.8 (6.7)
Cooling water temperature, °F	70
Fresh water to scrubber, gpm, avg (max)	2 (40)
Avg. blowdown, gpm, avg (max)	5 (10)
Avg. caustic usage (50 wt.%), gph , avg (max)	2 (3)
Scrubber air requirements	
Max air flow, scfm	10
Min system pressure, psig	100
Motors HP	
ID fan	60
Quencher/CA pump	15
Venturi pumps	3
Re-heat duct heater. kW	30

- Estimated equipment footprint: 42 ft L x 8 ft W x 15 ft H
  - Skid, quencher, C/A, VS/ES, ID fan, cartridge filter, carbon bed filter.
  -
- Estimated equipment weight:

Equipment	Shipping, lbs	Operating, lbs
Skid (8 ft x 25ft)	16,300	25,200
Cartridge filter	2,225	2,225
Carbon Bed	2,225	8,800

Estimated installation time for both scrubbers (to be confirmed by contractor)

PLEASE NOTE – Installation by others.

1. While the building is still open, set and install the equipment. Allow for 4 weeks. This includes:
   a. Rigging.
   b. Set the primary skid, filter, and carbon bed adsorber.
   c. Install interconnect ductwork.
   d. Install packing into the C/A.
   e. Install carbon media in the carbon bed adsorber.

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

2. After the building is erected around the equipment, install the stack. Drop it in with a crane. Leave a 36” x 36” opening in the roof to drop it in. It will take 1 week for both stacks.
3. After the building is buttoned up, complete electrical and mechanical.
4. Summary
    a. 4 weeks for rigging and setting equipment. Prior to building installation
    b. 1 week stack installation – After building and with open ceiling.
    c. 3 weeks mechanical – After building is buttoned up.
    d. 3 weeks wiring/electrical.
    e. 2 weeks punch list items
    f. 13 weeks overall for both scrubbers.

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

6.0 Performance Guarantee and Warranty

The performance guarantee and system warranty are described below. These warranties are contingent upon Envitech's providing the start-up services as described in this proposal.

6.1 Performance Guarantee

The proposed APC systems are guaranteed to meet the US EPA Hospital, medical, and infectious waste (HMIWI) MACT standard for a new, large category incinerator per pollutants summarized below corrected to 7 percent oxygen basis.

- Particulate Matter (PM): 0.0080 gr/dscf
- Dioxins/Furans (TCCD/TCDF): 0.035 ng/dscm on a TEQ basis
- Hydrogen Chloride (HCl): 5.1 PPM, dry volume
- Sulfur Dioxide (SO2): 8.1 PPM, dry volume
- Lead (Pb): 0.00069 mg/dscm.
- Cadmium (Cd): 0.00013 mg/dscm.
- Mercury (Hg): 0.0013 mg/dscm.

6.2 System Warranty

The system is warranted for materials and workmanship twelve (12) months from start-up completion or eighteen (18) months from notification of ready to ship, whichever comes first. The system warranty is based on operation of the system in compliance with Envitech's operating instructions, including proper preventative maintenance and the design basis described in section 5.1.

Excluded are purchased third-party items, such as pumps, valves, fans, instruments, where the manufacturer's standard warranty shall remain in force.

The following are specific exclusions to the mechanical warranty: erosion or corrosion.

In all situations involving non-conforming or defective products furnished under this warranty, Buyer's exclusive remedy is the repair or replacement of the products. Envitech shall in its sole discretion have the option to elect repair or replacement of the products. Envitech shall not be liable for any indirect, special, incidental or consequential loss or damage (including, without limitation, loss of profits or loss of use) suffered by Buyer arising from or relating to Envitech's performance, non-performance, breach of or default under a covenant, warranty, representation, term or condition hereof. Envitech shall not be liable for any indirect, special, incidental or consequential loss or damage (including, without limitation, loss of profits or

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

loss of use) suffered by Buyer arising from or relating to Envitech's performance, non-performance, breach of or default under a covenant, warranty, representation, term or condition hereof.

The installation contractor is responsible for following accepted industry practices for equipment installation. Envitech's warranty does not cover costs for contractor errors or costs that could have been minimized or avoided by following accepted industry practices.

6.3 Performance Warranty

Subject to the limitations of the General Terms and Conditions and the conditions stated herein, Envitech warrants the performance of the equipment at the performance levels specified above during a performance test to be conducted, or the warranty deemed satisfied, within ninety (90) days after start completion or six (6) months after notification of ready to ship, whichever occurs first, provided that the equipment, if in operation, has been installed and adjusted in accordance with Envitech engineering drawings and other written instructions. This warranty is conditional upon the Inlet Gas Conditions as specified in *Design Basis*.

Buyer shall give Envitech at least 30 days prior written notice of the date when the equipment will be ready for performance testing. If the equipment is not tested for performance within the time period specified in the above paragraph, through no fault of Envitech, or if Inlet Gas Conditions different than those specified above are encountered during performance testing, then the Envitech performance test obligation and this performance warranty will be deemed satisfied.

The System and Envitech shall be deemed to have satisfied obligations and this performance warranty when the average of three consecutive tests results in concentrations consistent with the applicable performance levels.

Prior to performance testing, Envitech may inspect the equipment at any reasonable time. If the equipment has been damaged after the transfer and passage of the risk of loss and damage from Envitech to the Buyer or mis-installed by Buyer, then Buyer shall at its expense, restore the equipment to operating condition satisfactory to Envitech prior to beginning of performance testing. If the equipment cannot be restored, Envitech will be released from its obligation.

Performance testing will be conducted by an independent testing laboratory, mutually acceptable to Buyer and Envitech. The initial battery of tests will be conducted at Buyer's expense (including all fees and charges of the independent testing laboratory, as well as payment for the services, if requested, of an Envitech engineer at Envitech's then current daily service rate plus travel and living expenses). If the equipment performs at the applicable performance levels, as measured by the initial battery of tests,

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

then the Envitech obligations and this performance warranty shall be deemed satisfied.

If the equipment fails to meet the applicable performance levels for reasons which are the fault or responsibility of Envitech, Buyer shall notify Envitech of the nonconformity in writing within 10 days of the knowledge of the nonconformity. Envitech, at its option, may make modifications, additions, or replacements to the equipment as it deems necessary to have the equipment function in accordance with said warranty. Envitech, at its expense, may request the independent laboratory to conduct additional tests to determine if the equipment is meeting the applicable performance levels. However, if the failure of the equipment to perform at the applicable performance levels occurs in whole or in part by reason of the fault or responsibility of third parties or of the Buyer, or its employees, agents or contractors, Buyer shall bear the expense of such additional tests.

Envitech and its engineers are to have access to all records, reports, results and other information relative to the equipment, as well as to all tests conducted by the independent testing laboratory. Immediately after completion of the tests, the Buyer shall cause the independent testing laboratory to transmit an unedited copy of the test reports and results to Envitech. At any time that this performance warranty is satisfied, or deemed satisfied, or Envitech is relieved of performance warranty obligations, any portion of the contract price not yet paid will immediately become due and payable to Envitech.

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

7.0 Operation and Maintenance Manuals

One (1) electronic tablet and one (1) electronic, web based operating and maintenance manuals are provided. The manuals contain all the information needed to operate, maintain, and troubleshoot the incinerator gas cleaning system.

The manuals also include general arrangement drawings, process flow diagrams, P & ID diagrams, wiring diagrams, sequence of operations, manufacturers' catalog sheets of purchased components, recommended sources of replacement parts, and spare parts list.

8.0 Training and Start-up

Start-up and installation supervision is provided as outlined in the proposal on a per diem basis plus travel time and costs.

The training covers system design, start-up and shut-down procedures, basic control functions, and trouble shooting. The training schedule can be adjusted to meet the specific needs of various groups of personnel and different plant conditions.

9.0 Revision History

Revision	Date	Author	Prepared For	Description
00	06/15/2023	ACB	Contractor	Preliminary Proposal
01	06/15/2023	ACB	Contractor	Updated for cooling water temp and heat load
02	06/16/2023	ACB	Contractor	DAS update

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

Appendix A: Standard Service Rate Sheet and Terms and Conditions

PREPARED FOR

US Army Corps
of Engineers
Maryland District

PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

2924 Emerson St.—Suite 320
San Diego, CA USA
Phone (619) 223-9925 • Fax (619) 223-9938
E-mail: abartocci@envitechinc.com
Website: www.envitechinc.com

Engineering Service Rate Quotation

Rates Effective February 1, 2022

- **RATE SCHEDULE APPLIES TO SERVICES OFFERED IN APPLICABLE CONTRACT AND/OR PROPOSAL, AND IS SUBJECT TO THE TERMS AND CONDITIONS THEREIN**
- **STAND ALONE SERVICE ORDERS SHOULD BE ISSUED IN "NOT TO EXCEED" INCREMENTS OF $25,000 UNLESS SERVICES FOR LARGER AMOUNT S ARE ANTICIPATED**

		Rates
	Field Service Engineer On-site services, data analysis, project management, drawings, procurement, and report writing, etc.	**$225.00/hr**
	Project Manager On-site services, data analysis, project management, drawings, procurement, and report writing, etc.	**$275.00/hr**
	Senior Process Engineer On-site services, data analysis, project management, drawings, procurement, and report writing	**$375.00/hr**
	Travel Time Full day travel from the Envitech Representative's point of origin to the job site and return Return travel from job site if travel occurs in the evening after a standard work day.	**$1,100/Day** **$165.00/hr**
RATE MULTIPLIERS	**Normal** Monday-Friday (non-holidays) for first 8 hours	**1.0 x Base Rate**
	Overtime 1 Saturdays, daily other than normal, but less than 12 consecutive hours	**1.5 x Base Rate**
	Overtime 2 Sundays, holidays, or after 12 consecutive hours	**2.0 x Base Rate**
SPECIAL PREMIUMS	**Emergency Response** When response is required within 24 hours	**$600 per event**
	Hazardous Environments Suiting-up for environments involving radiation, acid or other chemicals, bio-hazards, etc.	**$1,500 per day per employee**
EXPENSES	**Travel and Living (T&L)** Hotel, meals, rental car etc. within the continental U.S.A.	**$400 per day per employee**
	Commercial Transportation (air fare), Shipping, and Excess Baggage	**At cost plus 15% administrative expense**
	Minimum Charge	**Four (4) hours labor, expenses, and appropriate T&L**
BILLING SCHEDULE	**On Site Services** 30% Down Payment with the order of the estimated charges Balance of on-site work and expenses will be billed bi-weekly (every two weeks) as incurred	
	Services Completed in Office Work completed in the office will be billed bi-weekly (every 2 weeks) as it is completed	

Notes:

1. Hourly Rates are subject to Rate Multipliers, Expenses, and Special Premiums where applicable.
2. Workweek shall consist of five (5), eight (8) hour days, forty (40) hours per week, typically from 8am to 5pm, but may fall between 6 a.m. to 6 p.m. depending on the customer's normal workweek
3. Charges for day(s) not worked, but on standby, shall be charged at the standard rate, times the applicable multiplier, plus expenses and applicable T&L.
4. This quotation is an offer to sell and is based exclusively upon the Envitech, Inc. Terms and Conditions (attached). Any order for services placed with Envitech shall be considered an acceptance of this offer.
5. The customer must agree to increase the purchase order amount accordingly if the actual services provided exceed the PO amount.

ENVITECH

General Terms and Conditions

Acceptance

Unless otherwise provided, this Proposal is subject to acceptance by Buyer within sixty (60) days from the Proposal date. Acceptance of this Proposal is limited to the terms and conditions herein. Envitech rejects all additional or different terms proposed by Buyer, except with Envitech's prior written consent. Buyer will reimburse Envitech for all reasonable costs and all other loss and damage resulting from the amendment or termination of this Proposal.

Terms of Payment

Except as otherwise provided in the Proposal, payment shall be by check or bank transfer according to the *Payment Schedule.* If Buyer fails to make any payments in accordance with the terms and provisions hereof, Envitech, in addition, but not in limitation, to its other rights and remedies, may at its option, either terminate the Contract or suspend further deliveries under it until payments have been brought current.

Shipping

Unless otherwise provided, all shipments shall be made F.O.B. shipping point. Title and risk of damage to or loss of goods shall pass to the Buyer upon delivery by Envitech to the carrier. If the shipment of any or all of the equipment is postponed or delayed by Buyer for any reason, including a Force Majeure situation, Buyer agrees to reimburse Envitech for any and all storage costs and other additional expenses resulting there from.

Force Majeure

Envitech shall not be liable for loss or damage for delay in delivery or failure to manufacture due to causes beyond its reasonable control including, but not limited to, acts of God, the government or the public enemy, riots, embargoes, strikes or other acts or workmen, casualties or accidents delays in deliveries and transposition and shortages of cars, fuel, power, labor, or material.

Material/Workmanship Warranty

Envitech will repair or replace, in its sole discretion, any equipment which has been manufactured to Envitech's special design and sold hereunder which is found to be defective in workmanship or materials, within twelve (12) months from its respective final acceptance date or eighteen (18) months from its respective shipment date, whichever comes first. Seller's obligations hereunder are subject to the following conditions:

a) Buyer notifies Envitech in writing within fifteen (15) days after such defect becomes apparent and promptly furnishes Envitech full particulars in connection therewith, together with an opportunity to witness the operation of such defective equipment.

b) Buyer shall have installed (if applicable), operated and maintained the equipment strictly in accordance with Envitech's operating and maintenance instructions, including, but not limited to, the use of only those materials specified in the Proposal and in the inlet quantities stated in the Proposal.

c) The defect has been caused solely by faulty materials or workmanship for which Envitech is responsible, and is not due to such things as erosion, corrosion, or deterioration resulting from the manner in which the equipment is operated, accident (including damage during shipment, neglect, misuse or abuse), or exposure to conditions beyond the environmental power or operating constrains specified by Envitech.

Envitech makes no warranty with respect to equipment and materials not furnished by Envitech pursuant to this Proposal or with respect to equipment furnished by Envitech pursuant to this Proposal which has not been manufactured to Envitech's special design, but will pass on or assign to Buyer to the extent legally permissible, the warranties, if any, obtained from manufacturers of such items of equipment.

Any repairs made under this warranty will be done on site, if feasible, or at the place of manufacture. Any round-trip freight transportation charges required for returning material deemed defective to the place of manufacture must be paid by Buyer. All costs associated with removing or reinstalling the defective equipment will be at Buyer's sole expense.

Limitation of Warranties

The warranties and guaranties furnished by Envitech, as expressly included herein, constitute Envitech's sole obligation hereunder and are in lieu of any other warranties or guaranties, express or implied, including warranties of merchantability or fitness for a particular purpose.

Taxes

Unless otherwise provided, Buyer agrees to pay any tax or import duty imposed by any federal, state, local or municipal Authority upon the equipment or related services described in this Proposal.

Installation

Unless otherwise provided, Envitech shall have no responsibility for, and Buyer hereby waives and relinquishes any claims related to, the installation, start-up and operation of the equipment to be furnished hereunder. If this agreement so provides, Envitech shall furnish advisory personnel to assist in installation and start-up of the equipment and to instruct Buyer's personnel in the operation of Envitech's equipment. Although Envitech will be responsible for mechanical adjustments to its equipment, Envitech has no responsibility for, and Buyer hereby waives and relinquishes any claims related to, correctness of site installation, the appropriateness and compatibility of the installation with respect to Buyer's facility or ability of Buyer's personnel to correctly operate and maintain Envitech's equipment.

Buyer agrees to defend, indemnify and hold harmless Envitech from and against any loss, costs (including reasonable attorneys' fees and costs), claims, suits or causes of action brought, threatened or incurred by or against Envitech arising from or in any way related to the installation, start-up and operation of the equipment to be furnished hereunder.

Inventions and Patents

Envitech grants no license by reason of any sale under any patent rights it may now own or hereafter acquire except the right to use the equipment sold hereby for the purpose for which it is sold under such patent rights, only as it covers said equipment as sold by Envitech. All drawings, novel techniques, special tooling and inventions made or acquired by Envitech or its agents or employees in the fulfillment of this proposal shall be the property of Envitech regardless of whether any order document states a separate price item for tooling or engineering. Buyer agrees to indemnify and hold Envitech harmless from and against any expense or loss from infringement of patents or trademarks arising from compliance with the Buyer's designs, specifications or instructions in the manufacture of the equipment or its use in combination with other equipment or systems.

Limitation of Remedies

Envitech's entire liability and Buyer's exclusive remedy are set forth in this Section:

In all situations involving non-conforming or defective Products furnished under this Agreement, Buyer's exclusive remedy is the repair or replacement of the Products. Envitech shall in its sole discretion have the option to elect repair or replacement of the Products.

Envitech's liability for actual damages for any cause whatsoever shall be limited to the applicable unit price for the specific components of the Product that caused the damages or that are the subject matter of, or are directly related to, the cause of action. This limitation will apply, except as otherwise stated in this Section, regardless of the form of action, whether in contract or in tort, including negligence.

Envitech shall not be liable for any indirect, special, incidental or consequential loss or damage (including, without limitation, loss of profits or loss of use) suffered by Buyer arising from or relating to Envitech's performance, non-performance, breach of or default under a covenant, warranty, representation, term or condition hereof. Except as specifically provided in the preceding sentence, Buyer waives and relinquishes claims for indirect, special, incidental or consequential damages.

Buyer expressly waives any right to recover punitive damages from Envitech, and Buyer hereby waives and relinquishes any and all punitive damage claims.

The limitations on liability and damages set forth in this section apply to all causes of action that may be asserted here under, whether sounding in breach of contract, breach of warranty, tort, product liability, negligence or otherwise.

Security

Envitech reserves a security interest in the equipment sold hereunder and in all accessions to, replacements for and proceeds of such equipment, until the full contract price, plus all other charges permitted hereunder, including any charges, costs or fees contemplated in the *Attorney's Fees, Venue and Jurisdiction* section below, are paid in full by Buyer. If so requested by Envitech, Buyer shall execute all security agreements, financing statements, promissory notes and all other security documents requested by Envitech in the form determined by Envitech.

Dispute Resolution

The Parties agree that any controversy, dispute or claim arising from or in any way related to this Agreement or the materials or equipment provided by Envitech shall be resolved by binding arbitration. The parties agree that jurisdiction for any arbitration shall be with the San Diego, California office of the Judicial Arbitration and Mediation Service ("JAMS") and the Parties hereby expressly agree to be bound by the then-prevailing JAMS rules applicable to commercial arbitrations.

Any dispute subject to arbitration shall be submitted to a single neutral arbitrator, who, unless otherwise agreed by the Parties, shall be a retired judge or other lawyer who is a member of the arbitration panel of the San Diego office of JAMS and who has substantial experience in the area of the Dispute. JAMS shall submit to each Party an identical list of five proposed qualified arbitrators drawn from the applicable panel of commercial arbitrators. If the Parties are unable to agree upon an arbitrator within thirty (30) days from the date that JAMS submits such list to each Party, then JAMS shall simultaneously submit to each Party a second list of five additional proposed qualified arbitrators drawn from the applicable panel of commercial arbitrators. If for any reason, the appointment of an arbitrator cannot be made from either list, JAMS may make the appointment from among other qualified members of the panel without the submission of additional lists to the Parties

The Parties shall be entitled to obtain pre-hearing discovery through depositions and requests for the inspection and copying of documents and other items upon reasonable notice and to obtain the issuance of a

subpoena duces tecum therefor in accordance with applicable law, provided that depositions shall not be taken unless leave to do so is first granted by the arbitrator. As between the Parties, the arbitrator shall have the power to enforce the rights, remedies, procedures, duties, liabilities and obligations of discovery by the imposition of the same terms, conditions, consequences, sanctions and penalties as may be imposed in like circumstances in a civil action by a California Superior Court.

Any award rendered by the arbitrator shall be reduced to a judgment and may be entered in any Court authorized to have jurisdiction under this Agreement.

The parties expressly waive any right they may have to a jury trial.

Venue and Jurisdiction

Each Party irrevocably consents to the jurisdiction of the state courts located in San Diego, California, and agrees, subject to the provisions contained in the paragraph entitled “Dispute Resolution” above, that any action, suit or proceeding by or among the Parties (or any of them) may be brought in any such court sitting in San Diego, California, and waives any objection which the Party may now or hereafter have concerning jurisdiction and venue, whether based on considerations of personal jurisdiction, forum non conveniens or on any other ground.

Attorney's Fees

In the event of any litigation, arbitration, judicial reference or other proceeding involving the Parties to this Agreement to enforce any provision of this Agreement, to enforce any remedy available upon default under this Agreement, or seeking a declaration of the rights of a Party under this Agreement, the prevailing Party(ies) shall be entitled to recover from the other(s) such attorneys' fees and costs as may be reasonably incurred, including the cost of reasonable investigation, preparation and professional or expert consultation incurred by reason of such litigation, arbitration, judicial reference or other proceeding.

Sound Levels

The combined sound or noise levels produced by individual sound generating devices, and the exposure of workmen to such, will depends on Buyer's plant noise levels over which Envitech has no control. Therefore, Envitech makes no guarantees, warranties or representations with respect to sound levels. If, after the equipment to be furnished hereunder is installed, it is determined that the system does not meet the maximum permissible sound levels or exposures, or that changes in OSHA requirements necessitate equipment modifications or additions, Envitech shall assist Buyer in designing and providing equipment and materials required, provided that an equitable adjustment of the contract price and proposed schedule is made.

Design Criteria

Envitech’s Proposal is based upon design criteria supplied by Buyer and Envitech assumes no responsibility for the accuracy of such criteria. Buyer recognizes, and the parties hereto intend, that Envitech shall not be obligated to meet its performance guarantee hereunder if the actual design conditions are found to be different from those upon which Envitech's Proposal is based.

Additions or Changes in the Work

Buyer agrees to pay Envitech reasonable charges for additional work outside the scope of any contract resulting from Envitech's Proposal as requested by Buyer by changes indicated by Buyer on Envitech's drawings, by letter, or by change order or other written instruction, and an equitable adjustment of the contract price and proposed schedule will be made by the parties.

Termination or Cancellation

In the event that Buyer terminates or cancels all or any portion of its order, Buyer shall compensate Envitech for all costs and expenses already incurred including, but not limited to, the price of any goods or services required to fill said order already committed to by Envitech, a pro rata portion of the contract price representing work completed prior to such termination or cancellation and a reasonable allowance for overhead and profit.

Miscellaneous

This Proposal represents the entire understanding and agreement between the parties hereto with respect to the subject matter hereof and supersedes all prior negotiations, letters and understandings relating to the subject matter hereof and cannot be amended, supplemented or modified except in writing signed by the party against whom the enforcement of any such amendment, supplement or modification is sought.

Failure of Envitech at any time or times to require performance of any provision of this proposal shall in no manner affect its right to enforce the same, and a waiver by Envitech of any breach of any provision of this proposal shall not be construed to be a waiver by Envitech of any succeeding breach of such provision or a waiver by Envitech of any breach of any other provision.

The rights, privileges, duties and obligations covered herein, including the transactions and agreements covered and contemplated hereby, shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns provided, however, Buyer may not assign any of its rights, privileges, duties or obligations hereunder without the prior written consent of Envitech, and any purported or attempted assignment without such written consent shall be null and void *ab initio.*

Appendix B: Drawings

The following drawings are for reference only.

- 40065GA, Rev. A
- 40065PID, Rev A

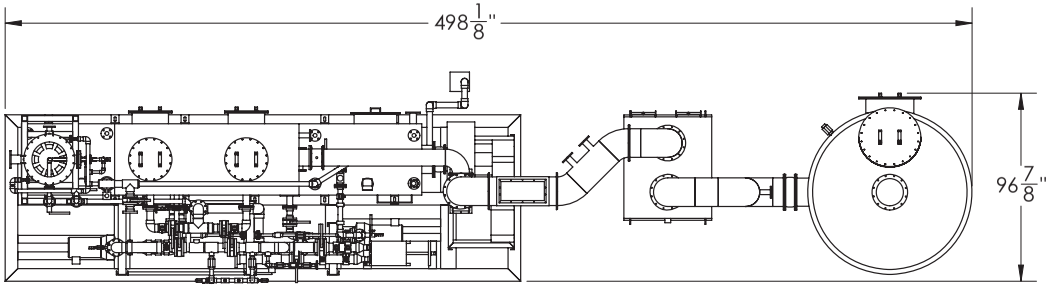
PREPARED FOR

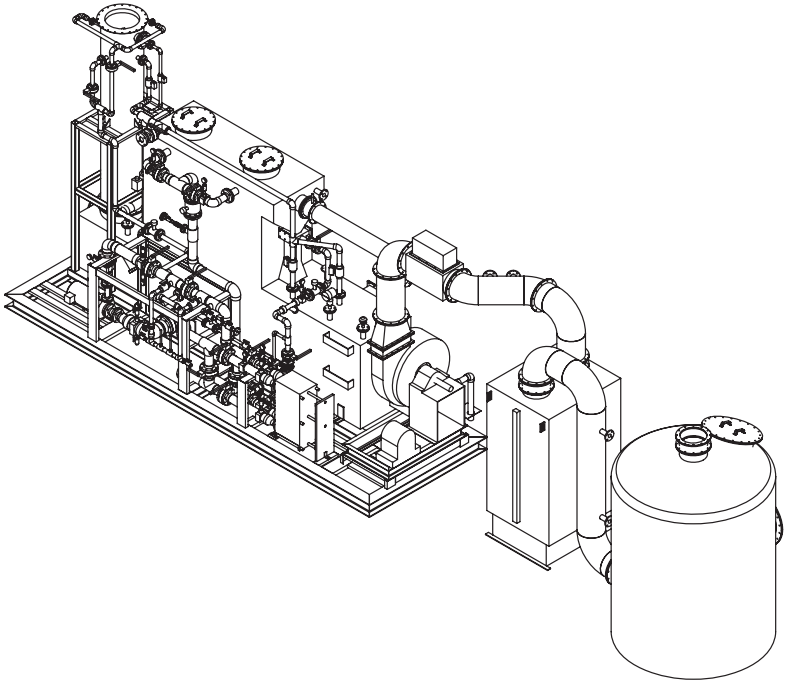
US Army Corps
of Engineers
Maryland District

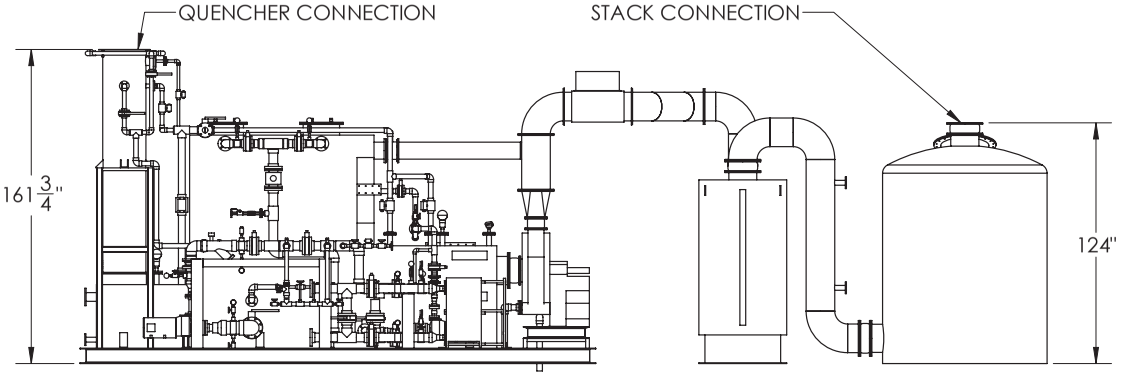
PREPARED ON
June 16, 2023

Envitech 2924 Emerson St, Ste 320, San Diego, CA 92106 | Tel 619.223.9925 | Fax 619.223.9938

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	6/14/2023	A. OLDS







UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN	AJO	6/14/23
	CHECKED		
	PROJ ENG	AJO	6/14/23
	MATERIAL		
INTERPRET GEOMETRIC TOLERANCING PER:	FINISH		
	PROJECT:		

Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

TITLE:
GENERAL ASSEMBLY

SIZE	DWG. NO.	REV
B	40065GA	A

SCALE: 1:64 WEIGHT: SHEET 1 OF 1

LEGEND:

PIPING KEY:

[A.0.5] = [TYPE.SIZE]

A – CPVC, PIPE

B – 316 SS, PIPE

C – 316 SS, TUBE

D – CS, PIPE

E – COPPER, TUBE

F – FRP, PIPE

G – CPVC, TUBE

INSULATION

HEAT TRACING

PIPING AND ELECTRICAL:

FRESH WATER

PROCESS WATER

COOLING TOWER WATER

SODA ASH

INSTRUMENT WIRING

ETHERNET

DUCTWORK

PNEUMATIC

ACID

BASE

CHEMICAL

NOTE: DASHED PIPING SIGNIFIES EXISTING PIPING

EQUIPMENT:

DAMPER

FLEXIBLE JOINT

MANUAL VALVE

SOLENOID VALVE

MOTORIZED VALVE

CONTROL VALVE

FLOAT VALVE

CHECK VALVE

PNUEMATIC VALVE

REDUCER

FLANGE

CENTRIFUGAL PUMP

METERING PUMP

STRAINER

DUCT JOINT

BUTTERFLY VALVE

BALL VALVE

BUTTERFLY VALVE WITH POSITIONER

PLUG VALVE WITH POSITIONER

INSTRUMENTS AND DEVICES:

AE – ANALYZER ELEMENT

AIT – ANALYZER INDICATING TRANSMITTER

AR – ANALYZER RECORDER

AT – ANALYZER TRANSMITTER

AV – ANALYZER VALVE

EE – VOLTAGE ELEMENT

EJ – EXPANSION JOINT

ER – VOLTAGE RECORDER

FE – FLOW ELEMENT

FIT – FLOW INDICATING TRANSMITTER

FI – FLOW INDICATOR

FR – FLOW RECORDER

FS – FLOW SWITCH

FT – FLOW TRANSMITTER

FV – FLOW VALVE

FY – FLOW STATE

HV – HAND VALVE

IT – CURRENT TRANSMITTER

LE – LEVEL ELEMENT

LG – LEVEL GAUGE

LIT – LEVEL INDICATING TRANSMITTER

LS – LEVEL SWITCH

LT – LEVEL TRANSMITTER

LV – LEVEL VALVE

M – MOTOR

PDIT – PRESSURE DIFFERENTIAL INDICATING TRANSMITTER

PDI – PRESSURE DIFFERENTIAL INDICATOR

PDT – PRESSURE DIFFERENTIAL TRANSMITTER

PI – PRESSURE INDICATOR

PIT – PRESSURE INTICATING TRANSMITTER

PS – PRESSURE SWITCH

PT – PRESSURE TRANSMITTER

PV – PRESSURE VALVE

TCE – HEATER

TE – TEMPERATURE ELEMENT

TI – TEMPERATURE INDICATOR

TIT – TEMPERATURE INDICATING TRANSMITTER

TJ – THERMOCOUPLE

TS – TEMPERATURE SWITCH

TT – TEMPERATURE TRANSMITTER

TV – TEMPERATURE VALVE

TY – TEMPERATURE STATE

VE – VIBRATION ELEMENT

VR – VIBRATION RECORDER

VT – VIBRATION TRANSMITTER

EI – VOLTAGE INDICATOR

JAV – POWER AVERAGE INDICATOR

JI – POWER INDICATOR

ZI – POSITION INDICATOR

ZSO – POSITION SWITCH OPEN

CONTROL FUNCTIONS:

AAH XX – ANALYZER ALARM HI

AAHH XX – ANALYZER ALARM HI HI

AAL XX – ANALYZER ALARM LO

AALL XX – ANALYZER ALARM LO LO

AI XX – ANALYZER INDICATION

FAH XX – FLOW ALARM HI

FAHH XX – FLOW ALARM HI HI

FAL XX – FLOW ALARM LO

FALL XX – FLOW ALARM LO LO

FI XX – FLOW INDICATION

LAH XX – LEVEL ALARM HI

LAHH XX – LEVEL ALARM HI HI

LAL XX – LEVEL ALARM LO

LALL XX – LEVEL ALARM LO LO

LI XX – LEVEL INDICATION

JC XX – POWER CONTROL

JIC XX – POWER INDICATING CONTROL

JI XX – POWER INDICATION

JY XX – POWER RELAY

PAH XX – PRESSURE ALARM HI

PAHH XX – PRESSURE ALARM HI HI

PAL XX – PRESSURE ALARM LO

PALL XX – PRESSURE ALARM LO LO

PI XX – PRESSURE INDICATION

PDAH XX – PRESSURE DIFFERENTIAL ALARM HI

PDAHH XX – PRESSURE DIFFERENTIAL ALARM HI HI

PDAL XX – PRESSURE DIFFERENTIAL ALARM LO

PDALL XX – PRESSURE DIFFERENTIAL ALARM LO LO

PDI XX – PRESSURE DIFFERENTIAL INDICATION

SC XX – SPEED CONTROL

SIC XX – SPEED INDICATING CONTROL

SI XX – SPEED INDICATION

TAH XX – TEMPERATURE ALARM HI

TAHH XX – TEMPERATURE ALARM HI HI

TAL XX – TEMPERATURE ALARM LO

TALL XX – TEMPERATURE ALARM LO LO

TI XX – TEMPERATURE INDICATION

YC XX – STATE CONTROL

YI XX – STATE INDICATION

YIC XX – STATE INDICATING CONTROL

VAHH XX – VIBRATION ALARM HI HI

VAH XX – VIBRATION ALARM HI

ZSOA XX – POSITION SWITCH OPEN ALARM

Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

MORTENSON
FORT DETRICK, MD

GAS CLEANING SYSTEM

No.	Revision/Issue	Date
A	INITIAL RELEASE	6/14/23

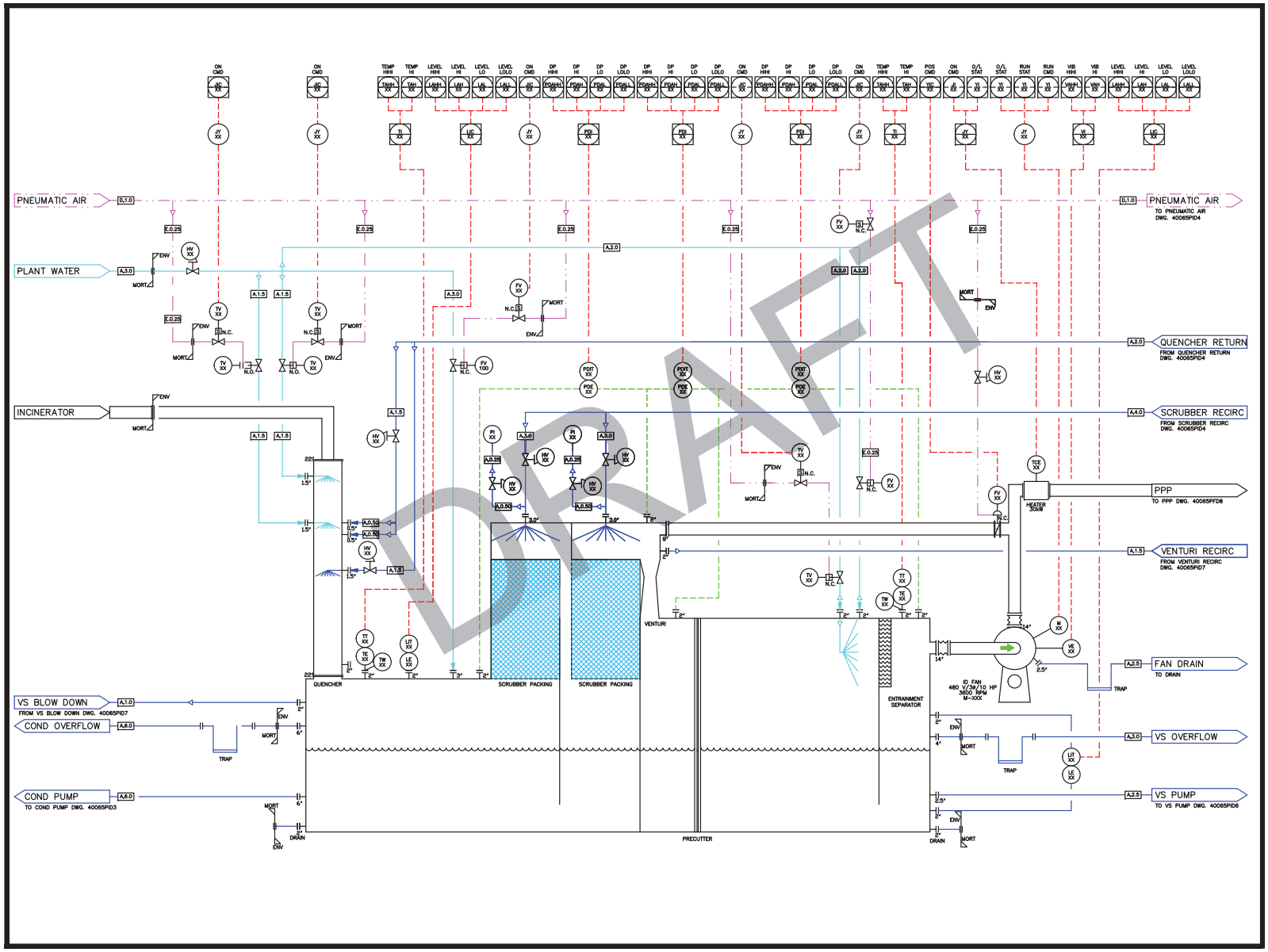
Drawing Title

PIPING AND INSTRUMENTATION DIAGRAM

Date	6/14/2023
Proj. Engr.	S. GRAF
Drawn By	J. BERRY
Checked By	A. OLDS
Scale	NTS
Rev	A
File Name	40065PID1

Tolerances:
Fractional ±
Angular ±
Decimal .XXX± .XX ± .X ±

Sheet 1 OF 8



Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

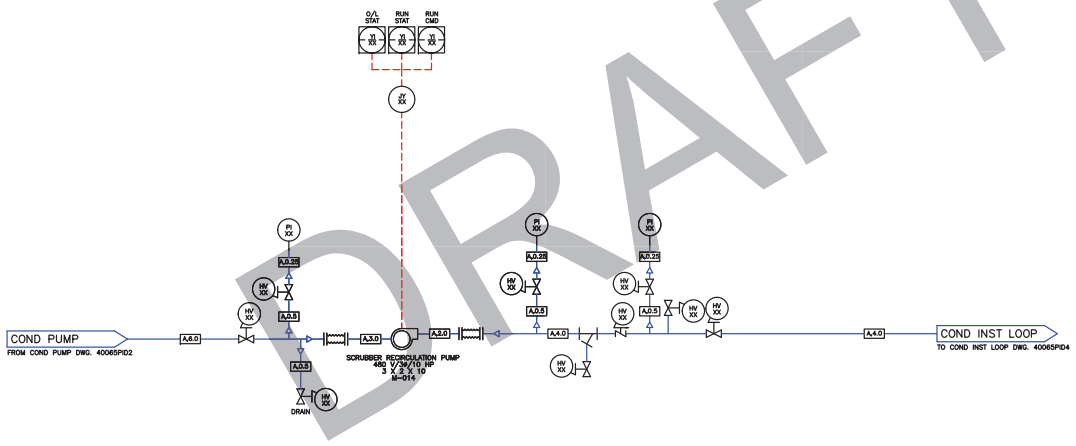
MORTENSON
FORT DETRICK, MD

GAS CLEANING SYSTEM

No.	Revision/Issue	Date
A	INITIAL RELEASE	6/14/23

Drawing Title
PIPING AND INSTRUMENTATION DIAGRAM

Date	6/14/2023
Proj. Engr.	S. GRAF
Drawn By	J. BERRY
Checked By	A. OLDS
Scale	NTS
Rev	A
File Name	40065PID2
Tolerances: Fractional ±	
Angular ±	
Decimal .XXX± .XX ± .X ±	
Sheet	2 OF 8



Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

MORTENSON
FORT DETRICK, MD

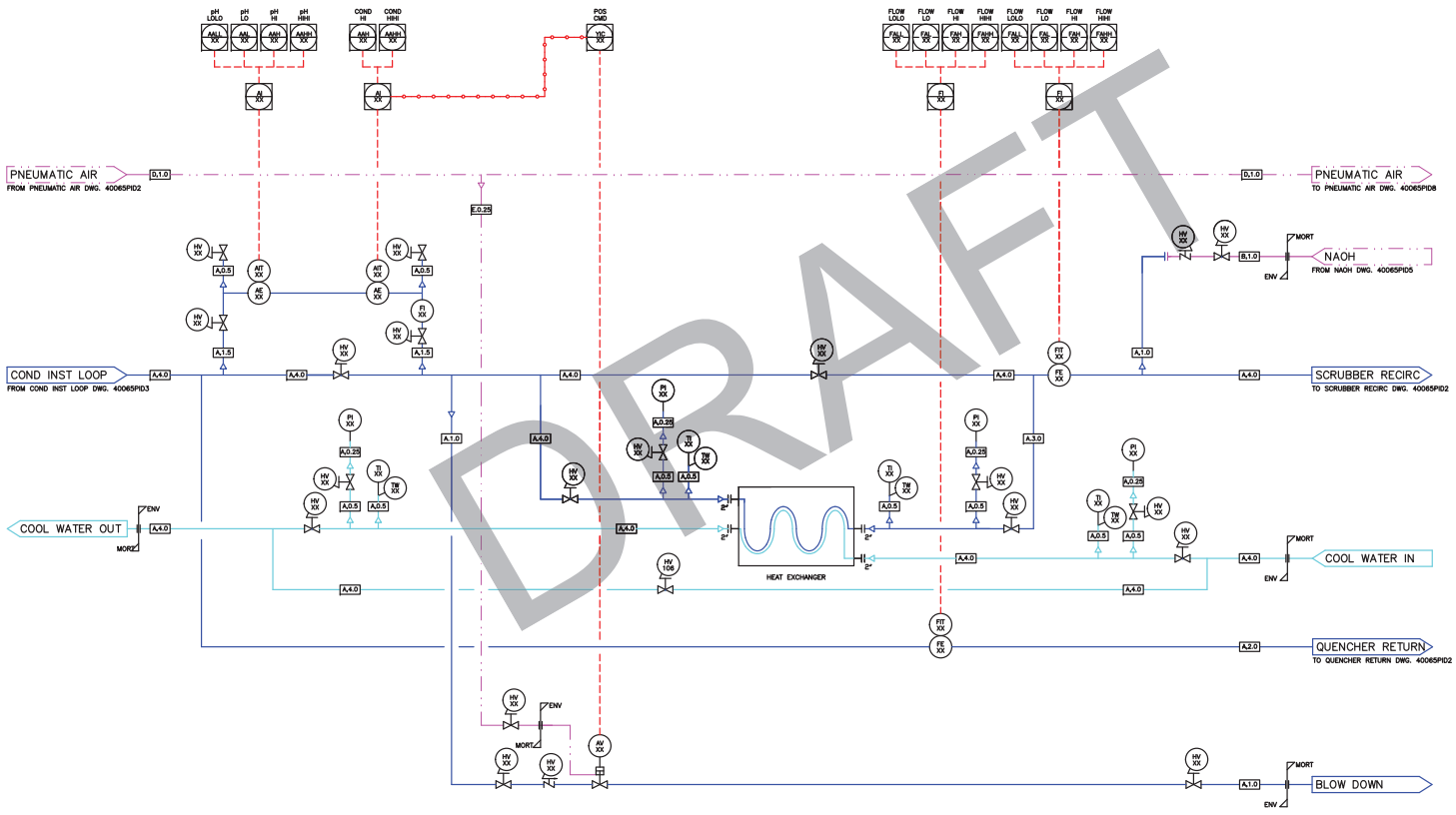
GAS CLEANING SYSTEM

No.	Revision/Issue	Date
A	INITIAL RELEASE	6/14/23

Drawing Title

PIPING AND INSTRUMENTATION DIAGRAM

Date	6/14/2023	Tolerances:
Proj. Engr.	S. GRAF	Fractional ±
Drawn By	J. BERRY	Angular ±
Checked By	A. OLDS	Decimal XXX± .XX ± .X ±
Scale	NTS	
Rev	A	
File Name	40065PID3	Sheet 3 OF 8



Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

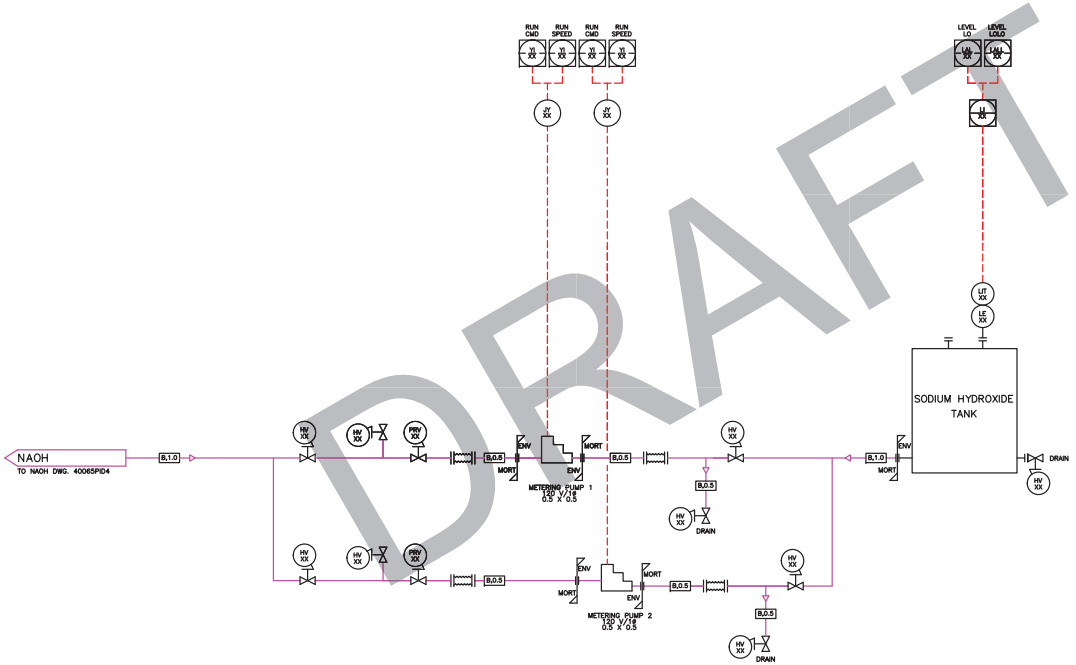
MORTENSON
FORT DETRICK, MD

GAS CLEANING
SYSTEM

No.	Revision/Issue	Date
A	INITIAL RELEASE	6/14/23

Drawing Title
PIPING AND INSTRUMENTATION DIAGRAM

Date	6/14/2023	Tolerances:
Proj. Engr.	S. GRAF	Fractional ±
Drawn By	J. BERRY	Angular ±
Checked By	A. OLDS	Decimal XXX± XX ± X ±
Scale	NTS	
Rev	A	
File Name	40065PID4	Sheet 4 OF 8



Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

MORTENSON
FORT DETRICK, MD

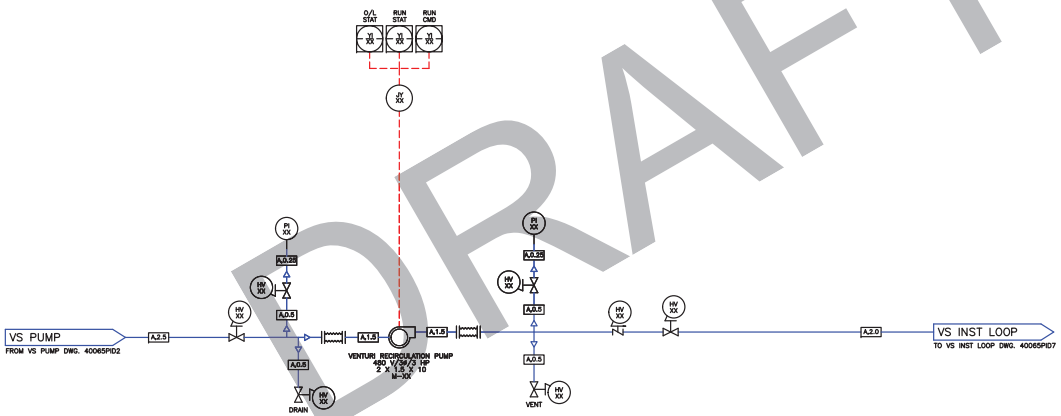
GAS CLEANING SYSTEM

No.	Revision/Issue	Date
A	INITIAL RELEASE	6/14/23

Drawing Title

PIPING AND INSTRUMENTATION DIAGRAM

Date	6/14/2023	Tolerances:
Proj. Engr.	S. GRAF	Fractional ±
Drawn By	J. BERRY	Angular ±
Checked By	A. OLDS	
Scale	NTS	Decimal XXX± XX ± X ±
Rev	A	
File Name	40065PID5	Sheet 5 OF 8



Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

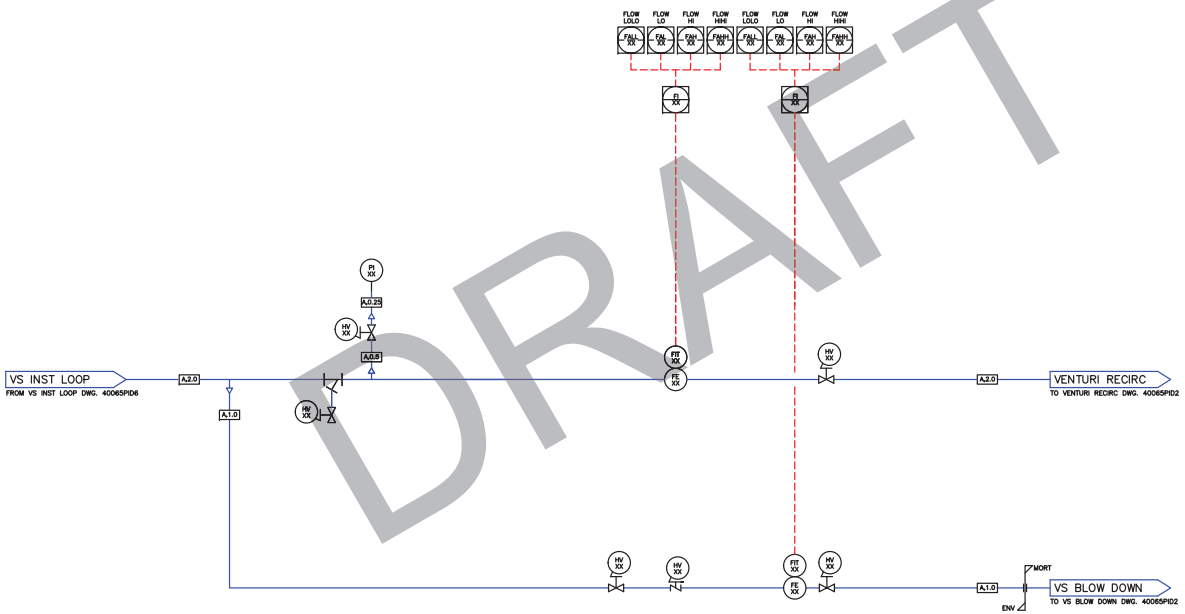
MORTENSON
FORT DETRICK, MD

GAS CLEANING SYSTEM

No.	Revision/Issue	Date
A	INITIAL RELEASE	6/14/23

Drawing Title
PIPING AND INSTRUMENTATION DIAGRAM

Date	6/14/2023	Tolerances:	
Proj. Engr.	S. GRAF	Fractional ±	
Drawn By	J. BERRY	Angular ±	
Checked By	A. OLDS	Decimal XXX± XX ± X ±	
Scale	NTS		
Rev	A		
File Name	40065PID6	Sheet	6 OF 8



Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

MORTENSON
FORT DETRICK, MD

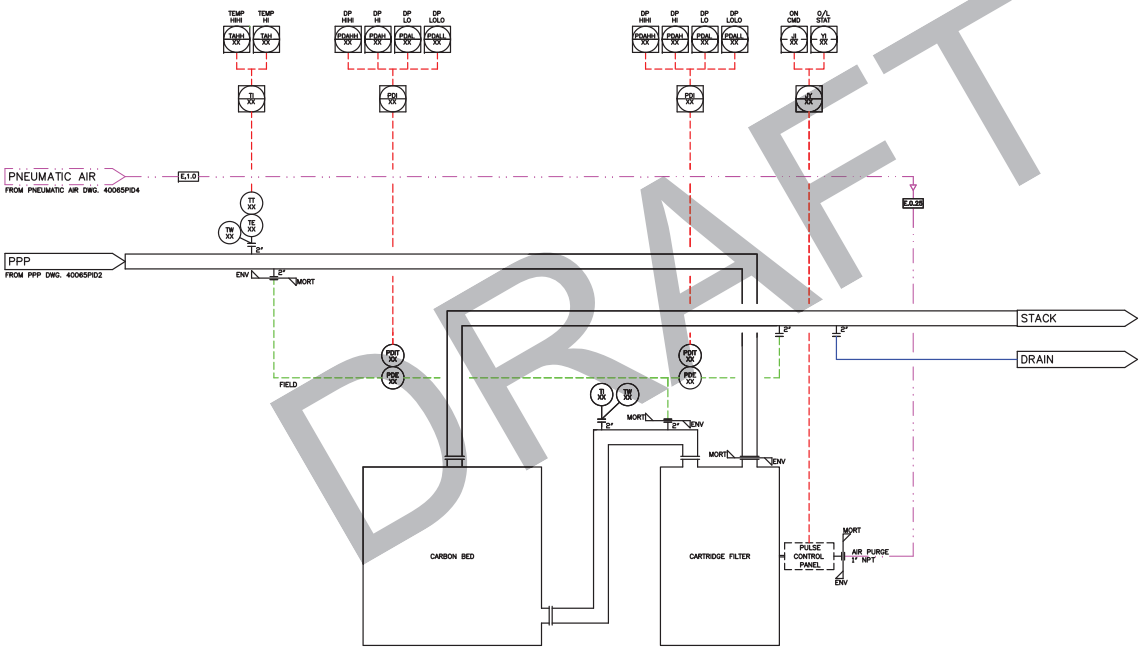
GAS CLEANING SYSTEM

No.	Revision/Issue	Date
A	INITIAL RELEASE	6/14/23

Drawing Title

PIPING AND INSTRUMENTATION DIAGRAM

Date	6/14/2023	Tolerances:
Proj. Engr.	S. GRAF	Fractional ±
Drawn By	S. GRAF	Angular ±
Checked By	A. OLDS	Decimal XXX± XX ± X ±
Scale	NTS	
Rev	A	
File Name	40065PID7	Sheet 7 OF 8



Envitech
2924 Emerson Street
San Diego, CA 92106
(619) 223-9925
(619) 223-9938 FAX

General Notes

MORTENSON
FORT DETRICK, MD

GAS CLEANING SYSTEM

No.	Revision/Issue	Date
A	INITIAL RELEASE	6/14/23

Drawing Title

PIPING AND INSTRUMENTATION DIAGRAM

Date	6/14/2023	Tolerances:
Proj. Engr.	S. GRAF	Fractional ±
Drawn By	J. BERRY	Angular ±
Checked By	A. OLDS	
Scale	NTS	Decimal XXX± .XX ± .X ±
Rev	A	
File Name	40065PID8	Sheet 8 OF 8

Cat® G3512 WITH FAST RESPONSE
Gas Generator Sets

Image shown may not reflect actual configuration

Bore – mm (in)	170 (6.7)
Stroke – mm (in)	190 (7.5)
Displacement – L (in³)	52 (3173)
Compression Ratio	9.7
Aspiration	Turbocharged
Fuel System	Electronic Fuel Control Valve
Governor Type	ADEM™ A4

Standby and Continuous 60 Hz ekW (kVA) w/Fan	Emissions Performance
1000 (1250) *	NOx Selectable (0.5 to 2.0 g/bhp-hr)
750 (938) *	NOx Selectable (0.5 to 2.0 g/bhp-hr)

**SCR system only available on Standby Applications (0.5 - 1.0g Nox) from G3512 NPN price list with limited options through Customer Solutions Quoter (CSQ) and performance data upon request.*

Standard Features

Cat® Natural Gas Engine
- Robust high speed block design provides prolonged life and lower owning and operating costs
- Designed for maximum performance on low pressure gaseous fuel supply
- Simple open chamber combustion system for reliability and fuel flexibility
- Twelve cylinder design to optimize transient performance

Generator Set Package
- Accepts 100% block load in one step
- Designed to meet NFPA 110, Type 10 starting and loading requirements
- Conforms to ISO 8528-5 G3 load acceptance and steady state criteria
- Reliability verified through torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

Generators
- Superior motor starting capability minimizes need for oversizing generator
- Designed to match performance and output characteristics of Cat engines

Cooling System
- Cooling systems available to operate in ambient temperatures up to 43°C (110°F)
- Package tested to ensure proper cooling of complete generator set

Cat Energy Control System (ECS)
- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements
- Graphical touchscreen display
- Easily upgradeable

Warranty
- 24 months/1000-hour warranty for standby ratings
- 12 months/unlimited hour warranty for continuous ratings
- Extended service coverage is available to provide extended coverage options

Worldwide Product Support
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

Financing
- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

Optional Equipment

Engine

Air Cleaner (Single Element)
- ❑ Installed
- ❑ Supplied loose

Muffler
- ❑ Industrialgrade (15 dB)
- ❑ Residential grade (18 dB)
- ❑ Criticalgrade(25 dB)

- ❑ Spark arresting
- ❑ Exhaust SCR System *

Starting
- ❑ Standard batteries
- ❑ Standard electric starter(s)
- ❑ Air starter(s)
- ❑ Jacket water heater

Generators

Output voltage
- ❑ 208V ❑ 2400V
- ❑ 220V ❑ 4160V
- ❑ 240V ❑ 12470V
- ❑ 380V ❑ 13200V
- ❑ 440V ❑ 13800V
- ❑ 480V
- ❑ 600V

Temperature Rise (over 40°C ambient)
- ❑ 150°C
- ❑ 125°C/130°C
- ❑ 105°C
- ❑ 80°C

Winding type
- ❑ Random wound
- ❑ Form wound

Excitation
- ❑ Permanent magnet (PM)

Attachments
- ❑ Anti-condensation heater
- ❑ Stator and bearing temperature monitoring and protection

Power Termination

Type
- ❑ Bus bar
- ❑ Circuit breaker
- ❑ 400A ❑ 800A
- ❑ 1200A ❑ 1600A
- ❑ 2000A ❑ 2500A
- ❑ 3200A ❑ 4000A

- ❑ UL ❑ IEC
- ❑ 3-pole ❑ 4-pole
- ❑ Manually operated

- ❑ Electrically operated

Trip Unit
- ❑ LSI
- ❑ LSI-G
- ❑ LSIG-P

Enclosure

- ❑ Weather protective
- ❑ Sound attenuated

Attachments
- ❑ Cold weather bundle
- ❑ DC lighting package
- ❑ AC lighting package
- ❑ Motorized louvers

Fuel System Pressure

- ❑ Standard
- ❑ Low

Control System

Controller
- ❑ Cat ECS 100
- ❑ EMCP 4.4

Attachments
- ❑ Local annunciator module
- ❑ Remote annunciator module
- ❑ Load share module
- ❑ Remote monitoring software

Charging

- ❑ Battery charger – 20A
- ❑ Battery charger – 35A
- ❑ Battery charger – 50A

Vibration Isolators

- ❑ Rubber
- ❑ Spring
- ❑ Seismic rated

Cat Connect

Connectivity
- ❑ Ethernet
- ❑ Cellular

Extended Service Options

Terms
- ❑ 2 year
- ❑ 3 year
- ❑ 5 year
- ❑ 10 year

Coverage
- ❑ Silver
- ❑ Gold
- ❑ Platinum
- ❑ Platinum Plus

Ancillary Equipment

- ❑ Automatic transfer switch (ATS)
- ❑ Paralleling switchgear
- ❑ Paralleling controls

Certifications

- ❑ ULC 2200 Listed
- ❑ OSHPD pre-approval

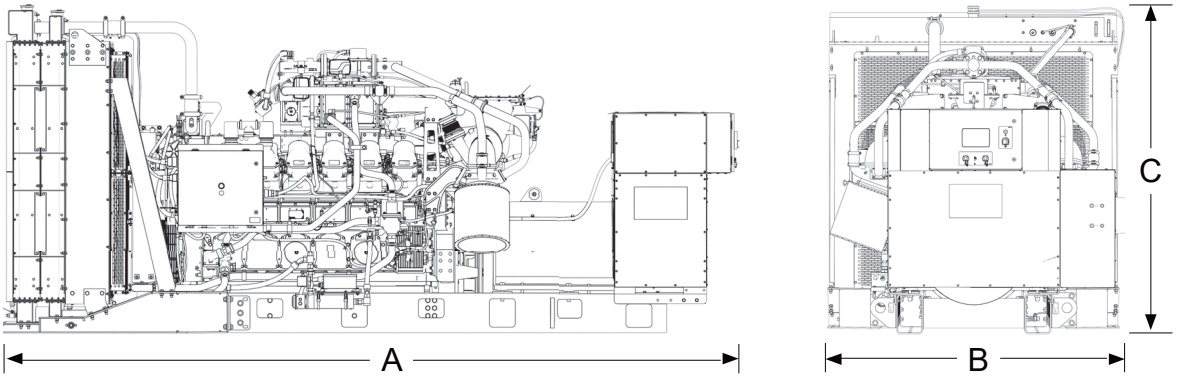
Note: *Some options may not be available on all models. Certifi cations may not be available with all model confi gurations. Consult factory for availability.*

**SCR system only available on Standby Applications (0.5 - 1.0g Nox) from G3512 NPN price list with limited options through Customer Solutions Quoter (CSQ) and performance data upon request.*

Package Performance

Performance	Standby & Continuous			
Frequency	60 Hz			
Genset power rating @ 0.8 power factor – ekW (kVA)	750 (938)		1000 (1250)	
Emissions	2 g/bhp-hr NOx			
Performance number	EM2091-01		EM1622-02	
Fuel Consumption				
100% load with fan – MJ/ekW-hr (Btu/ekW-hr)	10.57	(10025)	10.05	(9526)
75% load with fan – MJ/ekW-hr (Btu/ekW-hr)	11.39	(10799)	10.52	(9971)
50% load with fan – MJ/ekW-hr (Btu/ekW-hr)	12.96	(12287)	11.57	(10970)
Cooling System				
Radiator air flow restriction – kPa (in. water)	0.12	(0.5)	0.12	(0.5)
Radiator air flow – m^3/min (cfm)	1830	(64625)	1830	(64625)
Radiator ambient capability @ 304 m (1000 ft) – °C (°F)	45	(113)	45	(113)
Auxiliary circuit temperature (maximum inlet) – °C (°F)	54	(130)	54	(130)
Jacket water temperature (maximum outlet) – °C (°F)	99	(210)	99	(210)
Inlet Air				
Combustion air inlet flow rate – Nm^3/bkW-hr (ft3/min)	4.38	(2339)	4.18	(2941)
Altitude Capability				
At 25°C (77°F) ambient, above sea level – m (ft)	2910	(9547)	2025	(6644)
Exhaust System				
Exhaust temperature – engine outlet – °C (°F)	513	(956)	508	(947)
Exhaust Gas Flow – Nm^3/bkW-hr (ft^3/min)	4.67	(6657)	4.45	(8320)
Exhaust Gas Mass Flow – kg/bkW-hr (lb/hr)	5.87	(10757)	5.60	(13527)
Heat Rejection				
Heat rejection to jacket water circuit (JW+AC1+OC) – kW (Btu/min)	486	(27927)	600	(34126)
Heat rejection to jacket water – kW (Btu/min)	365	(27668)	422	(24010)
Heat rejection to exhaust (LHV to 120°C/248°F) – kW (Btu/min)	602	(34230)	748	(42513)
Heat rejection to auxiliary circuit temperature – kW (Btu/min)	65	(3671)	93	(5272)
Heat rejection to atmosphere from engine and generator – kW (Btu/min)	126	(7185)	151	(8605)

Weights and Dimensions



Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
6011(236)	2809 (110)	2671 (105)	12,500 (27,500)

Note: *For reference only. Do not use for installation design. Contact your local Cat dealer for precise weights and dimensions.*

Ratings Definitions

Standby
Output available with varying load for the duration of an emergency outage. Average power output is 100% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Continuous
Output available with non-varying load for unlimited time. Average power output is 70-100% of the continuous power rating. Typical peak demand is 100% of continuous rating for 100% of the operating hours.

Applicable Codes and Standards
AS 1359, ULC 2200 3rd edition, UL 489, UL 869A, IEC 60034-1, ISO 3046, ISO 8528, NEMA MG1-22, NEMA MG1-33, 2014/35/EU, 2006/42/EC, 2014/30/EU and facilitates compliance to NFPA 37, NFPA 70, NFPA 99, NFPA 110.

Note: Codes may not be available in all model configurations. Please consult your local Cat dealer for availability.

Fuel Rates

1. For transient response, ambient, and altitude capabilities consult your local Cat dealer.
2. Fuel pressure range specified is to the engine fuel control valve. Additional fuel train components may be required and should be considered in pressure and flow calculations.
3. For a complete reference of definitions and conditions see the following datasheets
   a. 750ekw Standby
      EM2091 w/fan - 2 g/bhp-hr NOx
      EM2093 w/fan - 1 g/bhp-hr NOx *
      EM2095 w/fan - 0.5 g/bhp-hr NOx *
      EM2092 w/o fan - 2 g/bhp-hr NOx
      EM2094 w/o fan - 1 g/bhp-hr NOx
      EM2096 w/o fan - 0.5 g/bhp-hr NOx

   b. 1000ekw Standby
      EM1622 w/fan - 2 g/bhp-hr NOx
      EM2089 w/fan - 1 g/bhp-hr NOx *
      EM2087 w/fan - 0.5 g/bhp-hr NOx*
      EM1623 w/o fan - 2 g/bhp-hr NOx
      EM2090 w/o fan - 1 g/bhp-hr NOx
      EM2088 w/o fan - 0.5 g/bhp-hr NOx

**SCR system only available on Standby Applications (0.5 - 1.0g NOx) from G3512 NPN pricelist with limited options through CSQ and performance data via SRR.*

APPENDIX F. WASTE CHARACTERIZATION SURVEY

Fort Detrick Medical and Infectious Waste Characterization Survey

Purpose

The purpose of this report is to assess the composition of medical and infectious waste, herein referred to as special medical waste (SMW), generated at Fort Detrick in an effort to identify items that would contribute to air contaminant emission releases resulting from the proposed operation of Fort Detrick hospital, medical, infectious waste incinerator (HMIWI) units. As part of the information gathering phase, a SMW survey was conducted 10-12 Dec 19 to determine the types, volumes, and material composition of medical and infectious wastes that can be expected to be generated by various tenant activities on Fort Detrick. This information will be used to assist in the proper sizing and design for two new proposed HMIWIs at Fort Detrick. Currently, SMW is transported off-site for off-site incineration.

Background

This survey is a follow-up to a survey that was conducted by the U.S. Army Public Health Center in August/September 2014. Historically, Fort Detrick had operated two HMIWI under Clean Air Act Title V Part 70 Operating Permit No.24-021-00131 to treat medical and infectious waste generated by Mission Partners facilities in the diagnosis, treatment, or immunization of human beings or animals, in research, and/or in the production or testing of biologicals. The two HMIWI units, installed in June 1995, are identified as emissions units 85 and 86 in the Title V Operating Permit. These units are each rated at 1,000 lbs/hr, with a capacity of 24,000 lbs/day, and are classified as large capacity (>500 lbs/hr) incinerators for the purpose of 40 CFR 62. The HMIWI were shut down in April 2018 by Fort Detrick as the result of an Environmental Protection Agency Region III inspection which identified areas of noncompliance due to ongoing operational and maintenance issues.

Survey Methodology

At the request of Fort Detrick environmental staff, AEC conducted a SMW Characterization Survey at Fort Detrick (10-12 Dec 19) to assist with obtaining types, composition, and monthly quantities of SMW generated by Fort Detrick and tenant activities. Prior to the SAV, USAEC staff provided a questionnaire to each tenant activity requesting data and information on respective SMW management and disposal methods. While on-site, USAEC staff toured facilities that generate SMW and obtained additional follow-up information. Due to personal safety, as well as mission and operational constraints, walk throughs of BSL-3 and 4 laboratory facilities were not conducted, but only viewed from outside hallways.

Special Medical Waste Generators

SMW is generated by various tenants on Fort Detrick. In general, SMW is a waste that is likely to have been contaminated by an organism capable of causing disease in healthy humans. For specific SMW categories, please refer to Maryland Department of Health (MDH) and the Maryland Environment (MDE) Code of Maryland Regulations (COMAR) 10.06.06.02 and COMAR 26.13.11.02, respectively. For SMW exclusions, please refer to COMAR 26.13.11.03. COMAR references are included in Appendix A.

Fort Detrick is a unique Army installation in that it serves as the location for the National Interagency Biodefense Campus (NIBC). The campus hosts members of the National Interagency Confederation for Biological Research (NICBR), which is a biotechnology and biodefense partnership and collaborative environment of U.S. Federal government agencies. In addition, Fort Detrick also has an Army Health Clinic and a Veterans Affairs Community-Based Outpatient Clinic (CBOC). Below is a brief summary of each tenant and its respective mission.

- U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), which is primarily located in Buildings 1425 and 1412, serves as the Department of Defense's (DoD) lead laboratory for medical biological defense research. USAMRIID's capabilities include, but are not limited to, rapid identification and characterization of biological agents; developing, testing, and evaluating medical countermeasures; and investigating disease outbreaks and threats to public health. USAMRIID is a subordinate laboratory of the U.S. Army Medical Research and Development Command.

- National Institutes of Health-National Cancer Institute (NIH-NCI) – The NIH-NCI Campus at Frederick, which is located within the Fort Detrick Installation boundary, occupies 68 acres of land and 109 buildings. NCI-Frederick conducts basic and applied biological research in cancer and AIDS mechanisms and treatment. NCI-Frederick houses one-third of the NCI's Center for Cancer Research, along with staff from several NCI divisions, including the Division of Cancer Epidemiology and Genetics and the Division of Cancer Treatment and Diagnosis.

- National Institutes of Health-National Institute of Allergy and Infectious Diseases (NIH-NIAID), located in Building 8200, conducts and supports basic and applied research to better understand, treat, and ultimately prevent infectious, immunologic, and allergic diseases. NIH-NIAID conducts and supports research on nearly 300 infectious agents and investigates the biological properties of these pathogens and the immune system's responses to them.

- Department of Homeland Security-National Biodefense Analysis and Countermeasures Center (DHS-NBACC), located in Building 8300, provides a continuously available national security biocontainment laboratory capability to address newly identified biological threats. DHS-NBACC is a GOCO operated by Battelle National Biodefense Institute, LLC. DHS-NBACC's mission is to provide the scientific basis for the characterization of biological threats and bioforensic analysis to support attribution of their planned or actual use. DHS-NBACC components include the National Bioforensic Analysis Center (NBFAC) and the National Biological Threat Characterization Center (NBTCC).

- Naval Medical Research Center-Biological Defense Research Directorate (NMRC-BDRD), located in Building 8400, is a leader in the field of detection, including hand-held assays, molecular diagnostics, and confirmatory analysis. NMRC-BDRD capabilities include, but are not limited to, utilizing microarray technologies to sequence genomic regions of biological warfare agents rapidly; providing rapid diagnostics and detection assays for field identification of biothreat agents; and providing specialty analysis of samples for the presence and identification of biological threats.

- U.S. Department of Agriculture-Agricultural Research Service (USDA-ARS) Foreign Disease-Weed Science Research Unit, located primarily in Building 1301, has two distinct missions united by a common relationship to plant pathology and the unit's unique BSL-3 plant pathogen containment laboratory, which is located in Building 374, and greenhouse facilities. The mission of the foreign disease program is to develop techniques for the rapid detection and identification of new and emerging crop pathogens, and to provide fundamental information on the biology and epidemiology of emerging pathogens for risk assessment and disease management strategies including the development of resistant plants. The mission of the weed biological control program is to collect plant pathogens from invasive weeds in their native habitat, and to evaluate, characterize and release the pathogens in the U.S. for biological control of introduced weeds, leading to improved, sustainable weed control practices in agricultural systems with reduced dependence on chemical herbicides.

- Barquist U.S. Army Health Clinic, located in Building 1434, provides outpatient care, physical therapy, and limited OB/GYN for enrolled beneficiaries, as well as laboratory, pharmacy, and radiology services for all TRICARE beneficiaries.

- Fort Detrick VA Community Based Outpatient Clinic, located in Building 1433, provides Veterans accessible, coordinated, comprehensive, patient-centered health care delivered by primary care providers.

- Walter Reed Army Institute of Research (WRAIR) – The Military HIV Research Program (MHRP), which will be located in Building 568, is slated to begin operations in the CY21 timeframe. The MHRP conducts HIV diagnostics, threat assessment and epidemiology, and vaccine and functional cure research. When full operational capability is reached, the MHRP will be the DoD centralized operation for HIV sampling and confirmatory analyses for all military personnel.

Special Medical Waste Regulatory Requirements

SMW is regulated by both the Maryland Department of Health (MDH) and the Maryland Environment (MDE). SMW is defined in COMAR 10.06.06 by MDH and in COMAR 26.13.11.02 by MDE. Per COMAR 26.13.11.03.C, a generator who generates or accumulates SMW in quantities equal to or greater than 50 pounds in a calendar month is subject to Standards Applicable to Generators and Transporters of SMW per COMAR 26.13.12 and 26.13.13, respectively. Per MDE regulations, a generator may not treat, store, dispose of, transport, or offer for transportation, SMW without having received a Maryland identification number. Table 1 below provides each respective tenant's SMW identification number.

Table 1

Special Medical Waste Generators	
Organization	Special Medical Waste Activity ID#
USAMRIID	SMW000009235
NIH-NCI	SMW000007781
NIH-NIAID	SMW000009780
DHS-NBACC	SMW000009653
NMRC-BDRD	SMW000009665
WRAIR	SMW000009229
USDA/ARS	SMW000009689
Barquist U.S. Army Health Clinic	SMW000009268
VA Community-Based Outpatient Clinic	NA - May not require one
U.S. Army Garrison - Fort Detrick	SMW000008461

Special Medical Waste Segregation, Collection, Storage and Handling Procedures

Fort Detrick SMW is primarily generated in research and development (R&D) laboratories. Said laboratories conduct R&D, which may involve biological select agents or toxins (BSAT) as defined COMAR 10.10.11.03.B(8). BSATs are a subset of biological agents and toxins that the Departments of Health and Human Services (HHS) and Agriculture (USDA) have determined to have the potential to pose a severe threat to public health and safety, to animal or plant health, or to animal or plant products. For a list of the BSATs, see Appendix B. Hence, due to the nature of the R&D, laboratories are categorized and compartmentalized based on respective biosafety levels. A biosafety level is a set of biocontainment precautions required to isolate dangerous biological agents in an enclosed laboratory facility. The levels of containment range from the lowest biosafety level 1 (BSL-1) to the highest at level 4 (BSL-4). For more information on BSL levels and associated facility design and PPE requirements, refer to COMAR 10.10.11.03.B(10)-(13) and Appendix C. SMW is segregated in respective labs and either placed in a red “biohazard” bag or in a sharps container. Trained laboratory staff, who wear the appropriate of level of personal protective equipment, transport the red bags from the labs to be autoclaved, if applicable. After being autoclaved, the red bags are collected and stored in respective SMW storage areas in contractor-provided totes.

Special Medical Waste Treatment – On-Site – Current Process

Most Fort Detrick tenants currently utilize steam sterilization, i.e. autoclaving, as the primary method for treating their respective SMW. An autoclave uses saturated steam under pressure to heat materials to a high enough temperature for a long enough period of time to inactivate the pathogen(s) of concern in the waste. Such time and steam pressure conditions ensures that the waste material is no longer infectious, does not pose a health risk, and is not considered SMW

or a hazardous material under federal law or MDE, MDH or Frederick County requirements (unless other types of regulated hazardous materials, such as chemicals, are present). Other SMW treatment methods used on Fort Detrick include a BSL-3/-4 rated tissue digester, which is located at DHS-NBACC, for body parts, tissues, organs, or other such materials (i.e., anatomical waste) from humans or animals, and an effluent decontamination system for liquid SMW.

In determining how to dispose of waste/residuals, Fort Detrick should consider whether the SMW has been properly treated, i.e. sterilized, to inactivate pathogens it may have or was known to contain. Some infectious agents (e.g., prions, spores, and pathogens within biofilms) are particularly stable in the environment and difficult to inactivate. "Sterilize" means to use a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores. Any item, device, or solution is considered to be sterile when it is completely free of all living microorganisms and viruses. **The definition is categorical and absolute (i.e., an item is either sterile or it is not).** A sterilization procedure is one that kills all detectable microorganisms, including high numbers of bacterial endospores. Results from sterilization procedures, however, can only be expressed in terms of the probability of viable organisms surviving after a sterilization procedure. A probability level of less than one in one million microbial survivors (10-6) after treatment is a commonly accepted measure of sterility. This is referred to as the “sterility assurance level.” Fort Detrick should verify with MDE, MDH, and Frederick County that the waste may be treated as a solid waste, and verify that the disposal facility, i.e. solid waste landfill, is permitted and willing to accept the waste. In addition, Fort Detrick should verity that respective SMW groups, e.g. Group 5 - Animal Waste, are treated and disposed of in accordance with U.S. Army Medical Command (MEDCOM) Regulation 40-35. Note: Sharps shall be treated and disposed of using one of the following methods: Encapsulation; Incineration; or Mechanical destruction after decontamination.

If confidence in the sterility assurance level of SMW treated at Fort Detrick is not absolute and/or disposition in a permitted facility is not a viable option, then incineration is the preferred method for disposal. Incineration is a thermal method of treatment using combustion to reduce waste to ash and flue gases. HMIWIs with dual chambers run at extremely high temperatures, well above the relatively low temperatures needed to kill (i.e., inactivate) most Category A organisms. Incineration, if available on-site and properly permitted, would be the best method for large or bulky items. Incineration that reduces waste to ash at any temperature inactivates almost all infectious substances (except prions, as noted previously), including those classified as Category A. **Combustion at or above 1,000°C/1,832°F is necessary to destroy prion infectivity.** Prions are misfolded proteins with the ability to transmit their misfolded shape onto normal variants of the same protein. They characterize several fatal and transmissible neurodegenerative diseases in humans and many other animals. SMW residuals (e.g., ash from incineration) should be evaluated to determine whether they may be hazardous waste (e.g., ash can concentrate certain constituents such as toxic metals, if present in the original waste, or in other wastes incinerated at the same time) and should be transported and disposed of in accordance with state and local regulations and standard protocols for waste disposal.

Special Medical Waste Treatment and Disposal – On-Site – Prior to 2018

Prior to the HMIWI shutdown in April 2018, Fort Detrick was incinerating SMW on-site and disposing of the non-SMW/non-hazardous waste ash in the Fort Detrick permitted solid waste landfill – Refuse Disposal Permit #2015-WIN-0341. Based on Solid Waste Tonnage Reports

submitted to the MDE, Fort Detrick generated 512 tons and 544 tons of SMW, which was incinerated, in CY2016 and CY2017, respectively.

Special Medical Waste Disposal – Off-Site

Currently, SMW that has already been treated to kill pathogens is picked up for disposal, i.e. off-site incineration, by either Curtis Bay Medical Waste Services or Stericycle, both located in Baltimore, MD. See Table 2 below for projected amount of SMW generated per year by tenant. See Table 3 below for estimated percentage of material composition by weight of SMW generated per tenant. See Table 4 below for categories of SMW generated by each tenant. See Table 5 below for SMW disposal contract information and disposal cost per pound by each tenant.

Table 2.

Projected Amount of Special Medical Waste Generated per Year			
Organization	**lbs/year**	**BSL Type(s)**	**Frequency of Pickup by Disposal Contractor**
USAMRIID	360,000	2,3, & 4	3 times/week
NIH-NCI	220,000	2	3 times/week
NIH-NIAID	77,800	2 & 4	2 times/week
DHS-NBACC	66,000	2,3, & 4	3 times/week
NMRC-BDRD	11,400	2	1 time/week
WRAIR	48,000	2	2 times/week
USDA/ARS	2,700	2 & 3	1 time/week
U.S. Army Health Clinic	1,600	2	Once every two weeks
VA Community-Based Outpatient Clinic	1,500	2	Once every two weeks
U.S. Army Garrison - Fort Detrick	NA	NA	NA

Total Projected Amount of SMW/Year	788,900

Table 3.

	Type of Material (% by Weight)			
SMW Generator	Plastic	Sharps	Biologicals	Paper
USAMRIID	15	25	59	1
NIH-NCI	60	15	15	10
NIH-NIAID	40	10	30	20
DHS-NBACC	35	15	30	20
NMRC-BDRD	45	20	30	5
WRAIR	40	25	30	5
USDA-ARS	85	10	2	3
Army Health Clinic	2	95	2	1
VA COBC	5	90	4	1

***NOTE:** From an aggregate standpoint, the total average material by percentage and weight is as follows: Plastic – 37%/289,000 lbs; Sharps – 33%/259,000 lbs; Biologicals – 23%/183,000 lbs; and Paper – 7%/57,900 lbs.

Table 4.

	Category of SMW Generated per Month (>= 50 lbs)						
SMW Generator	Lab Wastes	Blood or Body fluids	Sharps	Contaminated Animals	Surgical Specimens	Isolation Waste	Pharmaceutical Waste
USAMRIID	Y	Y	Y	Y	Y	N	N
NIH-NCI	Y	Y	Y	Y	Y	N	N
NIH-NIAID	Y	NA	Y	N	NA	Y	N
DHS-NBACC	Y	NA	Y	Y	NA	Y	N
NMRC-BDRD	Y	Y	Y	N	NA	NA	NA
WRAIR	Y	Y	Y	N	N	NA	N
USDA-ARS	Y	NA	Y	NA	NA	NA	NA
Army Health Clinic	N	N	Y	NA	N	NA	N
VA COBC	Y?	N	Y?	NA	N	NA	N

N = SMW generated per month is less than 50 lbs/month; NA = SMW category is not generated at the facility.

Table 5.

Special Medical Waste Generators			
Organization	**Contract Information**	**Disposal Contractor**	**Disposal Cost per lb.**
USAMRIID	W81XWH18D0032P00005	Curtis Bay MWS	$0.36
NIH-NCI	NIH Contract	Curtis Bay MWS	NA
NIH-NIAID	NIH Contract	Curtis Bay MWS	NA
DHS-NBACC	BNBI Sub to Clym Environmental Svcs	Curtis Bay MWS	NA
NMRC-BDRD	W81XWH18D0032P00005	Curtis Bay MWS	$0.36
WRAIR	NA	Stericycle	NA
USDA-ARS	Government Purchase Card	Curtis Bay MWS	$0.36
Army Health Clinic	MEDCOM CONUS-Wide Contract	Stericycle	NA
VA COBC	NA	Stericycle(?)	NA

Recommendations

- Perform a life-cycle cost analysis comparing the cost of the current way of doing business, i.e. contractor pickup/disposal, versus the cost to design and build two new HMIWIs operating either under a GOGO or GOCO 24/5 scenario.

- With the exception of sharps, estimate annual amount in pounds, if any, of on-site treated BSL-2/-3/-4 SMW that could be disposed of as regular municipal solid waste rather than undergoing subsequent off-site treatment, i.e. incineration, as a post-sterilization precautionary safeguarding measure.

- Update or develop a HMIWI waste management plan. Per 40 CFR 62.14430, all HMIWI owners or operators must have a waste management plan. As stated in 40 CFR 60.55c, the waste management plan shall identify both the feasibility and the approach to separate certain components of solid waste from the health care waste stream in order to reduce the amount of toxic emissions from incinerated waste. The American Hospital Association publication entitled “An Ounce of prevention: Waste Reduction Strategies for Health Care Facilities” (incorporated by reference, *see* §60.17) shall be considered in the development of the waste management plan.

References

Biosafety in Microbiological and Biomedical Laboratories. 5th Edition, rev Dec 2009 - HHS Publication No. (CDC) 21-1112.

COMAR 10 MARYLAND DEPARTMENT OF HEALTH Subtitle 06 DISEASES Chapter 06 *Communicable Disease Prevention — Handling, Treatment, and Disposal of Special Medical Waste.*

COMAR 26 DEPARTMENT OF THE ENVIRONMENT Subtitle 13 DISPOSAL OF CONTROLLED HAZARDOUS SUBSTANCES Chapter 11 *Special Medical Wastes*; Chapter 12 *Standards Applicable to Generators of Special Medical Waste*; and Chapter 13 *Standards Applicable to Transporters of Special Medical Waste.*

Managing Solid Waste with a Category A Infectious Substance. August 2019 – DOT, EPA, DOL, DOD, CDC, and ASPR.

MEDCOM Regulation 40-35 – *Management of Regulated Medical Waste.* 4 April 2017 – U.S. Army Medical Command

Select Agents and Toxins Biosafety/Biocontainment Plan Guidance. July 2018 – CDC and USDA-APHIS.

Technical Guide 177 - *A Commander's Guide to Regulated Waste Management.* 2009 - U.S. Army Center for Health Promotion and Preventive Medicine.

APPENDIX A

Title 10
Maryland Department of Health

Subtitle 06 DISEASES

Chapter 06 Communicable Disease Prevention — Handling, Treatment, and Disposal of Special Medical Waste

10.06.06.02 Definitions.

A. In this chapter, the following terms have the meanings indicated.

B. Terms Defined.

(1) "Anatomical material" means human or animal body parts, including tissues and organs.

(2) "Autoclaving" means a process by which an article is subjected to steam under pressure for documented periods of time, temperature, and pressure that render the article incapable of transmitting disease to humans.

(3) "Blood" means human blood, human blood components, and products made from human blood.

(4) Bloodborne Pathogens.

(a) "Bloodborne pathogens" means pathogenic microorganisms that:

(i) Are present in human blood; and

(ii) Can cause disease in humans.

(b) "Bloodborne pathogens" includes, but is not limited to:

(i) Human immunodeficiency virus;

(ii) Hepatitis B virus; and

(iii) Hepatitis C virus.

(5) "Chemical disinfection" means the application of a chemical agent to an article, so that the article is rendered incapable of transmitting disease to humans.

(6) "Contaminated" means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

(7) "Cremation" means the incineration of human or animal remains.

(8) "Decontamination" means the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on an article to render the article incapable of transmitting disease to humans.

(9) "Department" means the MARYLAND Department of Health.

(10) "Disinfection" means a method that inactivates:

(a) Vegetative bacteria, fungi, lipophilic/hydrophilic viruses, parasites, and mycobacteria at a 6 log reduction or greater; and

(b) Bacillus stearothermophilus spores and Bacillus subtilis spores at a 4 log reduction or greater.

(11) "Encapsulation" means a process by which:

(a) An article is sealed in a material that renders the article no longer recognizable or capable of transmitting disease to humans; and

(b) The sealed material:

(i) Is decontaminated or disinfected during the encapsulation process; and

(ii) Remains sealed under physical stress.

(12) "Incineration" means a process during which an article is burned:

(a) In an incinerator that meets the requirements of the Department of the Environment as set forth in COMAR 26.11.08;

(b) To carbonized or mineralized ash that is capable of disposal as solid waste; and

(c) So the article is rendered incapable of transmitting disease to humans.

(13) "Infectious agent" means an organism, including viral, rickettsial, bacterial, fungal, protozoal, or helminthic, that is capable of producing infection or infectious disease in humans.

(14) "Interment" means burial in a location, other than a landfill, that is approved for that purpose under applicable law.

(15) "Mechanical destruction" means a physical process that renders an article no longer recognizable as the original article.

(16) "Microbiological laboratory waste" means waste from a microbiological laboratory that:

(a) Contains an infectious agent; and

(b) Includes cultures and stocks of infectious agents and associated biologicals.

(17) "Occupational exposure" means skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials, that results from the performance of an employee's duties.

(18) "Other potentially infectious material" means:

(a) The following human body fluids:

(i) Amniotic fluid;

(ii) A body fluid that is visibly contaminated with blood;

(iii) A body fluid that cannot be readily identified;

(iv) Cerebrospinal fluid;

(v) Pericardial fluid;

(vi) Peritoneal fluid;

(vii) Pleural fluid;

(viii) Saliva only when dental procedures are performed;

(ix) Semen;

(x) Synovial fluid; and

(xi) Vaginal secretions;

(b) A tissue or organ from a living or dead human, not including intact skin, that has not been preserved by a chemical additive or preservative;

(c) The following human immunodeficiency virus, hepatitis B virus, or hepatitis C virus related items:

(i) HIV containing cell, tissue, or organ cultures;

(ii) HIV, Hepatitis B, or Hepatitis C containing media or other solutions; and

(iii) Blood, organs, or other tissues; and

(d) Microbiological laboratory waste.

(19) "Person" means an individual, receiver, trustee, guardian, personal representative, fiduciary, or representative of any kind and any partnership, firm, association, corporation, or other entity.

(20) "Sanitary sewer"

means:

(a) A liquid waste piping network leading to a sewerage system permitted under Environment Article, §9- 204, Annotated Code of Maryland; or

(b) An on-site sewerage system permitted under Environment Article, §9-204, Annotated Code of Maryland.

(21) "Sharps" means an object contaminated by blood or other potentially infectious material that can cut or penetrate the skin, including but not limited to:

(a) A broken capillary tube;

(b) Broken glass;

(c) An exposed end of dental wire;

(d) A needle;

(e) A surgical instrument; and

(f) A syringe with an attached sharp.

(22) "Special medical waste" means:

(a) Liquid or semiliquid blood or another potentially infectious material;

(b) A contaminated article that releases liquid or semiliquid blood or another potentially infectious material if compressed;

(c) An article that contains dried blood or another potentially infectious material and is capable of releasing the blood or material during handling;

(d) Pathological and microbiological waste containing blood or another potentially infectious material;

(e) Contaminated sharps; and

(f) Anatomical material.

Title 26
DEPARTMENT OF THE ENVIRONMENT

Subtitle 13 DISPOSAL OF CONTROLLED HAZARDOUS SUBSTANCES
Chapter 11 Special Medical Wastes

26.13.11.02. Definitions.

A. The following terms have the meanings indicated.

B. Terms Defined.

(1) "Anatomical material" means human or animal body parts, including tissues and organs.

(2) "Blood" means human blood, human blood components, and products made from human blood.

(3) "Blood-soiled article" means any article that contains blood in any form as a result of

contact with blood. (3-1) "Contaminated item" means an item for which it is known or

reasonably anticipated that blood or other potentially infectious material is present on the item.

(4) "Contaminated material" means:

(a) Microbiological laboratory waste;

(b) The feces of an individual diagnosed as having a disease that may be transmitted to another human being through the feces;

(c) An article soiled with the feces of an individual diagnosed as having a disease that may be transmitted to another human being through the feces; or

(d) An article that has come into contact with a known human pathogen.

(5) "Generator" means any person whose act or process produces a special medical waste.

(5-1) "Infectious substance" means a material known or reasonably expected to contain a pathogen.

(6) "Microbiological laboratory waste" means waste from a microbiological laboratory that contains a human pathogen and includes cultures and stocks of pathogens and associated biologicals.

(6-1) "Other potentially infectious material" means:

(a) The following human body fluids:

(i) Amniotic fluid;

(ii) A body fluid that is visibly contaminated with blood;

(iii) A body fluid that cannot be readily identified;

(iv) Cerebrospinal fluid;

(v) Pericardial fluid;

(vi) Peritoneal fluid;

(vii) Pleural fluid;

(viii) Saliva generated in the performance of dental procedures;

(ix) Semen;

(x) Synovial fluid; and

(xi) Vaginal secretions;

(b) A tissue or organ from a living or dead human, not including intact skin, that has not been preserved by a chemical additive or preservative;

(c) The following items relating to human immunodeficiency virus (HIV), hepatitis B virus, or hepatitis C virus:

(i) HIV-containing cell, tissue, or organ cultures;

(ii) Media or other solutions containing HIV, Hepatitis B, or Hepatitis C; and

(iii) Blood, organs, or other tissues, including blood, organs or other tissues from experimental animals infected with HIV or hepatitis B virus; and

(d) Microbiological laboratory waste.

(6-2) "Pathogen" means a microorganism, including bacteria, viruses, rickettsiae, parasites, and fungi, or other agent, such as a proteinaceous infectious particle, also known as a prion, that can cause disease in humans or animals.

(7) "Person" means an individual, trust, firm, joint stock company, federal agency, corporation (including a government corporation), partnership, association, state, municipality, political subdivision of a state, any interstate body, and any combination of persons using a common disposal collection device.

(8) Sharp.

(a) "Sharp" means an object that:

(i) Is capable of cutting or penetrating skin or a packaging material, and

(ii) Either is known, suspected, or reasonably anticipated to be contaminated with a human pathogen, blood, or other potentially infectious material or may become contaminated with a human pathogen through handling or during transportation;

(b) "Sharp" includes needles, syringes with an attached needle or other sharp, scalpels, surgical instruments, broken glass, broken capillary tubes, broken rigid plastic, and exposed ends of dental wires.

(c) "Sharp" includes an item that is capable of cutting or penetrating skin or a packaging material if the item is not in its original, intact packaging unless the item:

(i) Is not commonly associated with blood, other potentially infectious material or infectious substances, such as, for example, broken glass from beverage containers or disposable blades used by a contractor in building maintenance; and

(ii) Has not been exposed to or commingled with special medical waste; and

(d) "Sharp" does not include an item in its original, intact packaging.

(9) "Shipping paper" means a shipping order, bill of lading, manifest, or other shipping document serving a similar purpose and containing the information required by 49 CFR §§172.202, 172.203, and 172.204, which are incorporated by reference in COMAR 26.13.12.01B(5) and 26.13.13.01G.

(10) "Solid waste" means any waste defined by COMAR 26.13.02.02.

(11) "Special medical waste" means a solid waste that is not excluded under Regulation .03 of this chapter and is composed of:

(a) Anatomical material;

(b) Blood that is in a liquid or semiliquid state;

(c) Blood-soiled articles that:

(i) Would release blood in a liquid or semiliquid state if compressed; or

(ii) Are caked with dried blood and are capable of releasing the blood during handling of the items;

(d) A contaminated item that:

(i) Would release other potentially infectious material in a liquid or semiliquid state if compressed; or

(ii) Is caked with other potentially infectious material and is capable of releasing the other potentially infectious material during handling of the item;

(e) Contaminated material;

(f) An infectious substance that can cause disease in humans;

(g) Microbiological laboratory waste;

(h) Other potentially infectious material that is in a liquid or semiliquid state;

(i) Pathological and microbiological waste that contains blood or other potentially infectious material; or

(j) Sharps.

(12) "Sterilize" means to use a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

26.13.11.03. Exclusions.

A. The following solid wastes are not special medical wastes:

(1) Household waste, including household waste that has been collected, transported, stored, treated, disposed of, recovered, or reused. "Household waste" means any waste material (including garbage, trash, and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels, and motels).

(2) Wastes generated in the handling of an animal unless the generator knows or has reason to know that the animal has a disease that is capable of being transmitted to humans.

(3) The ash or by-product from an incinerator authorized by a state to burn special medical waste.

(4) Wastes not generated in the ordinary course of business.

B. Except as otherwise provided in this regulation, if a person generates, in a calendar month, a total of less than 50 pounds of special medical wastes, those wastes are not subject to regulation under COMAR 26.13.12 and 26.13.13, except as provided in C and D of this regulation.

C. If a person whose waste has been excluded from regulation under §B of this regulation accumulates special medical wastes in quantities greater than 50 pounds, those accumulated wastes are subject to regulation under COMAR 26.13.12 and 26.13.13.

D. In order for special medical waste to be excluded from regulation under §B of this regulation, the generator shall comply with COMAR 26.13.12.02 and .05A and C.

E. If a person sterilizes special medical wastes, those wastes are excluded from the requirements of COMAR
26.13.12 and 26.13.13, except for COMAR 26.13.12.02 and .05A and C.

APPENDIX B

The following biological agents and toxins have been determined to have the potential to pose a severe threat to both human and animal health, to plant health, or to animal and plant products. An attenuated strain of a select agent or an inactive form of a select toxin may be excluded from the requirements of the Select Agent Regulations..

HHS and USDA Select Agents and Toxins
7 CFR Part 331, 9 CFR Part 121, and 42 CFR Part 73

HHS SELECT AGENTS AND TOXINS

1. Abrin[5]
2. *Bacillus cereus* Biovar *anthracis**
3. Botulinum neurotoxins*,[5]
4. Botulinum neurotoxin producing species of *Clostridium**
5. Conotoxins (Short, paralytic alpha conotoxins containing the following amino acid sequence $X_1CCX_2PACGX_3X_4X_5X_6CX_7$)[1,5]
6. *Coxiella burnetii*
7. Crimean-Congo haemorrhagic fever virus
8. Diacetoxyscirpenol[5]
9. Eastern Equine Encephalitis virus[3,4]
10. Ebola virus*
11. *Francisella tularensis**
12. Lassa fever virus
13. Lujo virus
14. Marburg virus*
15. Monkeypox virus[3]
16. Reconstructed replication competent forms of the 1918 pandemic influenza virus containing any portion of the coding regions of all eight gene segments (Reconstructed 1918 Influenza virus)
17. Ricin[5]
18. *Rickettsia prowazekii*
19. SARS-associated coronavirus (SARS-CoV)[4]
20. Saxitoxin[5]

- **South American Haemorrhagic Fever viruses:**

21. Chapare
22. Guanarito
23. Junin
24. Machupo
25. Sabia

26. Staphylococcal enterotoxins (subtypes A,B,C,D,E)[5]
27. T-2 toxin[5]
28. Tetrodotoxin[5]

- **Tick-borne encephalitis complex (flavi) viruses:**

29. Far Eastern subtype[4]
30. Siberian subtype[4]

31. Kyasanur Forest disease virus[4]
32. Omsk hemorrhagic fever virus[4]
33. Variola major virus (Smallpox virus)*
34. Variola minor virus (Alastrim)*
35. *Yersinia pestis**

OVERLAP SELECT AGENTS AND TOXINS

36. *Bacillus anthracis**
37. *Bacillus anthracis* Pasteur strain
38. *Brucella abortus*
39. *Brucella melitensis*
40. *Brucella suis*
41. *Burkholderia mallei**
42. *Burkholderia pseudomallei**
43. Hendra virus
44. Nipah virus
45. Rift Valley fever virus
46. Venezuelan equine encephalitis virus[3,4]

USDA SELECT AGENTS AND TOXINS

47. African horse sickness virus
48. African swine fever virus
49. Avian influenza virus[3]
50. Classical swine fever virus[4]
51. Foot-and-mouth disease virus[*,4]
52. Goat pox virus
53. Lumpy skin disease virus
54. *Mycoplasma capricolum*[3]
55. *Mycoplasma mycoides*[3]
56. Newcastle disease virus[2,3]
57. Peste des petits ruminants virus
58. Rinderpest virus*
59. Sheep pox virus
60. Swine vesicular disease virus[4]

USDA PLANT PROTECTION AND QUARANTINE (PPQ) SELECT AGENTS AND TOXINS

61. *Coniothyrium glycines* (formerly *Phoma glycinicola* and *Pyrenochaeta glycines*)
62. *Peronosclerospora philippinensis (Peronosclerospora sacchari)*
63. *Ralstonia solanacearum*
64. *Rathayibacter toxicus*
65. *Sclerophthora rayssiae*
66. *Synchytrium endobioticum*
67. *Xanthomonas oryzae*

*Denotes Tier 1 Agent

[1] C = Cysteine residues are all present as disulfides, with the 1st and 3rd Cysteine, and the 2nd and 4th Cysteine forming specific disulfide bridges; The consensus sequence includes known toxins α-MI and α-GI (shown above) as well as α-GIA, Ac1.1a, α-CnIA, α-CnIB; X1 = any amino acid(s) or Des-X; X2 = Asparagine or Histidine; P = Proline; A = Alanine; G = Glycine; X3 = Arginine or Lysine; X4 = Asparagine, Histidine, Lysine, Arginine, Tyrosine, Phenylalanine or Tryptophan; X5 = Tyrosine, Phenylalanine, or Tryptophan; X6 = Serine, Threonine, Glutamate, Aspartate, Glutamine, or Asparagine; X7 = Any amino acid(s) or Des X and; "Des X" = "an amino acid does not have to be present at this position." For example if a peptide sequence were XCCHPA then the related peptide CCHPA would be designated as Des-X.

[2] A virulent Newcastle disease virus (avian paramyxovirus serotype 1) has an intracerebral pathogenicity index in day-old chicks (Gallus gallus) of 0.7 or greater or has an amino acid sequence at the fusion (F) protein cleavage site that is consistent with virulent strains of Newcastle disease virus. A failure to detect a cleavage site that is consistent with virulent strains does not confirm the absence of a virulent virus.

[3] Select agents that meet any of the following criteria are excluded from the requirements of this part: Any low pathogenic strains of avian influenza virus, South American genotype of eastern equine encephalitis virus, west African clade of Monkeypox viruses, any strain of Newcastle disease virus which does not meet the criteria for virulent Newcastle disease virus, all subspecies Mycoplasma capricolum except subspecies capripneumoniae (contagious caprine pleuropneumonia), all subspecies Mycoplasma mycoides except subspecies mycoides small colony (Mmm SC) (contagious bovine pleuropneumonia), and any subtypes of Venezuelan equine encephalitis virus except for Subtypes IAB or IC, provided that the individual or entity can verify that the agent is within the exclusion category.

[4] For determining the regulatory status of nucleic acids that are capable of producing infectious forms of select agent viruses, please reference guidance at https://www.selectagents.gov/na-guidance.html.

[5] For determining the regulatory status of Recombinant and/or Synthetic nucleic acids that encode for the toxic form(s) of any select toxins if the nucleic acids (i) can be expressed in vivo or in vitro, or (ii) are in a vector or recombinant host genome and can be expressed in vivo or in vitro; please reference guidance at https://www.selectagents.gov/na-guidance.html.

APPENDIX C

Biosafety Levels

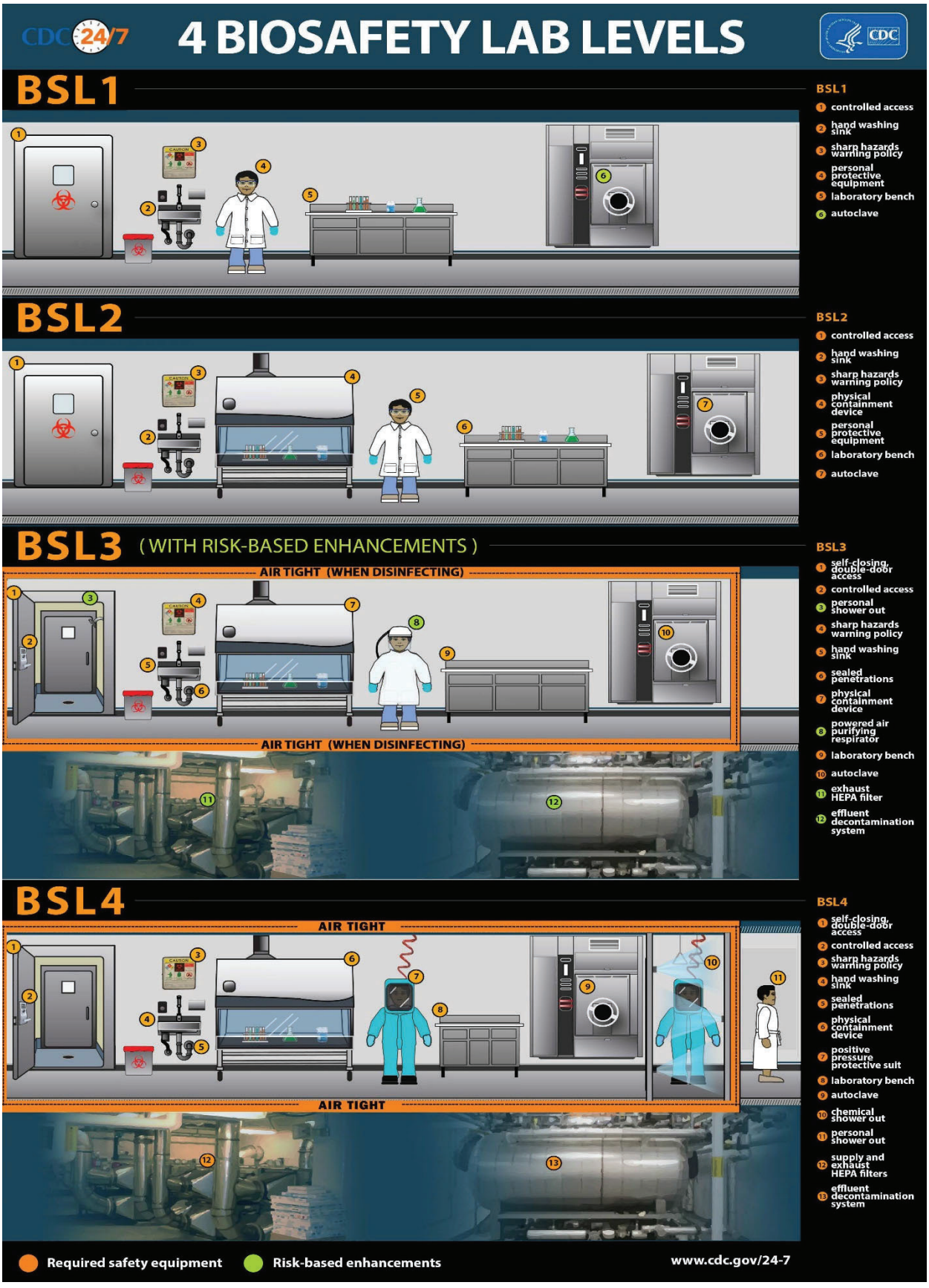
BSL-1, the microbes there are not known to consistently cause disease in healthy adults and present minimal potential hazard to laboratorians and the environment. An example of a microbe that is typically worked with at a BSL-1 is a nonpathogenic strain of *E. coli*.

BSL-2, the microbes there pose moderate hazards to laboratorians and the environment. The microbes are typically indigenous and associated with diseases of varying severity. An example of a microbe that is typically worked with at a BSL-2 laboratory is *Staphylococcus aureus*.

BSL-3, the microbes there can be either indigenous or exotic, and they can cause serious or potentially lethal disease through respiratory transmission. Respiratory transmission is the inhalation route of exposure. One example of a microbe that is typically worked with in a BSL-3 laboratory is *Mycobacterium tuberculosis*, the bacteria that causes tuberculosis.

BSL-4 is the highest level of biological safety. The microbes in a BSL-4 lab are dangerous and exotic, posing a high risk of aerosol-transmitted infections. Infections caused by these microbes are frequently fatal and without treatment or vaccines. Two examples of microbes worked with in a BSL-4 laboratory include Ebola and Marburg viruses

https://www.cdc.gov/training/QuickLearns/biosafety/


CDC 24/7
4 BIOSAFETY LAB LEVELS
CDC
BSL1
BSL1
1 controlled access
2 hand washing sink
3 sharp hazards warning policy
4 personal protective equipment
5 laboratory bench
6 autoclave
BSL2
BSL2
1 controlled access
2 hand washing sink
3 sharp hazards warning policy
4 physical containment device
5 personal protective equipment
6 laboratory bench
7 autoclave
BSL3 (WITH RISK-BASED ENHANCEMENTS)
AIR TIGHT (WHEN DISINFECTING)
AIR TIGHT (WHEN DISINFECTING)
BSL3
1 self-closing double-door access
2 controlled access
3 personal shower out
4 sharp hazards warning policy
5 hand washing sink
6 sealed penetrations
7 physical containment device
8 powered air purifying respirator
9 laboratory bench
10 autoclave
11 exhaust HEPA filter
12 effluent decontamination system
BSL4
AIR TIGHT
AIR TIGHT
BSL4
1 self-closing double-door access
2 controlled access
3 sharp hazards warning policy
4 hand washing sink
5 sealed penetrations
6 physical containment device
7 positive pressure protective suit
8 laboratory bench
9 autoclave
10 chemical shower out
11 personal shower out
12 supply and exhaust HEPA filters
13 effluent decontamination system
Required safety equipment
Risk-based enhancements
www.cdc.gov/24-7

Peter Morano

From: Peter Morano <Peter.Morano@mortenson.com>
Sent: Tuesday, October 22, 2024 4:55 PM
To: Susan Barnes; NSaniti
Subject: FW: Zoning and Ft. Detrick

Are you both able to take this feedback from the city of Frederick and submit this with the air permit for approval?

Thanks!

Peter Morano, Design Phase Manager I
Federal Contracting Group - FCG
8484 Westpark Drive, Suite 150
McLean, VA, 22102

Mortenson | Let's Redefine Possible®
mobile 845.325.0887
peter.morano@mortenson.com
https://urldefense.com/v3/__http://www.mortenson.com/Federal__;!!PrI4aAen2FRcs3QywQ!FCfwKaN4X4PRJssZNeyxbzVS4_QgiqefukoYmVRn7idc0qpMjjnlrPO_pLKaCirE1T5tl2qH_xfqSho3t7MomZEQTWoJeDU$

-----Original Message-----
From: Gabrielle Collard <gcollard@cityoffrederickmd.gov>
Sent: Tuesday, October 22, 2024 3:14 PM
To: Grundy, Jo Ann CIV USARMY CENAB (USA) <Jo.Ann.Grundy@usace.army.mil>
Cc: Peter Morano <Peter.Morano@mortenson.com>; Schumann, Laura M CIV USARMY CENAB (USA) <Laura.M.Schumann@usace.army.mil>; c.eyler@cityoffrederickmd.gov
Subject: RE: Zoning and Ft. Detrick

Good afternoon Jo Ann,

Thank you for consulting with your attorney on the below information. I have shared with our City Attorney as well and we concur with the analysis below.

Thank you for your time,

Gabrielle

Gabrielle Collard, AICP
Deputy Director for Planning
The City of Frederick
140 W. Patrick Street
Frederick MD 21701

O: 301.600.1883
C: 301.673.4825

-----Original Message-----
From: Grundy, Jo Ann CIV USARMY CENAB (USA) <Jo.Ann.Grundy@usace.army.mil>
Sent: Tuesday, October 22, 2024 11:12 AM
To: Gabrielle Collard <gcollard@cityoffrederickmd.gov>
Cc: Peter Morano <Peter.Morano@mortenson.com>; Schumann, Laura M CIV USARMY CENAB (USA) <Laura.M.Schumann@usace.army.mil>; c.eyler@cityoffrederickmd.gov
Subject: RE: Zoning and Ft. Detrick

Good Morning Gabrielle,

Our attorney give us the following advice and kindly ask for the City of Frederick's concurrence as soon as possible:

Ft. Detrick is under the jurisdiction and control of the U.S. Army under the direction of the installation commander, and zoning issues are under the installation's control. As a general rule, military facilities are not subject to local land use regulations. The Constitution's Supremacy Clause provides immunity from state laws that directly regulate the Federal Government unless Congress has waived such immunity. See, e.g., United States v. Washington, 596 U.S. 832, 835 (2022). With respect to military facilities, local zoning requirements would be a direct regulation of a federal activity and therefore not applicable unless Congress has waived sovereign immunity. There is no general waiver of sovereign immunity from local zoning laws.

While there is a waiver of sovereign immunity from regulation of air pollution as part of the Clean Air Act, the waiver is "respecting the control and abatement of air pollution". 42 U.S.C. § 7418(a). Zoning rules of the City of Frederick are not covered by this waiver because they are not regulations respecting the control and abatement of air pollution.

Thank you in advance,

Jo Ann Grundy, Project Manager
U.S. Army Corps of Engineers
Programs and Project Management Division, Military Branch
443-406-5819 (mobile)

-----Original Message-----
From: Grundy, Jo Ann CIV USARMY CENAB (USA)
Sent: Friday, October 18, 2024 8:09 AM
To: 'gcollard@cityoffrederickmd.gov' <gcollard@cityoffrederickmd.gov>
Cc: 'Peter Morano' <Peter.Morano@mortenson.com>; Schumann, Laura M CIV USARMY CENAB (USA) <Laura.M.Schumann@usace.army.mil>; 'c.eyler@cityoffrederickmd.gov' <c.eyler@cityoffrederickmd.gov>; Shields, Michael CIV USARMY CENAB (USA) <Michael.T.Shields@usace.army.mil>
Subject: RE: Zoning and Ft. Detrick

Good Morning Gabrielle,

I spoke to our attorney (Michael Shields copied above) yesterday afternoon and he is going to generate a response via email for expediency to indicate why local zoning does not apply to military installations such as Ft. Detrick for the City of Frederick's concurrence. Standby.

R/

Jo Ann Grundy, Project Manager
U.S. Army Corps of Engineers
Programs and Project Management Division, Military Branch
443-406-5819 (mobile)

-----Original Message-----
From: Grundy, Jo Ann CIV USARMY CENAB (USA)
Sent: Thursday, October 17, 2024 10:12 AM
To: gcollard@cityoffrederickmd.gov
Cc: Peter Morano <Peter.Morano@mortenson.com>; Schumann, Laura M CIV USARMY CENAB (USA) <Laura.M.Schumann@usace.army.mil>; c.eyler@cityoffrederickmd.gov
Subject: FW: Zoning and Ft. Detrick

Hi Gabrielle,

Thank you for returning my call and correcting your email address. Our primary POC for MDE is:

Suna Sariscak

suna.sariscak@maryland.gov <mailto:suna.sariscak@maryland.gov>

I understand you will be speaking with your attorney to determine if a written response can be generated indicating that under United States Code (U.S.C.) Ft. Detrick is exempt from state and local land use regulations and therefore the City of Frederick zoning ordinances and codes do not apply.

R/

Jo Ann Grundy, Project Manager

U.S. Army Corps of Engineers

Programs and Project Management Division, Military Branch

443-406-5819 (mobile)

From: Grundy, Jo Ann CIV USARMY CENAB (USA)
Sent: Tuesday, October 15, 2024 9:27 AM
To: 'g.collard@cityoffrederickmd.gov' <g.collard@cityoffrederickmd.gov>
Cc: 'c.eyler@cityoffrederickmd.gov' <c.eyler@cityoffrederickmd.gov>; Peter Morano <Peter.Morano@mortenson.com>; Schumann, Laura M CIV USARMY CENAB (USA) <Laura.M.Schumann@usace.army.mil>; Kris Carey <Kris.Carey@mortenson.com>
Subject: Zoning and Ft. Detrick

Good Morning Ms. Collard,

I was able to speak to a representative from your department today who advised me to reach out to you via email since Carreanne is out. We have a future project that requires a permit prior to construction from MDE. MDE is requiring the permit application to include documentation from local government of compliance with local zoning ordinances. I understand Ft. Detrick is not subject to the City zoning ordinances since it is a federal facility. I am reaching out to you for documentation from the City of Frederick regarding zoning and Ft. Detrick's exempt status as a federal facility. The contractor (copied above) requires this information prior to MDE considering their initial permit application complete. We are hoping to receive a response from the City as soon as possible to avoid delays to this project.

Thank you in advance and please reach out if you have any questions.

V/R,

Jo Ann Grundy, Project Manager

U.S. Army Corps of Engineers

Programs and Project Management Division, Military Branch

443-406-5819 (mobile)

MARYLAND DEPARTMENT OF THE ENVIRONMENT

AIR AND RADIATION ADMINISTRATION
APPLICATION FOR A PERMIT TO CONSTRUCT

SUPPLEMENT A TO DOCKET #15-24

COMPANY: US Army Garrison – Fort Detrick

LOCATION: Fort Detrick Campus at 8425 Navy Way, Fort Detrick, MD 21702.

APPLICATION: Installation and operation of two (2) new multiple chamber medical waste incinerators (MWI) each with a rated burning capacity of 550 lb/hr, equipped with air pollution control systems, & one (1) natural gas fired emergency generator rated at 1000 kW.

ITEM	DESCRIPTION
1	Ft. Detrick Slide Presentation – Copy of the presentation made at the February 26, 2025 public Informational Meeting

US Army Corps of Engineers®

FORT DETRICK MEDICAL WASTE INCINERATOR

AIR CONSTRUCTION PERMIT PUBLIC MEETING

FEB 26, 2025

ARCADIS | Mortenson®

AIR QUALITY PERMITTING- TWO STEP PROCESS

CURRENT PERMITTING STATUS

- This Air Construction Permit is the first in a two-step process to amend Fort Detrick's Title V Permit.
- The permit application package has been deemed administratively complete and is currently under technical review by MDE.
- This project requires an Air Construction Permit in order to proceed with the construction.

- *REGULATORY AUTHORITIES*
  - *EPA Region 3*
  - *Department of Health & Mental Hygiene (defines SMW & treatment criteria)*
  - *MDE – Air & Radiation Division*
- *PRIMARY REGULATIONS*
  - *Title 26 - Department of Environment - Subtitle 11 - Air Quality*
    - *Permit to Construct (26.11.02)*
    - *Permit to Operate (26.11.02.13)*
  - *HMIWI Regulations (40 CFR Part 60, Subpart Ec)*
  - *Part 70 (Title V) Permitting*

PROJECT DESIGN OVERVIEW

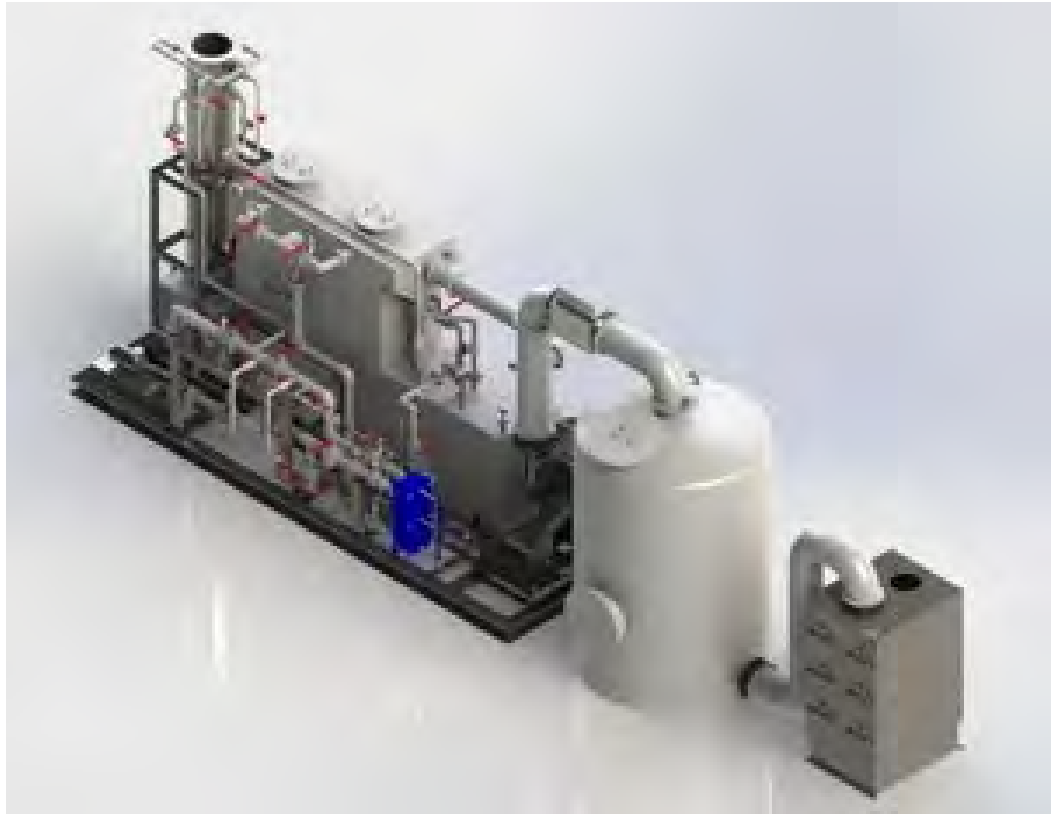
PROPOSED PROJECT DESIGN GOALS

1. A state-of-the-art system to process medical waste with air pollution control in compliance with all regulations.
2. An interior design that enhances facility operations, aesthetics, livability, functionality, long-term cost-effectiveness, and productivity.
3. Complete Code compliance with state and federal measures.
4. Fully functional building that is designed to operate 24/7.

PROJECT BUILDING DESIGN

PROJECT SCOPE

- The proposed new incinerator will be to build a 13000 SF, single story Concrete Masonry Unit building with steel structure and brick veneer.
- Minimal service parking space, staff parking, a loading dock w/ paver pathways, and storm water control best practices are the high-level features of the site plan, in full compliance with MDE's stormwater regulations.
- In addition to the incinerator room, the program includes an exterior loading dock at the main entrance, located on the northwest side of the building.
- Ash removal access door and exterior access ash storage spaces are provided on the building's east side.
- Office, breakroom, toilet and shower facilities, and building support in the west side of the building.



PROJECT OVERVIEW – EQUIPMENT

OVERALL EQUIPMENT OVERVIEW

- Two 550 lbs/ hr of 9,000 btu/lb medical waste incinerators operating at 1800 F.
- Two Air Pollution Control (APC) systems, one for each incinerator. The incinerators will process approximately 1 million lbs of waste per year.
- Only one system is in operation at a time and can be operated up to 24/7 if needed. The second MWI and APC systems are redundant and will be used in case the first system is inactive for maintenance.

WASTE INCINERATOR SYSTEM

Representative System - Pennram

AIR POLLUTION CONTROL (APC)

System Components

- HIGH-EFFICIENCY SYSTEM DESIGNED TO MEET EMISSION LIMITS FOR “NEW - LARGE” HMIWIs AS REQUIRED BY THE REGULATORY AUTHORITIES
- Main Components – Each APC System
  - Evaporative quencher
  - Condenser/absorber & plate-frame heat exchanger
  - Venturi scrubber & entrainment separator
  - Induced draft fan & reflux damper (draft control)
  - Polishing system – reheater, cartridge filter & carbon adsorber
  - Discharge stack with test ports
  - Controls & instrumentation
- FURNISHED BY ENVITECH, INC.

AIR POLLUTION CONTROL SYSTEM

Representative System - Envitech

MWI / APC SYSTEMS

Emissions Monitoring Overview

- Monitoring Regulatory Requirements
  - REGULATORY REQUIREMENTS - DESIGN
    - EPA's & MDE's HMIWI regulations (40 CFR 60, Subpart Ec)
  - REGULATORY REQUIREMENTS FOR VERIFYING CONTINUED COMPLIANCE - OPERATIONS
    - Continuous monitoring & recording key operating parameters (40 CFR § 60.57c)
      - Values established during compliance testing
      - Values become part of Operating Permit (Title V Permit)
      - Recorded values submitted to semi-annually
    - Annual emissions testing required per regulations
- Control Measures Established
  - Continuous Emissions Monitoring Systems (CEMs)
    - CO emissions CEMs system is provided to ensure emissions of CO continuously remain at acceptable levels per the EPA and MDE HMIWI regulations
  - Emissions CONTINUOUSLY RECORDED via Data Acquisition System (DAS)
    - Provides continuous, direct, real-time confirmation & verification of compliance with HMIWI emission limits & Permit conditions
      - MWI - Waste loading rates (hourly)
      - Primary & secondary chamber temperatures (1 minute)
      - APC system parameters (1 minute intervals)

Questions - Comments?

MARYLAND DEPARTMENT OF THE ENVIRONMENT

AIR AND RADIATION ADMINISTRATION
APPLICATION FOR A PERMIT TO CONSTRUCT

SUPPLEMENT B TO
DOCKET #15-24

COMPANY: US Army Garrison – Fort Detrick

LOCATION: 201 Beasley Dr., Suite 230
Fort Detrick, MD 21702-9229

APPLICATION: Installation and operation of two (2) new multiple chamber medical waste incinerators (MWI) each with a rated burning capacity of 550 lb/hr, equipped with air pollution control systems, & one (1) natural gas fired emergency generator rated at 1000 kW.

ITEM	DESCRIPTION
1	Notice of Tentative Determination, Public Hearing, and Opportunity to Submit Written Comments
2	MDEnviroScreen Report
3	Fact Sheet and Tentative Determination
4	Draft Permit to Construct and Conditions
5	Supplemental Information References List
5	Privilege Log – Not Applicable

MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION

NOTICE OF TENTATIVE DETERMINATION, PUBLIC HEARING, AND OPPORTUNITY TO SUBMIT WRITTEN COMMENTS

FIRST NOTICE

The Department of the Environment, Air and Radiation Administration (ARA) has completed its review of an application for a Permit to Construct submitted by US Army Garrison – Fort Detrick on October 29, 2024 for the installation and operation of two (2) new multiple chamber medical waste incinerators (MWI) each with a rated capacity of burning 550 lb/hr, equipped with air pollution control systems, & one (1) natural gas fired emergency generator rated at 1000 kW. The proposed installation will be located at 8425 Navy Way, Fort Detrick, MD 21702.

Pursuant to Section 1-604, of the Environment Article, Annotated Code of Maryland, the Department has made a tentative determination that the Permit to Construct can be issued. A final determination on issuance of the permit will only be made after review of all pertinent information presented at the public hearing or received in written comments. Copies of the Department's tentative determination, the application, the draft permit to construct with conditions, and other supporting documents are available for public inspection on the Department's website. Look for Docket #15-24 at the following link:

https://mde.maryland.gov/programs/Permits/AirManagementPermits/Pages/index.aspx

In accordance with HB 1200/Ch. 588 of 2022, the applicant provided an environmental justice (EJ) Score for the census tract in which the project is located using the MDE EJ Screening Tool. The EJ Score, expressed as a statewide percentile, was shown to be 48.6, which the Department has verified. This score represents a combined measure of pollution and the potential vulnerability of a population to the effects of pollution. The Department's review of the factors contributing to the score is included in the tentative determination that is available for public inspection.

The issuance of the Permit to Construct for this facility will be the subject of a Public Hearing to be held on October 29, 2025 from 6:00 p.m. to 8:00 p.m. at the Hampton Inn and Suites, Frederick-Fort Detrick located at 1565 Opossumtown Pike, Frederick, MD 21702. You may also participate in the hearing virtually. Please register to attend using the following link:

https://forms.gle/wv19bRr2gPdzk6NW6

Registered attendees will receive instructions on how to join virtually using your computer or telephone on the day of the hearing.

Persons who wish to make a statement concerning this application at the hearing are requested to provide the Department with a copy of their statement. In lieu of oral statements at the hearing, written comments may be submitted at the time of the hearing or to the Department no later than 30 days from the date of this notice or within 5 days after the hearing, whichever is later.

Interested persons may request an extension to the public comment period. The extension request must be submitted in writing and must be received by the Department no later than 30 days from the date of this notice or within 5 days after the hearing, whichever is later. The public comment period may only be extended one time for a 60-day period.

All requests for an extension to the public comment period and all written comments should be directed to the attention of Ms. Shannon Heafey, by email to shannon.heafey@maryland.gov or by mail to the Air and Radiation Administration, 1800 Washington Boulevard, Baltimore, Maryland 21230.

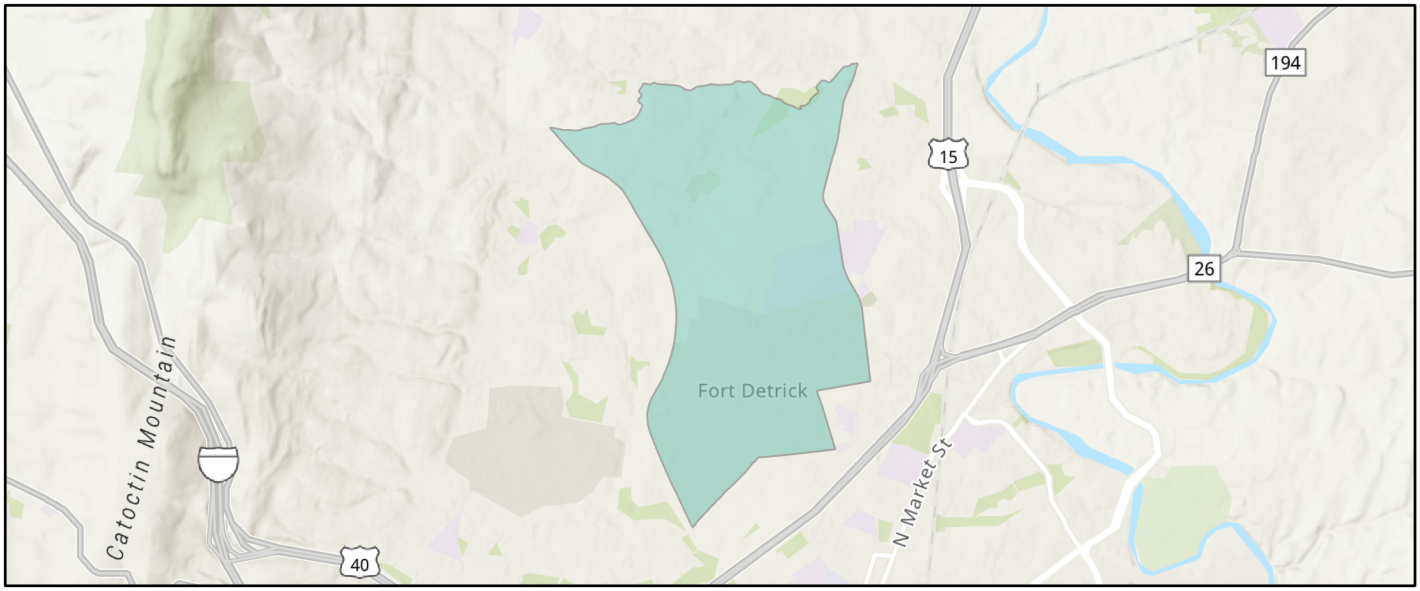
The Department will provide language translation services and/or an interpreter for deaf and hearing impaired persons provided that a request is made for such service at least five (5) days prior to the hearing. Further information may be obtained by calling Ms. Shannon Heafey at 410-537-4433.

Christopher R. Hoagland, Director
Air and Radiation Administration

MDEnviroScreen Report

Census Tract ID: 24021751201

County: Frederick



MDEnviroScreen Summary

EJ Score: 48.6

Overburdened Community: Yes

Underserved Community: Yes

MDEnviroScreen EJ Score Indicators

Pollution Burden Exposure

Indicator	Percentile
PM 2.5	91.2
Ozone	21.8
Diesel PM	34
Cancer Risk	9.5
Respiratory Hazard	2.9
Traffic	33.1
Toxic Release	74.8
Hazardous Landfill	0

Pollution Environmental Effect

Indicator	Percentile
Lead Paint	24.5
RMP Facility	75
Superfund	85.1
Hazardous Waste	59.6
Wastewater	89.5
Brownfield	68.5
Power Plant	0
CAFO	83.4
Mining	49.8

Sensitive Population

Indicator	Percentile
Low Birth Weight	32
Asthma Discharge	21
Myocardial Infarction	39.7
Lack of Broadband	30.9
Low Income*	27.7

*Low Income is included in Underserved but grouped into Sensitive Population for EJ Score Calculation

*The MDEnviroScreen EJ score represents a combined measure of pollution and the potential vulnerability of a population to the effects of pollution. The EJ score in MDEnviroScreen does not include data from every available map layer. For example, it does not include race/ethnicity or age, however, MDE has made that information available for informational purposes only. Collecting and displaying this data allows users to evaluate the relationships between demographics and pollution burden, and can be used to better understand issues related to environmental justice and racial equity in Maryland. MDE cautions users against using the "Underserved" map layer, or its subcategories, in any manner that would be considered discriminatory under applicable law.

Date Exported: 7/23/2025

MARYLAND DEPARTMENT OF ENVIRONMENT
AIR AND RADIATION ADMINISTRATION

FACT SHEET AND TENTATIVE DETERMINATION
U.S. ARMY GARRISON – FORT DETRICK

PROPOSED INSTALLATION OF TWO (2) MEDICAL WASTE INCINERATORS AND ONE (1) NATURAL GAS FIRED EMERGENCY GENERATOR TO BE LOCATED AT 8425 NAVY WAY ON THE FORT DETRICK CAMPUS.

I. INTRODUCTION

The Maryland Department of the Environment (the "Department") received an application from US Army Garrison – Fort Detrick on October 29, 2024 for a Permit to Construct for the installation and operation of two (2) new multiple chamber medical waste incinerators (MWI) each with a rated capacity of burning 550 lb/hr, equipped with air pollution control systems, & one (1) natural gas fired emergency generator rated at 1000 kW. The proposed installation will be located at 8425 Navy Way, Fort Detrick, MD 21702.

A notice was placed in The Frederick News-Post on Feb. 12, 2025 and Feb. 19, 2025 announcing a scheduled informational meeting to discuss the permit to construct application. The informational meeting was held on February 26, 2025 from 6:00 p.m. to 8:00 p.m. at the Hampton Inn and Suites, Frederick-Fort Detrick located at 1565 Opossumtown Pike, Frederick, MD 21702.

As required by law, all public notices were also provided to elected officials in all State, county, and municipality legislative districts located within a one mile radius of the facility's property boundary.

The Department has reviewed the application and has made a tentative determination that the proposed facility is expected to comply with all applicable air quality regulations. A public hearing has been scheduled for October 29, 2025 from 6:00 p.m. to 8:00 p.m. at the Hampton Inn and Suites Frederick Fort Detrick located at 1565 Opossumtown Pike, Frederick, MD 21702 to provide interested parties an opportunity to comment on the Department's tentative determination and draft permit conditions, and/or to present other pertinent concerns about the proposed facility. Notices concerning the date, time and location of the public hearing will be published in the legal section of a newspaper with circulation in general area of the proposed facility. Interested parties may also submit written comments.

If the Department does not receive any comments that are adverse to the tentative determination, the tentative determination will automatically become a final determination. If adverse comments are received, the Department will review the comments, and will then make a final determination with regard to issuance or denial of the permit. A notice of final determination will be published in a newspaper of general circulation in the affected area. The final determination may be subject to judicial review pursuant to Section 1-601 of the Environment Article, Annotated Code of Maryland.

II. CURRENT STATUS AND PROPOSED INSTALLATION

A. Current Status

U.S. Army Garrison at Fort Detrick (the Permittee) is a federal military installation located within the city limits of Frederick, Maryland in Frederick County. Fort Detrick houses several medical research laboratories and a worldwide communications area providing a “hot line” to Moscow and satellite dishes for satellite tracking. Consequently, the facility’s equipment list includes steam generating boilers, space heating boilers, several incinerators, and emergency generators.

Additionally, two (2) existing MWI units (EU B5 and B6) (ARA MDE Reg. No. 021-0131-2-0066 and 2-0067) were installed in June 1995 in Bldg. 393. Each were rated at a capacity of 1,000 lb/hr and equipped with an emission control system and a waste heat recovery boiler. However, both units have been out of service since 2018, due to equipment age and cost of maintenance. Accordingly, continued use of the existing MWI units is no longer considered viable. As such, the Permittee has made plans to install two replacement MWI units in a new laboratory building.

B. Proposed Installation

The Permittee plans to install two (2) new multiple chamber medical waste incinerators (MWI) each with a rated burning capacity of 550 lb/hr, equipped with air pollution control systems, and one (1) natural gas-fired emergency generator rated at 1000 kW. These MWI units will replace the units that have been out of service since 2018.

The exhaust gases from each MWI vent through a complex air pollution control train consisting of an evaporative quencher, a condenser/adsorber, a venturi scrubber, an entrainment separator, a polishing filter, and a carbon adsorber. The system reduces emissions of particulate matter, sulfur oxides, acid gases, heavy metals, mercury, dioxins and furans and other toxic air pollutants.

Other equipment that will be installed in support of the MWI units include, two (2) hot water boilers, one (1) domestic water heater, and seven (7) additional combustion units. Although these units are all fired by natural gas and each rated at less than 1 million Btu per hour and not subject to individual air permit requirements, emissions from the units were included in the technical evaluation for the project.

III. APPLICABLE REGULATIONS

(1) The proposed installation is subject to all applicable federal and State air quality control regulations, including, but not limited to the following:

(a) **40 CFR 60 NSPS Subparts A and Ec** – Standards of Performance for Large Medical Waste Incinerators. – which states standards of performance, applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements for

large medical waste incinerators that commenced construction after December 1, 2008.

(b) **40 CFR Part 60, Subparts A (General Provisions) and JJJJ** – Standards of Performance for Stationary Spark Ignition (SI) Internal Combustion Engines.– which states all applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) for the performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE).

(c) **40 CFR 63, Subparts A (General Provisions) and ZZZZ** – Stationary Reciprocating Internal Combustion Engines. – which states all applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in the National Emissions Standards for Hazardous Air Pollutants (NESHAP). Note: The Permittee must meet the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart JJJJ for the emergency generator. No further requirements apply to the emergency generator under 40 CFR, Part 63, Subpart ZZZZ. **[40 CFR §63.6590(c)(1)]**.

(2) This source is subject to all applicable federally enforceable state air pollution control requirements including, but not limited to, the following regulations:

(a) **COMAR 26.11.01.04** – Testing and Monitoring. – which states the emission testing methods and procedures approved by the Department.

(b) **COMAR 26.11.01.05-1**– Emission Statements. – which states the requirements and procedures for submitting emission statement to the Department.

(c) **COMAR 26.11.01.07** – Malfunctions and Other Temporary Increases of Emissions. – which states the requirements and procedures regarding the reporting of excess emissions.

(d) **COMAR 26.11.01.11** – Continuous Emission Monitoring Requirements. – which states the requirements and procedures regarding continuous emission monitors for **medical waste incinerators** for an owner or operator that is required to install a CEM under any federal requirement is also subject to all of the provisions of this regulation.

(e) **COMAR 26.11.02.04** – Duration of Permits. – which specifies the duration, and expiration of permits to construct, permits to operate,

temporary permits, portable emission units, and Part 70 permits.

(f) **COMAR 26.11.02.09A** – Sources Subject to Permit to Construct and Approvals. – which list sources categories subject to permit to construct approvals.

(g) **COMAR 26.11.03.02** – Applications for Part 70 Permits. General Requirement. – which states the requirements and procedures for sources subjected to Part 70 permits.

(h) **COMAR 26.11.06.03D** – Fugitive Particulate Matter from Materials Handling and Construction. – which states that "a person may not cause or permit any material to be handled, transported, or stored, or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne."

(i) **COMAR 26.11.06.12** – Control of NSPS Source. – which states that "a person may not construct, modify, or operate, or cause to be constructed, modified, or operated, a New Source Performance Standard (NSPS) source as defined in COMAR 26.11.01.01C, which results or will result in violation of the provisions of 40 CFR 60, as amended."

(j) **COMAR 26.11.08.04** – Visible Emissions Standards. – which prohibits emissions from any incinerator, other than water in an uncombined form, which is greater than 20 percent opacity.

(k) **COMAR 26.11.08.05** – Particulate Matter Standards. – which prohibits the discharge of particulate matter into the outdoor atmosphere from any incinerator or crematory constructed on or after January 17, 1972, to exceed 0.10 grains per standard cubic foot dry 0.10 gr/SCFD (229 mg/dscm).

(l) **COMAR 26.11.09.05E(2)** – Visible Emissions. – which prohibits emissions from engines greater than 10 percent during idle mode and greater than 40 percent during operating mode.

(m) **COMAR 26.11.09.07A(1)** – Control of Sulfur Oxides. – which limits the sulfur content for distillate fuel oils to 0.3 percent.

(n) **COMAR 26.11.09.08** – Control of NOx at Major Stationary Sources. – which establishes limits and work practices for NO_x emissions at major stationary sources. The proposed site is a major stationary source and is therefore subject to the requirements of this regulation.

(3) This source is subject to all applicable State-only enforceable air pollution control requirements including, but not limited to, the following regulations:

(a) **COMAR 26.11.06.08 and 26.11.06.09** – Nuisance and Odors. – which generally prohibit the discharge of emissions beyond the property line in such a manner that a nuisance or air pollution is created.

(b) **COMAR 26.11.15.05A** – Control Technology Requirements (T-BACT) New or Reconstructed Installations. – which requires that the Permittee implement "Best Available Control Technology for Toxics" (T – BACT) to control emissions of toxic air pollutants.

(c) **COMAR 26.11.15.06A** – Ambient Impact Requirements. Requirements for New Installations, Sources, or Premises. – which prohibits the discharge of toxic air pollutants to the extent that such emissions would unreasonably endanger human health.

IV. GENERAL AIR QUALITY

The U.S. Environmental Protection Agency (EPA) has established primary and secondary National Ambient Air Quality Standards (NAAQS) for six (6) criteria pollutants, i.e., sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, ozone, and lead. The primary standards were established to protect public health, and the secondary standards were developed to protect against non-health effects such as damage to property and vegetation.

The Department utilizes a statewide air monitoring network, operated in accordance with EPA guidelines, to measure the concentrations of criteria pollutants in Maryland's ambient air. The measurements are used to project statewide ambient air quality, and currently indicate that Frederick County complies with the NAAQS for sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, and lead.

Ground level ozone continues to present a problem for the entire Baltimore-Washington metropolitan area, which is classified as a non-attainment area for ozone. The primary contributors to the formation of ozone are emissions of oxides of nitrogen, primarily from combustion equipment, and emissions of Volatile Organic Compounds (VOC) such as paint solvents and gasoline vapors. Frederick County is included in the non-attainment area for ozone.

With regard to toxic air pollutants (TAPs), screening levels (i.e., acceptable ambient concentrations for toxic air pollutants) are generally established at 1/100 of allowed worker exposure levels (TLVs)[1]. The Department has also developed additional screening levels for

[1] TLVs are threshold limit values (exposure limits) established for toxic materials by the American Conference of Governmental Industrial Hygienists (ACGIH). Some TLVs are established for short-term exposure (TLV – STEL), and some are established for longer-term

carcinogenic compounds. The additional screening levels are established such that continuous exposure to the subject TAP at the screening level for a period of 70 years is expected to cause an increase in lifetime cancer risk of no more than 1 in 100,000.

V. ENVIRONMENTAL JUSTICE ANALYSIS

The concept behind the term environmental justice (EJ) is that all Maryland residents and communities should have an equal opportunity to enjoy an enhanced quality of life. How to assess whether equal protection is being applied is the challenge.

Communities surrounded by a disproportionate number of polluting facilities put residents at a higher risk for health problems from environmental exposures. It is important that residents who may be adversely affected by a proposed source be aware of the current environmental issues in their community in order to have meaningful involvement in the permitting process. Resources may be available from government and private entities to ensure that community health is not negatively impacted by a new source located in the community.

The Maryland General Assembly passed HB 1200, effective October 1, 2022, that adds to MDE's work into our mission to help overburdened and underserved communities with environmental issues. In accordance with HB 1200/Ch. 588 of 2022, the applicant provided an environmental justice (EJ) Score for the census tract in which the proposed source is located. The EJ Score, expressed as a statewide percentile, was shown to be 22 using the previous Maryland EJ Tool, which the Department has verified. Using MDE's revised MDEnviroScreen tool, the EJ Score for the census tract where the proposed source is located is now 48.6. The MDEnviroScreen report also shows that the proposed source is located in an area where at least five pollution indicators are in the 75th percentile or higher. This MDEnviroScreen score represents a combined measure of pollution and the potential vulnerability of a population to the effects of pollution.

Based on the new MDEnviroScreen results, the permit application now qualifies for enhanced public participation. The Department has taken additional steps since the release of the new tool to reach out to Frederick County officials and community groups ahead of the public hearing. To ensure that residents are afforded broader opportunities to participate in the permit process, the Department is providing both an in-person and virtual public hearing and will provide language translation and sign language services at the public hearing upon request.

VI. COMPLIANCE DEMONSTRATION AND ANALYSIS

The proposed installation must comply with all State imposed emissions limitations and screening levels, as well as the NAAQS. MDE-ARA has conducted an engineering and air quality review of the application. The emissions were projected based on vendor data, manufacturer's emission guarantees, and published emission factors for similar sources. The conservative U.S. EPA's SCREEN3 model was used to project the maximum ground level concentrations from the proposed facility, which were then compared to the screening levels and the NAAQS.

---

exposure (TLV – TWA), where TWA is an acronym for time-weight average.

A. Estimated Emissions - The maximum emissions of air pollutants of concern from the proposed installation are listed in Table I.

B. Compliance with National Ambient Air Quality Standards - The maximum ground level concentrations for NOx, CO, SO_2 and PM_{10} based on the emissions from the proposed installation are listed in column 2 of Table II. The combined impact of the projected contribution from the proposed installation and the ambient background concentration for each pollutant shown in column 3 of Table II is less than the NAAQS for each pollutant shown in column 4.

C. Compliance with Air Toxics Regulations – The toxic air pollutants of concern that would be emitted from this installation are listed in column 2 of Table III. The predicted emissions of these toxic air pollutants are shown in column 5 of Table III, and in each case the maximum allowable emission is less than the corresponding screening level for the toxic air pollutant shown in column 3.

VII. TENTATIVE DETERMINATION

Based on the above information, the Department has concluded that the proposed installation will comply with all applicable Federal and State air quality control requirements. In accordance with the Administrative Procedure Act, Department has made a tentative determination to issue the Permit to Construct.

Enclosed with the tentative determination is a copy of the draft Permit to Construct.

TABLE I
PROJECT-WIDE EMISSIONS SUMMARY

Pollutant	MWIs	Engine	Heaters/Boilers	Project-wide
	tpy	tpy	tpy	tpy
CO	0.53	2.95	0.65	4.135
NO_x	7.23	1.47	0.77	9.478
SO_2	0.88	0.0014	0.00	0.881
PM_{10}	0.76	0.0238	0.06	0.844
VOC	0.36	0.74	0.04	1.139
HAP	0.179	0.172	0.06	0.411
N_2O	0.12	11.55	39.09	50.76
CO_2	4,432.56	278.7	942.77	5,654.03
CH_4	0.883	0.00577	0.02	0.91

TABLE II
PROJECTED IMPACT OF EMISSIONS OF CRITERIA POLLUTANTS FROM THE PROPOSED INSTALLATION ON AMBIENT AIR QUALITY

POLLUTANTS	MAXIMUM OFF-SITE GROUND LEVEL CONCENTRATIONS CAUSED BY EMISSIONS FROM PROPOSED PROCESS ($\mu g/m^3$)	BACKGROUND AMBIENT AIR CONCENTRATIONS ($\mu g/m^3$) Notes	NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) ($\mu g/m^3$)
Nitrogen Dioxide (NO_2)	1-hr max. → 104.9 annual avg.→ 8.392	1-hr max. → 71.5 annual avg.→ 12	1-hr max. → 188 annual avg.→ 100
Carbon Monoxide (CO)	8-hr max. → 5.333 1-hr max. → 7.619	8-hr max.→ 1031 1-hr max.→ 1489	8-hr max.→ 10,000 1-hr max.→ 40,000
Sulfur Dioxide (SO_2)	1-hr max. → 12.71	1-hr max.→ 2.6	1-hr max.→ 196.5
Particulate Matter (PM_{10})	24-hr max. → 4.32	24-hr max.→ 22	24-hr max.→ 150
Particulate Matter ($PM_{2.5}$)	24-hr max. → 4.32 annual avg. → 0.864	24-hr max. → 14.5 annual avg. → 5.6	24-hr max → 35 annual avg. → 9

Notes:
Background concentrations were obtained from Maryland air monitoring stations as follows:
NO_2, CO, SO_2, PM_{10} and $PM_{2.5}$ → HU-Beltsville Monitoring Station in Prince George's County

TABLE III
PROJECT-WIDE TAP EMISSIONS

CAS	TAP	SCREENING LEVEL (μG/M3)	MAXIMUM ALLOWABLE EMISSION RATE (LB/HR)	EMISSION RATE (LB/HR)
7429905	Aluminum	10	0.0358	0.000833
7440360	Antimony	5	0.0179	0.0000850
7440382	Arsenic	0.1	0.000358	0.00000899
7440393	Barium	5	0.0179	0.0000569
7440417	Beryllium	0.0005	0.00000179	0.00000106
7782505	Chlorine	14.5	0.05197	0.000289
7440439	Cadmium	0.02	0.00007168	0.00000123
7440473	Chromium	5	0.0179	0.0000710
7440508	Copper	2	0.007168	0.0000756
7439896	Iron	1230	4.4086	0.00260
N/A	Dioxin Furans	N/A	N/A	0.000000000330
10035106	Hydrogen Bromide	269.4	0.96559	0.0144
7647010	Hydrogen Chloride	165.27	0.5924	0.07
7664393	Hydrogen Fluoride	4.09	0.01466	0.01
7439921	Lead	0.5	0.00179	0.00000650
7439965	Manganese	2	0.007168	0.000156
7439976	Mercury	0.1	0.000358	0.0000123
7440020	Nickel	1	0.00358	0.000146
7440224	Silver	0.1	0.000358	0.0000470
7440280	Thallium	0.2	0.0007168	0.000303
1336363	Total PCBs	26.60	0.09534	0.0000128

Wes Moore
Governor

Serena McIlwain
Secretary

Aruna Miller
Lt. Governor

Air and Radiation Administration

1800 Washington Boulevard, Suite 720
Baltimore, MD 21230

☒ Construction Permit ☐ Operating Permit

PERMIT NO.:
021-0131-2-0071, 2-0072 & 9-0507

DATE ISSUED:

PERMIT FEE:
$4,400.00

EXPIRATION DATE:
In accordance with COMAR 26.11.02.04B

LEGAL OWNER & ADDRESS
US Army Garrison – Fort Detrick
201 Beasley Dr., Suite 230
Fort Detrick, MD 21702-9229

Attention: Mr. Joseph Gortva, Chief DPW
Environmental Division

SITE
US Army Garrison – Fort Detrick
8425 Navy Way
Fort Detrick, MD 21702-9229

Premises # 021-0131
AI # 1790

SOURCE DESCRIPTION

Installation and operation of two (2) new multiple chamber medical waste incinerators (MWI) each with a rated burning capacity of 550 lb/hr, equipped with air pollution control systems, & one (1) natural gas fired emergency generator rated at 1000 kW.

This source is subject to the conditions described on the attached pages.

Program Manager

Director, Air and Radiation Administration

INDEX

Part A – General Provisions
Part B – Applicable Regulations
Part C – Construction Conditions
Part D – Operating Conditions
Part E – Testing and Monitoring
Part F – Notifications, Record Keeping and Reporting

Part A – General Provisions

(1) The following Air and Radiation Administration (ARA) permit-to-construct applications and supplemental information are incorporated into this permit by reference:

(a) Application for Gas Cleaning or Emission Control Equipment (Form 6) received on October 29, 2024, to control air emissions from two (2) medical waste incinerators **[MDE Reg. No. 2-0071 & 2-0072]**;

(b) Application for Incinerators (Form 10) received on October 29, 2024, for the installation & operation of two (2) new multiple chamber medical waste incinerators (MWI), each with a rated burning capacity of 550 lb/hr **[MDE Reg. No. 2-0071 & 2-0072]**;

(c) Emission Point Data (Form 5EP) received on October 29, 2024, for the installation & operation of two (2) new MWIs **[MDE Reg. No. 2-0071 & 2-0072]**;

(d) Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration (Form 5T) received on October 29, 2024, for the installation & operation of two (2) new MWIs **[MDE Reg. No. 2-0071 & 2-0072]**;

(e) Application for Emergency Generator (Form 42) received on October 29, 2024, for the installation of one (1) natural gas fired emergency generator rated at 1000 kW **[MDE Reg. No. 2-0071 & 2-0072]**; and

(f) Supplemental Information

(1) Project description, Emission quantification, Regulatory applicability, Toxic air pollution assessment, RACT/BACT/LAER Clearinghouse (RBLC) search output, Emissions calculations, Equipment specifications, Area map and process flow diagram,

Manufacturer performance guidelines and waste characterization survey, Vendor specifications, Emissions summary) received with the permit application on October 29, 2024.

(2) Revised potential to emit emission calculations for air pollutants originating from various medical waste incinerators, emergency generator and natural gas combustion units received with the revised permit application on May 29,2025.

If there are any conflicts between representations in this permit and representations in the applications, the representations in the permit shall govern. Estimates of dimensions, volumes, emissions rates, operating rates, feed rates and hours of operation included in the applications do not constitute enforceable numeric limits beyond the extent necessary for compliance with applicable requirements.

(2) Upon presentation of credentials, representatives of the Maryland Department of the Environment ("MDE" or the "Department") and the Frederick County Health Department shall at any reasonable time be granted, without delay and without prior notification, access to the Permittee's property and permitted to:

(a) inspect any construction authorized by this permit;

(b) sample, as necessary to determine compliance with requirements of this permit, any materials stored or processed on-site, any waste materials, and any discharge into the environment;

(c) inspect any monitoring equipment required by this permit;

(d) review and copy any records, including all documents required to be maintained by this permit, relevant to a determination of compliance with requirements of this permit;

(e) obtain any photographic documentation or evidence necessary to determine compliance with the requirements of this permit; and

(f) exercise its right of entry through use of an unmanned aircraft system to conduct inspections, collect samples, or make visual observations through photographic or video recordings to determine compliance with the requirements of this permit.

(3) The Permittee shall notify the Department prior to increasing quantities and/or changing the types of any materials referenced in the application or limited by this permit. If the Department determines that such increases or changes

constitute a modification, the Permittee shall obtain a permit-to-construct prior to implementing the modification.

(4) Nothing in this permit authorizes the violation of any rule or regulation or the creation of a nuisance or air pollution.

(5) If any provision of this permit is declared by proper authority to be invalid, the remaining provisions of the permit shall remain in effect.

(6) The installation of the new medical waste incinerators and the emergency generator qualifies as an "Off Permit" change to the facility's Part 70 Operating Permit. The Department recognizes the permit to construct application as written notification of the proposed change and the medical waste incinerators, and the emergency generator qualifies should be included in the application for the next renewal of the Part 70 permit.

Part B – Applicable Regulations

(1) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following:

(a) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) promulgated under 40 CFR 60, Subparts A and **Ec** – **Standards of Performance for Hospital/Medical/Infectious Waste Incinerators** as follows:

"(3) For which construction is commenced after December 1, 2008; or
(4) For which modification is commenced after April 6, 2010."
[Reference: 40 CFR 60.50c(a)(3) and (4)]

Definitions. – **[40 CFR §60.51]**
"Large HMIWI means:
(1) Except as provided in (2);
(i) An HMIWI whose maximum design waste burning capacity is more than 500 pounds per hour; or
(ii) A continuous or intermittent HMIWI whose maximum charge rate is more than 500 pounds per hour; or
(iii) A batch HMIWI whose maximum charge rate is more than 4,000 pounds per day."

Note: [*Based on their size, each of the installed incinerators fall under the definition as stated in **40 CFR §60.51(1)(i)***].

Emission limits. – **[40 CFR §60.52c]**

"(a) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8, whichever date comes first, no owner or operator of an affected facility shall cause to be discharged into the atmosphere:
(1) …
(2) From an affected facility as defined in § 60.50c(a)(3) and (4), any gases that contain stack emissions in excess of the limits presented in **Table 1B** to this subpart."

"(b) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8, whichever date comes first, no owner or operator of an affected facility shall cause to be discharged into the atmosphere:
(1) …
(2) From an affected facility as defined in § 60.50c(a)(3) and (4), any gases that exhibit greater than 6 percent opacity (6-minute block average)."

"(c) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8, whichever date comes first, no owner or operator of an affected facility as defined in § 60.50c(a)(1) and (2) and utilizing a large HMIWI, and in **§ 60.50c(a)(3) and (4)**, shall cause to be discharged into the atmosphere **visible emissions** of combustion ash from an ash conveying system (including conveyor transfer points) **in excess of 5 percent** of the observation period (*i.e*., 9 minutes per 3-hour period), as determined by **EPA Reference Method 22 of appendix A-1** of this part, except as provided in paragraphs **(d)** and **(e)** of this section."

"(d) The emission limit specified in paragraph (c) of this section does not cover visible emissions discharged inside buildings or enclosures of ash conveying systems; however, the emission limit does cover visible emissions discharged to the atmosphere from buildings or enclosures of ash conveying systems."

"(e) The provisions specified in paragraph (c) of this section do not apply during maintenance and repair of ash conveying systems. Maintenance and/or repair shall not exceed 10 operating days per calendar quarter unless the owner or operator obtains written approval from the State agency establishing a date whereby all necessary maintenance and repairs of ash conveying systems shall be completed."

[62 FR 48382, Sept. 15, 1997, as amended at 74 FR 51409, Oct. 6, 2009]

Note: [*Emission limits for MWI associated with this project is not applicable to* § 60.50c(a)(1) and (2)].

Table 1B to Subpart Ec of Part 60—Emissions Limits for Small, Medium, and Large HMIWI at Affected Facilities as Defined in §60.50c(a)(3) and (4)

Pollutant	Units (7 percent oxygen dry basis)	Emissions Limits (Large size HMIWI)[3]	Averaging Time[1]	Method for Demonstrating Compliance[2]
Particulate matter	Milligrams per dry standard cubic meter (grains per dry standard cubic foot)	18 (0.0080)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 5 of appendix A-3 of part 60, or EPA Reference Method M 26A or 29 of appendix A-8 of part 60.
Carbon monoxide	Parts per million by volume	11	3-run average (1-hour minimum sample time per run)	EPA Reference Method 10 or 10B of appendix A-4 of part 60.
Dioxins/furans	Nanograms per dry standard cubic meter total dioxins/furans (grains per billion dry standard cubic feet) or nanograms per dry standard cubic meter TEQ (grains per billion dry standard cubic feet)	9.3 (4.1) or 0.035 (0.015)	3-run average (4-hour minimum sample time per run)	EPA Reference Method 23 of appendix A-7 of part 60.
Hydrogen chloride	Parts per million by volume	5.1	3-run average (1-hour minimum sample time per run)	EPA Reference Method 26 or 26A of appendix A-8 of part 60.

Sulfur dioxide	Parts per million by volume	8.1	3-run average (1-hour minimum sample time per run)	EPA Reference Method 6 or 6C of appendix A-4 of part 60.
Nitrogen oxides	Parts per million by volume	140	3-run average (1-hour minimum sample time per run)	EPA Reference Method 7 or 7E of appendix A-4 of part 60.
Lead	Milligrams per dry standard cubic meter (grains per thousand dry standard cubic feet)	0.00069 (0.00030)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 29 of appendix A-8 of part 60.
Cadmium	Milligrams per dry standard cubic meter (grains per thousand dry standard cubic feet)	0.00013 (0.000057)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 29 of appendix A-8 of part 60.
Mercury	Milligrams per dry standard cubic meter (grains per thousand dry standard cubic feet)	0.0013 (0.00057)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 29 of appendix A-8 of part 60.

Note 1: Except as allowed under §60.56c(c) for HMIWI equipped with CEMS.
Note 2: Does not include CEMS and approved alternative non-EPA test methods allows under §60.55c(b).
Note 3: As stated in 40 CFR §60.56c(a), "the emissions limits apply at all times."

<u>Waste Management Plan</u>. – [40 CFR Part 60, Subpart Ec, §60.55c]
"The owner or operator of an affected facility shall prepare a waste management plan. The waste management plan shall identify both the feasibility and the approach to separate certain components of solid waste from the health care waste stream in order to reduce the amount of toxic emissions from incinerated waste. A waste management plan may include, but is not limited to, elements such as segregation and recycling of paper, cardboard, plastics, glass, batteries, food waste, and metals (e.g., aluminum cans, metals-containing devices); segregation of non-recyclable wastes (e.g., polychlorinated biphenyl-containing waste, pharmaceutical waste, and mercury-containing waste, such as dental waste); and purchasing recycled or recyclable products. A waste management plan may include different goals or approaches for different areas or departments of the facility and need not include new waste management goals for every waste stream. It should identify, where possible, reasonably available additional waste management measures, taking into account the effectiveness of waste management measures already in place, the costs of additional measures, the emissions reductions expected to be achieved, and any other

environmental or energy impacts they might have. The American Hospital Association publication entitled "An Ounce of Prevention: Waste Reduction Strategies for Health Care Facilities" (incorporated by reference, see § 60.17) shall be considered in the development of the waste management plan. The owner or operator of each commercial HMIWI company shall conduct training and education programs in waste segregation for each of the company's waste generator clients and ensure that each client prepares its own waste management plan that includes, but is not limited to, the provisions listed previously in this section."

(b) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) promulgated under 40 CFR 60, Subparts A and Subpart JJJJ for Standard of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE), Section 60.4233, including the following:

Section e: "Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE."

A summary of the EPA emission standards for these engines is shown in Table 1 of this preamble.

Excerpt from Table 1 to Subpart JJJJ of Part 60 "NOx, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥ 100 HP (except gasoline and rich burn LPG), stationary SI landfill/digester gas engines, and stationary emergency engines > 25 HP.

			Emission standards (g/HP-hr)		
Engine type & fuel	Maximum Engine Power	Manufacture Date	NO_x	CO	VOC
Emergency	HP≥ 130	January 1, 2009	2.0	4.0	1.0

(c) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in the National Emissions Standards for Hazardous Air Pollutants

(NESHAP) promulgated under 40 CFR 63, Subparts A and ZZZZ for Stationary Reciprocating Internal Combustion Engines.

Note: The Permittee will meet the requirements of 40 CFR Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR Part 60, Subpart JJJJ.

All reports and notifications required under 40 CFR 60, Subparts A, Ec and JJJJ shall be submitted to both of the following:

The Administrator
Compliance Program
Maryland Department of the Environment
Air and Radiation Administration
1800 Washington Boulevard, STE 715
Baltimore MD 21230

and

United States Environmental Protection Agency
Region III, Enforcement & Compliance Assurance Division
Air, RCRA and Toxics Branch (3ED21)
Four Penn Center
1600 John F. Kennedy Boulevard
Philadelphia, PA 19103-2852

(2) This source is subject to all applicable federally enforceable State air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.02.04B – Permits to Construct and Approvals.

"A permit to construct or an approval expires if, as determined by the Department:

(1) Substantial construction or modification is not commenced within 18 months after the date of issuance of the permit or approval, unless the Department specifies a longer period in the permit or approval;

(2) Construction or modification is substantially discontinued for a period of 18 months after the construction or modification has commenced; or

(3) The source for which the permit or approval was issued is not completed within a reasonable period after the date of issuance of the permit or approval."

(b) COMAR 26.11.02.09A – Sources subject to Permits to Construct and Approval.

"A person may not construct or modify or cause to be constructed or modified any of the following sources without first obtaining, and having in current effect, the specified permits to construct and approvals: (6) All sources, including installations and air pollution control equipment, except as listed in Regulation.10 of this chapter ----- permit to construct required."

(c) COMAR 26.11.02.19C – Information Required to be Maintained by a Source.

"(1) Beginning January 1, 1994, the owner or operator of a source for which a permit to operate is required shall maintain records necessary to support the emission certification, including the following information:
(a) The total amount of actual emissions of each regulated pollutant and the total of all regulated pollutants;
(b) An explanation of the methods used to quantify the emissions and the operating schedules and production data that were used to determine emissions, including significant assumptions made;
(c) Amounts, types, and analyses of all fuels used;
(d) Emission data from continuous emission monitors that are required by this subtitle or EPA regulations, including monitor calibration and malfunction information;
(e) Identification, description, and use records of all air pollution control equipment and compliance monitoring equipment, including significant maintenance performed, malfunctions and downtime, and episodes of reduced efficiency of this equipment;
(f) Limitations on source operation or any work practice standards that significantly affect emissions; and
(g) Other relevant information as required by the Department.
(2) The logs and other records of information required by §C(1) of this regulation shall be retained for a period of 5 years and made available to the Department upon request.
(3) If the owner or operator of a source for which a permit to operate is required fails to maintain or provide the data required by this section, which the Department requests in order to verify

the emissions during the previous calendar year, the annual emission-based fee for that source shall be based on the estimated allowable emissions, as defined in COMAR 26.11.01.01B(4), of that source, as determined by the Department."

(d) COMAR 26.11.02.19D – Emission Certification.
"(1) Beginning January 1, 1994, the responsible official designated by the owner or operator of a source for which a permit to operate is required shall certify, as provided at Regulation .02F of this chapter, the actual emissions of regulated air pollutants from all installations at the plant or facility.

(2) Certification shall be on a form obtained from the Department and shall be submitted to the Department not later than April 1 of the year following the year for which certification is required."

(e) COMAR 26.11.03.02 – Applications for Part 70 Permits.
A. General Requirement.
"A person who owns or operates a source for which a Part 70 permit is required by Regulation .01 of this chapter shall submit a timely and complete application for an initial permit or renewal of an existing permit on forms provided by the Department and in accordance with this regulation."

(f) COMAR 26.11.06.03D – Fugitive Particulate Matter from Materials Handling and Construction.
"A person may not cause or permit any material to be handled, transported, or stored, or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne."

(g) COMAR 26.11.06.12 – Control of NSPS Source.
"A person may not construct, modify, or operate, or cause to be constructed, modified, or operated, a New Source Performance Standard (NSPS) source as defined in COMAR 26.11.01.01B(23), which results or will result in violation of the provisions of 40 CFR 60, as amended."

(h) COMAR 26.11.09.08A(1)(a) – Control of NOx Emissions for Major Stationary Sources.

"This regulation applies to a person who owns or operates an installation that causes emissions of NOx and is located at premises that have total potential to emit:
(a) 25 tons or more per year of NOx and is located in Baltimore City, or Anne Arundel, Baltimore, Calvert, Carroll, Cecil, Charles, **Frederick**, Harford, Howard, Montgomery, or Prince George's counties."

(i) COMAR 26.11.09.08B(5) – NOx RACT – Operator Training.
"(a) For purposes of this regulation, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation.
(b) The operator training course sponsored by the Department shall include an in-house training course that is approved by the Department."

(j) COMAR 26.11.09.08E – Requirements for Fuel-Burning Equipment with a Rated Heat Input Capacity of 100 MMBtu Per Hour or Less.
"A person who owns or operates fuel-burning equipment with a rated heat input capacity of 100 MMBtu per hour or less shall:
(i) Submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each;
(ii) Perform a combustion analysis for each installation at least once each calendar year and optimize combustion based on the analysis;
(iii) Maintain the results of the combustion analysis at the site for at least 2 years and make this data available to the Department and the EPA upon request;
(iv) Once every 3 years, require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and
(v) Prepare and maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request."

Condition (h), (i) & (j) applies to Hospital/Medical/Infectious Waste incinerators, only.

(k) COMAR 26.11.08.04 – Visible Emissions Standards.
"A. In Areas I, II, V, and VI, the following apply:
(1) Except as provided in Regulations .08 and .08-1 of this chapter, a person may not cause or permit the discharge of emissions from any incinerator, other than water in an uncombined form, which is greater than 20 percent opacity;

C – Exceptions. "The requirements of §§A and B of this regulation do not apply to emissions during start-up, or adjustments or occasional cleaning of control equipment if:
(1) The visible emissions are not greater than 40 percent opacity; and
(2) The visible emissions do not occur for more than 6 consecutive minutes in any 60 minute period."

(l) COMAR 26.11.08.05 – Particulate Matter Standards.
"A. In Areas I, II, V, and VI, the following apply:
(1) Calculations. Except as provided in Regulations .08 and .08-2 of this chapter, incinerator or hazardous waste incinerator emissions shall be adjusted to 12 percent carbon dioxide.
(3) Incinerators Constructed on or After January 17, 1972. Except as provided in Regulations .07, .08, and .08-2 of this chapter, a person may not cause or permit the discharge of particulate matter into the outdoor atmosphere from any incinerator or crematory constructed on or after January 17, 1972, to exceed 0.10 grains per standard cubic foot dry 0.10 gr/SCFD (229 mg/dscm)."
Note: The MWIs will be subject to COMAR 26.11.08.05 which limits particulate matter emissions to 0.10 grains per standard cubic foot dry (gr/SCFD). This limit exceeds the applicable limit in NSPS Subpart Ec, therefore, the facility will remain in compliance with this limit. However, HMIWI will still need to meet the emission limit in table 1B to 40 CFR 60 Subpart Ec.

(m) COMAR 26.11.08.09 – Incinerator Operator Training
(A) Applicability.
"This regulation applies to any person in this State who owns or operates an incinerator."
(B) Certification and Operation.
"A person may not operate or allow an incinerator to be operated unless the owner certifies to the Department on a form provided by the Department that the incinerator operator:
(1) Has completed an initial training course approved by the Department which meets the requirements of §C or D of this regulation;
(2) Annually, after initial certification, completes a review course approved by the Department; and
(3) Is present at all times whenever the incinerator is in operation."

Conditions (k), (l) & (m) applies to Natural Gas Fired Emergency Generator [Reg. No. 021-0131-9-0507], only.
(n) COMAR 26.11.09.05E(2) – Visible Emissions.

(2) Emissions During Idle Mode.
"A person may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity."
(3) Emission During Operating Mode.
"A person may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity."
COMAR 26.11.09.05E(4) – Exceptions:
(a) Section E(2) of this regulation does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system;
(b) Section E(2) of this regulation does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:
(i) Engines that are idled continuously when not in service: 30 minutes,
(ii) All other engines: 15 minutes; and
(c) Section E(2) and (3) of this regulation do not apply while maintenance, repair, or testing is being performed by qualified mechanics."

(o) COMAR 26.11.09.07A(1) – Control of Sulfur Oxides.
"A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: In Areas I, II, V, and VI: (c) Distillate fuel oils, 0.3 percent."

(p) COMAR 26.11.36.03 – Distributed Generation.
"A. The owner or operator of an engine is subject to requirements under 40 CFR Part 63 Subpart ZZZZ, as applicable.
B. The owner or operator of an engine is subject to requirements, as applicable, under: (2) 40 CFR Part 60 Subpart JJJJ."

(3) This source is subject to all applicable State-only enforceable air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.06.08 – Nuisance.
"An installation or premises may not be operated or maintained in such a manner that a nuisance or air pollution is created. Nothing in this regulation relating to the control of emissions may in any manner be construed as authorizing or permitting the creation of, or maintenance of, nuisance or air pollution."

(b) COMAR 26.11.06.09 – Odors.
"A person may not cause or permit the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created."

(c) COMAR 26.11.15.05 (A) – Control Technology Requirements (T-BACT)
New or Reconstructed Installations.
"A person may not construct, reconstruct, operate, or cause to be constructed, reconstructed, or operated, any new installation or source that will discharge a toxic air pollutant to the atmosphere without installing and operating T-BACT."

(d) COMAR 26.11.15.06(A) – Ambient Impact Requirements.
Requirements for New Installations, Sources, or Premises.
"(1) Except as provided in §A(2) of this regulation, a person may not construct, modify, or operate, or cause to be constructed, modified, or operated, any new installation or source without first demonstrating to the satisfaction of the Department using procedures established in this chapter that total allowable emissions from the premises of each toxic air pollutant discharged by the new installation or source will not unreasonably endanger human health.
(2) If a new installation or source will discharge a TAP that is not listed in COMAR 26.11.16.07 and will be part of an existing premises, then emissions of that TAP from existing sources or existing installations on the premises may be omitted from a screening analysis unless the TAP is added to COMAR 26.11.16.07."

Part C – Construction Conditions

(1) Except as otherwise provided in this part, the two (2) new multiple chamber medical waste incinerators (MWI) each with a rated burning capacity of 550 lb/hr, equipped with air pollution control systems, & one (1) natural gas fired emergency generator rated at 1000 kW shall be constructed in accordance with specifications included in the application and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative construction procedures.

For the Hospital/Medical/Infectious Waste incinerators.

(2) Except as otherwise provided for in this part, each multiple chamber medical waste incinerator (MWI) shall be constructed such that the maximum capacity is 550 lb/hr and provided with an air pollution control system to control toxic air pollutant emissions in accordance with COMAR 26.11.15.05.

(3) Except as otherwise provided for in this part, the Permittee shall construct the wet scrubber, venturi scrubber, cartridge filter (fabric filter), carbon adsorber (dry scrubber) and related equipment in accordance with the constructing procedures (design parameters) recommended by the equipment vendors and or specified in the permit to construct application.

(4) The stack serving after the add on control systems, carrying the exhaust gases from each medical waste incinerator, shall be equipped with emissions test ports and shall be located in accordance with the specifications set forth in the Air and Radiation Administration's Technical Memorandum No. 91-01, "Stack Test Methods for Stationary Sources", January, 1991, as amended through Supplement 3 (October 1, 1997), which is incorporated by reference.

(5) As stated in the permit to construct application, the stack serving after the add on control systems, carrying the exhaust gases from each medical waste incinerator, shall be equipped with continuous emission monitoring systems (CEMS) to monitor and record CO, SO_2 and NO_X emissions. Each CEMS shall be designed and installed in accordance with the performance specifications in 40 CFR 60, Appendix B and 40 CFR 60.4345.

(6) As stated in the permit to construct application, the stack serving after the add on control systems, carrying the exhaust gases from each medical waste incinerator, shall be equipped with continuous automated sampling systems (CASS) to monitor and record Dioxin/furan emissions. Each CASS shall be designed and installed in accordance with the performance specifications in 40 CFR 60, Appendix B and 40 CFR 60, Subpart A, Section 60.13.

(7) To meet emissions limits for PM, PM_{10}, CO, MWI Organics (dioxin/furans), MWI Acid Gases (HCl, SO_2, NO_x), PCBs, MWI Metals (Hg, Pb, Cd), HF, from the medical waste incinerators when burning medical solid waste alone or in conjunction with natural gas, the Permittee shall install the Best Available Control Technology for Toxics (T-BACT).

(8) As part of the construction requirements, the Permittee shall follow the siting requirements listed in **§60.54c**. The siting requirements are stated as follows:

"(a) The owner or operator of an affected facility for which construction is commenced after September 15, 1997 shall prepare an analysis of the impacts of the affected facility. The analysis shall consider air pollution control alternatives that minimize, on a site-specific basis, to the maximum extent practicable, potential risks to public health or the environment. In considering such alternatives, the analysis may

consider costs, energy impacts, non-air environmental impacts, or any other factors related to the practicability of the alternatives.

(b) Analyses of facility impacts prepared to comply with State, local, or other Federal regulatory requirements may be used to satisfy the requirements of this section, as long as they include the consideration of air pollution control alternatives specified in paragraph (a) of this section.

(c) The owner or operator of the affected facility shall complete and submit the siting requirements of this section as required under § 60.58c(a)(1)(iii)."

(9) The Permittee should follow the installation requirements as stated in § 60.57c(a), pertaining the installation of the necessary equipment to monitor the applicable maximum and minimum operating parameters listed in the table shown in **Part D(5)(2)** of this permit (**Table 3** to **40 CFR 60, Subpart Ec**).

For natural gas fired emergency generator

(10) The Permittee shall comply with the requirements for 40 CFR 60, Subpart JJJJ by purchasing emergency generators equipped with engines certified to the emission standards in Table 1 to 40 CFR 60, Subpart JJJJ, as applicable, for the same manufacture date and maximum engine power for the entire life of the engine. If the engine is not certified to non-emergency standards in Table 1 to 40 CFR 60, Subpart JJJJ, the engine shall be equipped with a non-resettable hour meter. **[Reference: 40 CFR §60.4233(e), §60.4234, §60.4237(a), §60.4243(b)(1), and Table 1 to 40 CFR 60, Subpart JJJJ]**

(11) The Permittee meets the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart JJJJ for the emergency generator. No further requirements apply to the emergency generator under 40 CFR, Part 63, Subpart ZZZZ. **[Reference: 40 CFR §63.6590(c)(1)]**

Part D – Operating Conditions

(1) Except as otherwise provided in this part, the two (2) new multiple chamber medical waste incinerators (MWI) each with a rated burning capacity of 550 lb/hr, equipped with air pollution control systems, & one (1) natural gas fired emergency generator rated at 1000 kW shall be operated in accordance with specifications included in the application and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative construction procedures.

For the Hospital/Medical/Infectious Waste incinerators.

(2) In accordance with the manufacturer's instructions for the MWIs system, the Permittee is limited to only operating one incineration unit at a time, with a maximum loading rate equal or less than 550 lbs/hr.

(3) The Permittee shall properly maintain, calibrate, and operate all control panel instrumentation and all devices employed to monitor the performance of the medical waste incineration system's air pollution control devices.

(4) To comply with the emission limitations specified in 40 CFR 60 NSPS Subpart Ec Table 1B, the Permittee shall operate two (2) 550 lb/hr medical waste incinerator and air pollution control equipment in accordance to the manufacturer recommendations and in such a manner as to achieve full and continuous compliance with all the applicable emission standards.

(5) In accordance with §60.56c(d), "except as provided in paragraphs (c)(4) through (c)(7) of this section, the owner or operator of an affected facility equipped with a dry scrubber followed by a fabric filter, a wet scrubber, or a dry scrubber followed by a fabric filter and wet scrubber shall:

(1) Establish the appropriate maximum and minimum operating parameters, indicated in table 3 of this subpart for each control system, as site specific operating parameters during the initial performance test to determine compliance with the emission limits; and

(2) Following the date on which the initial performance test is completed or is required to be completed under § 60.8, whichever date comes first, ensure that the affected facility does not operate above any of the applicable maximum operating parameters or below any of the applicable minimum operating parameters listed in **table 3** of this subpart and measured as 3-hour rolling averages (calculated each hour as the average of the previous 3 operating hours) at all times. Operating parameter limits do not apply during performance tests. Operation above the established maximum or below the established minimum operating parameter(s) shall constitute a violation of established operating parameter(s). **[Reference: 40 CFR §60.56c(d)]**

Table 3 to Subpart Ec of Part 60—Operating Parameters To Be Monitored and Minimum Measurement and Recording Frequencies

Operating parameters to be monitored	Minimum frequency		Control system		
	Data measurement	Data recording	Dry scrubber	Wet scrubber	Dry scrubber

			followed by fabric filter		**followed by fabric filter and wet scrubber**
Maximum operating parameters:					
Maximum charge rate	Continuous	1 x hour	✓	✓	✓
Maximum fabric filter inlet temperature	Continuous	1 x minute	✓		✓
Maximum flue gas temperature	Continuous	1 x minute	✓	✓	
Minimum operating parameters:					
Minimum secondary chamber temperature	Continuous	1 × minute	✓		
Minimum dioxin/furan sorbent flow rate	Hourly	1 × hour	✓		
Minimum HCl sorbent flow rate	Hourly	1 × hour	✓		
Minimum mercury (Hg) sorbent flow rate	Hourly	1 × hour	✓		
Minimum pressure drop across the wet scrubber or minimum horsepower or amperage to wet scrubber	Continuous	1 × minute		✓	✓
Minimum scrubber liquor flow rate	Continuous	1 x minute		✓	✓
Minimum scrubber liquor pH	Continuous	1 x minute		✓	✓

(6) In accordance with §60.56c(e), "except as provided in paragraph (i) of this section, for affected facilities equipped with a dry scrubber followed by a fabric filter:

(a) Operation of the affected facility above the maximum charge rate and below the minimum secondary chamber temperature (each measured on a 3-hour rolling average) simultaneously shall constitute a violation of the CO emission limit.

(b) Operation of the affected facility above the maximum fabric filter inlet temperature, above the maximum charge rate, and below the minimum dioxin/furan sorbent flow rate (each measured on a 3-hour rolling average) simultaneously shall constitute a violation of the dioxin/furan emission limit.

(c) Operation of the affected facility above the maximum charge rate and below the minimum HCL sorbent flow rate (each measured on a 3-hour rolling average) simultaneously shall constitute a violation of the HCl emission limit.

(d) Operation of the affected facility above the maximum charge rate and below the minimum Hg sorbent flow rate (each measured on a 3-hour rolling average) simultaneously shall constitute a violation of the Hg emission limit.

(e) Use of the bypass stack shall constitute a violation of the PM, dioxin/furan, HCl, Pb, Cd and Hg emissions limits.

(f) Operation of the affected facility as defined in § 60.50c(a)(3) and (4) above the CO emissions limit as measured by the CO CEMS specified in paragraph (c)(4) of this section shall constitute a violation of the CO emissions limit.

(g) For an affected facility as defined in § 60.50c(a)(3) and (4), failure to initiate corrective action within 1 hour of a bag leak detection system alarm; or failure to operate and maintain the fabric filter such that the alarm is not engaged for more than 5 percent of the total operating time in a 6-month block reporting period shall constitute a violation of the PM emissions limit. If inspection of the fabric filter demonstrates that no corrective action is required, no alarm time is counted. If corrective action is required, each alarm is counted as a minimum of 1 hour. If it takes longer than 1 hour to initiate corrective action, the alarm time is counted as the actual amount of time taken to initiate corrective action. If the bag leak detection system is used to demonstrate compliance with the opacity limit, this would also constitute a violation of the opacity emissions limit.

(h) Operation of the affected facility as defined in § 60.50c(a)(3) and (4) above the PM, HCl, Pb, Cd, and/or Hg emissions limit as measured by the CEMS specified in paragraph (c)(5) of this section shall constitute a violation of the applicable emissions limit.

(i) Operation of the affected facility as defined in § 60.50c(a)(3) and (4) above the dioxin/furan emissions limit as measured by the continuous automated sampling system specified in paragraph (c)(6) of this section shall constitute a violation of the dioxin/furan emissions limit.

(j) Operation of the affected facility as defined in § 60.50c(a)(3) and (4) above the Hg emissions limit as measured by the continuous

automated sampling system specified in paragraph (c)(7) of this section shall constitute a violation of the Hg emissions limit."
[Reference: 40 CFR §60.56c(e)]

(7) Except as otherwise provided for in this part, each multiple chamber medical waste incinerator (MWI) shall be operated such that the maximum capacity is 550 lb/hr with an air pollution control system to control toxic air pollutant emissions in accordance with COMAR 26.11.15.05.

(8) Except as otherwise provided for in this part, the Permittee shall operate the wet scrubber, venturi scrubber, cartridge filter (fabric filter), carbon adsorber (dry scrubber) and related equipment in accordance with the operating procedures recommended by the equipment vendors and or specified in the permit to construct application.

(9) In accordance with the vendor and PTC application all gases passing through the APC should be vented through the stack.

(10) In accordance with the vendor and PTC application the Permittee shall operate the incinerators and the APC using the CEMS as per the performance specifications in 40 CFR 60, Appendix B and 40 CFR 60.4345.

(11) In accordance with the vendor and PTC application the Permittee shall operate the incinerators and the APC using the CAAS as per the performance specifications in 40 CFR 60, Appendix B and 40 CFR 60, Subpart A, Section 60.13.

(12) To meet emissions limits for PM, PM_{10}, CO, MWI Organics (dioxin/furans), MWC Acid Gases (HCl, SO_2, NO_x), PCBs, MWI Metals (Hg, Pb, Cd), HF, from the medical waste incinerators when burning medical solid waste alone or in conjunction with natural gas, the Permittee shall apply good combustion practices, and operate and maintain the control equipment to meet Best Available Control Technology for Toxics (T-BACT) requirements.

(13) In accordance with **§60.53c**, the Permittee shall follow the operator training and qualification requirements that are required for operators of HMIWI operators. As stated in the referenced section:

"(a) No owner or operator of an affected facility shall allow the affected facility to operate at any time unless a fully trained and qualified HMIWI operator is accessible, either at the facility or available within 1 hour. The trained and qualified HMIWI operator may operate the HMIWI directly or be the direct supervisor of one or more HMIWI operators.

Note: The Permittee shall comply with the procedures listed in COMAR 26.11.08.09(A) & (B). In accordance with COMAR 26.11.08.09B(3), the Permittee shall ensure that an incinerator operator is present at all times whenever the incinerator is in operation. Compliance with COMAR 26.11.08.09B(3) certification and operation requirements will constitute compliance with 40 CFR §60.53c(a) operator training and qualification requirements.

(b) Operator training and qualification shall be obtained through a State-approved program or by completing the requirements included in paragraphs (c) through (g) of this section."

(c) Training shall be obtained by completing an HMIWI operator training course that includes, at a minimum, the following provisions:

(1) 24 hours of training on the following subjects:

(i) Environmental concerns, including pathogen destruction and types of emissions;
(ii) Basic combustion principles, including products of combustion;
(iii) Operation of the type of incinerator to be used by the operator, including proper startup, waste charging, and shutdown procedures;
(iv) Combustion controls and monitoring;
(v) Operation of air pollution control equipment and factors affecting performance (if applicable);
(vi) Methods to monitor pollutants (continuous emission monitoring systems and monitoring of HMIWI and air pollution control device operating parameters) and equipment calibration procedures (where applicable);
(vii) Inspection and maintenance of the HMIWI, air pollution control devices, and continuous emission monitoring systems;
(viii) Actions to correct malfunctions or conditions that may lead to malfunction;
(ix) Bottom and fly ash characteristics and handling procedures;
(x) Applicable Federal, State, and local regulations;
(xi) Work safety procedures;
(xii) Pre-startup inspections; and
(xiii) Recordkeeping requirements.

(2) An examination designed and administered by the instructor.

(3) Reference material distributed to the attendees covering the course topics.

(d) Qualification shall be obtained by:

(1) Completion of a training course that satisfies the criteria under paragraph (c) of this section; and

(2) Either 6 months experience as an HMIWI operator, 6 months experience as a direct supervisor of an HMIWI operator, or completion of at least two burn cycles under the observation of two qualified HMIWI operators.

(e) Qualification is valid from the date on which the examination is passed or the completion of the required experience, whichever is later. **[Reference: 40 CFR §60.53c(a) – (e)]**

For natural gas fired emergency generator

(14) The Permittee must operate and maintain each certified emergency generator according to the manufacturer's emission-related written instructions. In addition, the Permittee must also meet the requirements as specified in 40 CFR, Part 1068, Subparts A through D, as applicable. If the engine settings are adjusted according to and consistent with the manufacturer's instructions, the engine will not be considered out of compliance. **[Reference: 40 CFR §60.4243(b)(1)]**

(15) The following operating conditions apply to each emergency generator unless the Permittee applies for and obtains an approval from the Department to operate at other conditions:

(a) Any operation other than emergency operation, maintenance checks and readiness testing, and operation in non-emergency situations as described in paragraph (d), is prohibited.

(b) There is no time limit on the use of an emergency generator in emergency situations.

(c) The Permittee may operate the emergency generator for a maximum of 100 hours per calendar year for maintenance checks and readiness testing, provided that the tests are recommended by federal, State or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The Permittee may petition the Department for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the Permittee maintains records indicating that federal, State, or local standards require

maintenance and testing of the emergency generator beyond 100 hours per calendar year.

(d) The Permittee may operate the emergency generator for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing. The 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.
[Reference: 40 CFR §60.4243(d), (d)(1), (d)(2), (d)(2)(i) and (d)(3)]

(16) The Permittee shall only burn natural gas in the engine.

(17) The Permittee may operate natural gas fired engine using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations, but must keep records of such use. **[Reference: 40 CFR §60.4243(e)]**

Part E – Testing and Monitoring

(1) The Permittee shall plan and conduct performance tests in accordance with the applicable testing requirements listed in § 60.56c, “Compliance and performance testing.”

(2) Compliance stack testing for the emissions limits listed in Part B, Condition 1(a)(e) of this permit (*or as listed in Table 1B to Subpart Ec of Part 60—Emissions Limits for Small, Medium, and Large HMIWI at Affected Facilities as Defined in §60.50c(a)(3) and (4))* shall be conducted within 180 days of initial start-up to quantify pollutant emissions and demonstrate compliance with the emission limits specified in the permit to construct.

Note: *Subsequent testing may be required in accordance with Part E, Condition 5)*.

(3) At least 30 days prior to conducting any compliance stack test, the Permittee shall submit a test protocol to ARA for review. Compliance stack testing shall be conducted in accordance with ARA Technical Memorandum ™ 91-01, “Test Methods and Equipment Specifications for Stationary Sources” (January, 1991), as amended by Supplement 1 (July 1, 1991), 40 CFR 51, 40 CFR 60, or subsequent test protocols approved by ARA. Test ports shall be located in

accordance with the TM 91-01 (January 1991), or subsequent or alternative measures approved by ARA.

Initial Performance Testing

(4) As part to the testing requirements in § 60.56c(b), the Permittee "of an affected facility as defined in § 60.50c(a)(3) and (4), shall conduct an initial performance test as required under § 60.8 to determine compliance with the emissions limits using the procedures and test methods listed in paragraphs (b)(1) through (b)(14). The use of the bypass stack during a performance test shall invalidate the performance test.

(1) All performance tests shall consist of a minimum of three test runs conducted under representative operating conditions.

(2) The minimum sample time shall be 1 hour per test run unless otherwise indicated.

(3) EPA Reference Method 1 of appendix A of this part shall be used to select the sampling location and number of traverse points.

(4) EPA Reference Method 3, 3A, or 3B of appendix A-2 of this part shall be used for gas composition analysis, including measurement of oxygen concentration. EPA Reference Method 3, 3A, or 3B of appendix A-2 of this part shall be used simultaneously with each of the other EPA reference methods. As an alternative to EPA Reference Method 3B, ASME PTC-19-10-1981-Part 10 may be used (incorporated by reference, *see* § 60.17).

(5) The pollutant concentrations shall be adjusted to 7 percent oxygen using the following equation:

$$C_{adj} = C_{meas} (20.9-7)/(20.9-\%O_2)$$

where:

C_{adj} = pollutant concentration adjusted to 7 percent oxygen;
C_{meas} = pollutant concentration measured on a dry basis (20.9 − 7) = 20.9 percent oxygen—7 percent oxygen (defined oxygen correction basis);
20.9 = oxygen concentration in air, percent; and
$\%O_2$ = oxygen concentration measured on a dry basis, percent.

(6) EPA Reference Method 5 of appendix A-3 or Method 26A or Method 29 of appendix A-8 of this part shall be used to measure the particulate matter

emissions. As an alternative, PM CEMS may be used as specified in paragraph (c)(5) of this section.

(7) EPA Reference Method 7 or 7E of appendix A-4 of this part shall be used to measure NOx emissions.

(8) EPA Reference Method 6 or 6C of appendix A-4 of this part shall be used to measure SO_2 emissions.

(9) EPA Reference Method 9 of appendix A-4 of this part shall be used to measure stack opacity. As an alternative, demonstration of compliance with the PM standards using bag leak detection systems as specified in § 60.57c(h) or PM CEMS as specified in paragraph (c)(5) of this section is considered demonstrative of compliance with the opacity requirements.

(10) EPA Reference Method 10 or 10B of appendix A-4 of this part shall be used to measure the CO emissions. As specified in paragraph (c)(4) of this section, use of CO CEMS are required for affected facilities under § 60.50c(a)(3) and (4).

(11) EPA Reference Method 23 of appendix A-7 of this part shall be used to measure total dioxin/furan emissions. As an alternative, an owner or operator may elect to sample dioxins/furans by installing, calibrating, maintaining, and operating a continuous automated sampling system for monitoring dioxin/furan emissions as specified in paragraph (c)(6) of this section. For Method 23 of appendix A-7 sampling, the minimum sample time shall be 4 hours per test run. If the affected facility has selected the toxic equivalency standards for dioxins/furans, under § 60.52c, the following procedures shall be used to determine compliance:

(i) Measure the concentration of each dioxin/furan tetra-through octa-congener emitted using EPA Reference Method 23.

(ii) For each dioxin/furan congener measured in accordance with paragraph (b)(9)(i) of this section, multiply the congener concentration by its corresponding toxic equivalency factor specified in table 2 of this subpart.

(iii) Sum the products calculated in accordance with paragraph (b)(9)(ii) of this section to obtain the total concentration of dioxins/furans emitted in terms of toxic equivalency.

(12) EPA Reference Method 26 or 26A of appendix A-8 of this part shall be used to measure HCl emissions. As an alternative, HCl CEMS may be used as specified in paragraph (c)(5) of this section.

(13) EPA Reference Method 29 of appendix A-8 of this part shall be used to measure Pb, Cd, and Hg emissions. As an alternative, Hg emissions may be measured using ASTM D6784-02 (incorporated by reference, *see* § 60.17). As an alternative for Pb, Cd, and Hg, multi-metals CEMS or Hg CEMS, may be used as specified in paragraph (c)(5) of this section. As an alternative, an owner or operator may elect to sample Hg by installing, calibrating, maintaining, and operating a continuous automated sampling system for monitoring Hg emissions as specified in paragraph (c)(7) of this section.

(14) The EPA Reference Method 22 of appendix A-7 of this part shall be used to determine compliance with the fugitive ash emissions limit under § 60.52c(c). The minimum observation time shall be a series of three 1-hour observations."

Subsequent Performance Testing

(5) As part to the testing requirements in § 60.56c(c), "following the date on which the initial performance test is completed or is required to be completed under § 60.8, whichever date comes first, the owner or operator of an affected facility shall:

(1) Determine compliance with the opacity limit by conducting an annual performance test (no more than 12 months following the previous performance test) using the applicable procedures and test methods listed in paragraph (b) of this section.

(2) Except as provided in paragraphs (c)(4) and (c)(5) of this section, determine compliance with the PM, CO, and HCl emissions limits by conducting an annual performance test (no more than 12 months following the previous performance test) using the applicable procedures and test methods listed in paragraph (b) of this section. If all three performance tests over a 3-year period indicate compliance with the emissions limit for a pollutant (PM, CO, or HCl), the owner or operator may forego a performance test for that pollutant for the subsequent 2 years. At a minimum, a performance test for PM, CO, and HCl shall be conducted every third year (no more than 36 months following the previous performance test). If a performance test conducted every third year indicates compliance with the emissions limit for a pollutant (PM, CO, or HCl), the owner or operator may forego a performance test for that pollutant for an additional 2 years. If any

performance test indicates noncompliance with the respective emissions limit, a performance test for that pollutant shall be conducted annually until all annual performance tests over a 3-year period indicate compliance with the emissions limit. The use of the bypass stack during a performance test shall invalidate the performance test.

(3) For an affected facility as defined in § 60.50c(a)(1) and (2) and utilizing a large HMIWI, and in § 60.50c(a)(3) and (4), determine compliance with the visible emissions limits for fugitive emissions from flyash/bottom ash storage and handling by conducting a performance test using EPA Reference Method 22 of appendix A-7 on an annual basis (no more than 12 months following the previous performance test).

(4) For an affected facility as defined in § 60.50c(a)(3) and (4), determine compliance with the CO emissions limit using a CO CEMS according to paragraphs (c)(4)(i) through (c)(4)(iii) of this section:

(i) Determine compliance with the CO emissions limit using a 24-hour block average, calculated as specified in section 12.4.1 of EPA Reference Method 19 of appendix A-7 of this part.

(ii) Operate the CO CEMS in accordance with the applicable procedures under appendices B and F of this part.

(iii) Use of a CO CEMS may be substituted for the CO annual performance test and minimum secondary chamber temperature to demonstrate compliance with the CO emissions limit.

(5) Facilities using CEMS to demonstrate compliance with any of the emissions limits under § 60.52c shall:

(i) …

(ii) For an affected facility as defined in § 60.50c(a)(3) and (4), determine compliance with the appropriate emissions limit(s) using a 24-hour block average, calculated as specified in section 12.4.1 of EPA Reference Method 19 of appendix A-7 of this part.

(iii) Operate all CEMS in accordance with the applicable procedures under appendices B and F of this part. For those CEMS for which performance specifications have not yet been promulgated (HCl, multi-metals), this option for an affected facility as defined in § 60.50c(a)(3) and (4) takes effect on the date a final performance specification is published in the Federal Register or the date of approval of a site-specific monitoring plan.

(iv) For an affected facility as defined in § 60.50c(a)(3) and (4), be allowed to substitute use of an HCl CEMS for the HCl annual performance test, minimum HCl sorbent flow rate, and minimum scrubber liquor pH to demonstrate compliance with the HCl emissions limit.

(v) For an affected facility as defined in § 60.50c(a)(3) and (4), be allowed to substitute use of a PM CEMS for the PM annual performance test and minimum pressure drop across the wet scrubber, if applicable, to demonstrate compliance with the PM emissions limit."

Note: [As stated in Section 4.3.1.2.5 of the Permit to Construct application, to demonstrate performance compliance, the Permittee plans to use CEMS for CO. The Permittee also plans to request the use of CEMS for NOx & SO_2 to demonstrate compliance].

Note: [As stated in Section 4.3.1.2.5 of PTC application, CEMS will be utilized to monitor emissions of NOx and SO_2, however, Subpart Ec does not specify use of CEMS or COMS as an alternative to initial compliance demonstration requirements for NOx, SO_2, or opacity. As allowed in §60.8(b)(3), Fort Detrick requests to follow the requirements of §60.56c(c)(5) to demonstrate compliance with the NOx and SO_2 emission limit through the use of CEMS.]

(6) An affected facility as defined in § 60.50c(a)(3) and (4) using a continuous automated sampling system to demonstrate compliance with the dioxin/furan emissions limits under § 60.52c shall record the output of the system and analyze the sample according to EPA Reference Method 23 of appendix A-7 of this part. This option to use a continuous automated sampling system takes effect on the date a final performance specification applicable to dioxin/furan from monitors is published in the Federal Register or the date of approval of a site-specific monitoring plan. The owner or operator of an affected facility as defined in § 60.50c(a)(3) and (4) who elects to continuously sample dioxin/furan emissions instead of sampling and testing using EPA Reference Method 23 of appendix A-7 shall install, calibrate, maintain, and operate a continuous automated sampling system and shall comply with the requirements specified in § 60.58b(p) and (q) of subpart Eb of this part.

Note: [As stated in Section 4.3.1.2.5 of PTC application, Method 23 or use of a continuous automated sampling system per 60.56c(b)(11) will be utilized to monitor emissions of Dioxin/furan.]

(7) An affected facility as defined in § 60.50c(a)(3) and (4) using a continuous automated sampling system to demonstrate compliance with the Hg emissions limits under § 60.52c shall record the output of the system and analyze the sample at set intervals using any suitable determinative technique that can meet appropriate performance criteria. This option to use a continuous automated sampling system takes effect on the date a final

performance specification applicable to Hg from monitors is published in the Federal Register or the date of approval of a site-specific monitoring plan. The owner or operator of an affected facility as defined in § 60.50c(a)(3) and (4) who elects to continuously sample Hg emissions instead of sampling and testing using EPA Reference Method 29 of appendix A-8 of this part, or an approved alternative method for measuring Hg emissions, shall install, calibrate, maintain, and operate a continuous automated sampling system and shall comply with the requirements specified in § 60.58b(p) and (q) of subpart Eb of this part.

Note: [As stated in Section 4.3.1.2.5 of PTC application, Method 29 or use of ASTM D6784-02 per 60.56c(b)(13) will be utilized to monitor emissions of Hg.]

(8) "The owner or operator of an affected facility may conduct a repeat performance test within 30 days of violation of applicable operating parameter(s) to demonstrate that the affected facility is not in violation of the applicable emissions limit(s). Repeat performance tests conducted pursuant to this paragraph shall be conducted using the identical operating parameters that indicated a violation under paragraph ~~(e)~~, ~~(f),~~ **(g)** or ~~(h)~~ of this section."

Note: [Due to the configuration of the control device with MWI for Fort Detrick project, only requirement (g) is applicable]

(9) ….

(10) The owner or operator of an affected facility may conduct a repeat performance test at any time to establish new values for the operating parameters. The Administrator may request a repeat performance test at any time."

[Reference 40 CFR §60.56c]

Monitoring requirements for the Hospital/Medical/Infectious Waste incinerators.

(6) The Permittee shall conduct the monitoring efforts in accordance with the applicable requirements listed in § 60.57c, "Monitoring requirements."

(7) As part of the monitoring requirements, the Permittee shall comply with the qualification requirements in § 60.53c(f) regarding the maintenance of operator training and qualification requirements. As stated, "to maintain qualification, the trained and qualified HMIWI operator shall complete and pass an annual review or refresher course of at least 4 hours covering, at a minimum, the following:
(1) Update of regulations;
(2) Incinerator operation, including startup and shutdown procedures;
(3) Inspection and maintenance;

(4) Responses to malfunctions or conditions that may lead to malfunction; and
(5) Discussion of operating problems encountered by attendees."

(8) As part of the monitoring requirements, the Permittee shall comply with the requirements in § 60.53c(i). As stated, "the owner or operator of an affected facility shall establish a program for reviewing the information listed in paragraph (h) of this section annually with each HMIWI operator (defined in § 60.51c).
(1) The initial review of the information listed in paragraph (h) of this section shall be conducted within 6 months after the effective date of this subpart or prior to assumption of responsibilities affecting HMIWI operation, whichever date is later.
(2) Subsequent reviews of the information listed in paragraph (h) of this section shall be conducted annually."

(9) As stated in **§ 60.57c(a)**, "except as provided in § 60.56c(c)(4) through (c)(7), the owner or operator of an affected facility shall install, calibrate (to manufacturers' specifications), maintain, and operate devices (or establish methods) for monitoring the applicable maximum and minimum operating parameters listed in Table 3 to this subpart (unless CEMS are used as a substitute for certain parameters as specified) such that these devices (or methods) measure and record values for these operating parameters at the frequencies indicated in Table 3 of this subpart at all times."

(10) In accordance with **§ 60.57c(c)**, "the owner or operator of an affected facility shall install, calibrate (to manufacturers' specifications), maintain, and operate a device or method for measuring the use of the bypass stack including date, time, and duration.

(11) In accordance with **§ 60.57c(e)**, "the owner or operator of an affected facility shall obtain monitoring data at all times during HMIWI operation except during periods of monitoring equipment malfunction, calibration, or repair. At a minimum, valid monitoring data shall be obtained for 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter that the affected facility is combusting hospital waste and/or medical/infectious waste.

(12) The Permittee shall continuously monitor and record all the parameters listed in Table 3 as stated in **§ 60.57c(a)**.

(13) The Permittee shall follow all maintenance schedules and procedures (i.e., filter cartridge and activated carbon change outs) as needed for all the emissions control units (i.e. dry scrubber, fabric filter, venturi scrubber and wet scrubber) serving the air pollution control system, including any supporting devices employed to monitor their performance in accordance to the manufacturer's recommendation included with the permit application.

(14) In accordance with **§ 60.57c(f)**, "the owner or operator of an affected facility as defined in § 60.50c(a)(3) and (4) shall ensure that each HMIWI subject to the emissions limits in § 60.52c undergoes an initial air pollution control device inspection that is at least as protective as the following:

(1) At a minimum, an inspection shall include the following:
(i) Inspect air pollution control device(s) for proper operation, if applicable;
(ii) Ensure proper calibration of thermocouples, sorbent feed systems, and any other monitoring equipment; and
(iii) Generally observe that the equipment is maintained in good operating condition.

(2) Within 10 operating days following an air pollution control device inspection, all necessary repairs shall be completed unless the owner or operator obtains written approval from the Administrator establishing a date whereby all necessary repairs of the designated facility shall be completed." **[Reference 40 CFR § 60.57c(f)(1) & (2)]**

(15) In accordance with **§ 60.57c(g)**, "the owner or operator of an affected facility as defined in § 60.50c(a)(3) and (4) shall ensure that each HMIWI subject to the emissions limits under § 60.52c undergoes an air pollution control device inspection annually (no more than 12 months following the previous annual air pollution control device inspection), as outlined in paragraphs (f)(1) and (f)(2) of this section.

(16) In accordance with **§ 60.57c(h)**, "for affected facilities as defined in § 60.50c(a)(3) and (4) that use an air pollution control device that includes a fabric filter and are not demonstrating compliance using PM CEMS, determine compliance with the PM emissions limit using a bag leak detection system and meet the requirements in paragraphs (h)(1) through (h)(12) of this section for each bag leak detection system.

(1) Each triboelectric bag leak detection system may be installed, calibrated, operated, and maintained according to the "Fabric Filter Bag Leak Detection Guidance," (EPA-454/R-98-015, September 1997). This document is available from the U.S. Environmental Protection Agency (U.S. EPA); Office of Air Quality Planning and Standards; Sector Policies and Programs Division; Measurement Policy Group (D-243-02), Research Triangle Park, NC 27711. This document is also available on the Technology Transfer Network (TTN) under Emissions Measurement Center Continuous Emissions Monitoring. Other types of bag leak detection systems shall be installed, operated, calibrated, and maintained in a manner consistent with the manufacturer's written specifications and recommendations.

(2) The bag leak detection system shall be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.

(3) The bag leak detection system sensor shall provide an output of relative PM loadings.

(4) The bag leak detection system shall be equipped with a device to continuously record the output signal from the sensor.

(5) The bag leak detection system shall be equipped with an audible alarm system that will sound automatically when an increase in relative PM emissions over a preset level is detected. The alarm shall be located where it is easily heard by plant operating personnel.

(6) For positive pressure fabric filter systems, a bag leak detector shall be installed in each baghouse compartment or cell.

(7) For negative pressure or induced air fabric filters, the bag leak detector shall be installed downstream of the fabric filter.

(8) Where multiple detectors are required, the system's instrumentation and alarm may be shared among detectors.

(9) The baseline output shall be established by adjusting the range and the averaging period of the device and establishing the alarm set points and the alarm delay time according to section 5.0 of the “Fabric Filter Bag Leak Detection Guidance.

(10) Following initial adjustment of the system, the sensitivity or range, averaging period, alarm set points, or alarm delay time may not be adjusted. In no case may the sensitivity be increased by more than 100 percent or decreased more than 50 percent over a 365-day period unless such adjustment follows a complete fabric filter inspection that demonstrates that the fabric filter is in good operating condition. Each adjustment shall be recorded.

(11) Record the results of each inspection, calibration, and validation check.

(12) Initiate corrective action within 1 hour of a bag leak detection system alarm; operate and maintain the fabric filter such that the alarm is not engaged for more than 5 percent of the total operating time in a 6-month block reporting period. If inspection of the fabric filter demonstrates that no corrective action is required, no alarm time is counted. If corrective action is required, each

alarm is counted as a minimum of 1 hour. If it takes longer than 1 hour to initiate corrective action, the alarm time is counted as the actual amount of time taken to initiate corrective action."
[Reference 40 CFR § 60.57c(h)(1)-(12)]

Part F – Notification, Record Keeping and Reporting

(1) The Permitee shall provide written notification to the Air and Radiation Administration when construction operations for the registered equipment in this permit has commenced.

(2) The Permitee shall provide written notification to the Air and Radiation Administration when commercial operations for the registered equipment in this permit has commenced.

(3) As part of the record keeping requirements, the Permittee shall comply with the requirements in **§ 60.53c(h)**. As stated, "the owner or operator of an affected facility shall maintain documentation at the facility that address the following:

(1) Summary of the applicable standards under this subpart;
(2) Description of basic combustion theory applicable to an HMIWI;
(3) Procedures for receiving, handling, and charging waste;
(4) HMIWI startup, shutdown, and malfunction procedures;
(5) Procedures for maintaining proper combustion air supply levels;
(6) Procedures for operating the HMIWI and associated air pollution control systems within the standards established under this subpart;
(7) Procedures for responding to periodic malfunction or conditions that may lead to malfunction;
(8) Procedures for monitoring HMIWI emissions;
(9) Reporting and recordkeeping procedures; and
(10) Procedures for handling ash."

(4) As part of the record keeping requirements, the Permittee shall comply with the requirements in **§ 60.53c(j)**. As stated, "the information listed in paragraph (h) of this section shall be kept in a readily accessible location for all HMIWI operators. This information, along with records of training shall be available for inspection by the EPA or its delegated enforcement agent upon request."

(1) In accordance with **§ 60.58c(a)**, "the owner or operator of an affected facility shall submit notifications, as provided by § 60.7. In addition, the owner or operator shall submit the following information:

(1) Prior to commencement of construction;

(i) A statement of intent to construct;
(ii) The anticipated date of commencement of construction; and
(iii) All documentation produced as a result of the siting requirements of § 60.54c.

(2) Prior to initial startup;
(i) The type(s) of waste to be combusted;
(ii) The maximum design waste burning capacity;
(iii) The anticipated maximum charge rate; and
(iv) If applicable, the petition for site-specific operating parameters under § 60.56c(j).

(2) In accordance with **§ 60.58c(b)**, "the owner or operator of an affected facility shall maintain the following information (as applicable) for a period of at least 5 years:

(1) Calendar date of each record;
(2) Records of the following data:
(i) Concentrations of any pollutant listed in § 60.52c or measurements of opacity as determined by the continuous emission monitoring system (if applicable);
(ii) Results of fugitive emissions (by EPA Reference Method 22) tests, if applicable;
(iii) HMIWI charge dates, times, and weights and hourly charge rates;
(iv) Fabric filter inlet temperatures during each minute of operation, as applicable;
(v) Amount and type of dioxin/furan sorbent used during each hour of operation, as applicable;
(vi) Amount and type of Hg sorbent used during each hour of operation, as applicable;
(vii) Amount and type of HCl sorbent used during each hour of operation, as applicable;
(viii) For affected facilities as defined in § 60.50c(a)(3) and (4), amount and type of NOx reagent used during each hour of operation, as applicable;
(ix) Secondary chamber temperatures recorded during each minute of operation;
(x) Liquor flow rate to the wet scrubber inlet during each minute of operation, as applicable;
(xi) Horsepower or amperage to the wet scrubber during each minute of operation, as applicable;
(xii) Pressure drop across the wet scrubber system during each minute of operation, as applicable,

(xiii) Temperature at the outlet from the wet scrubber during each minute of operation, as applicable;
(xiv) pH at the inlet to the wet scrubber during each minute of operation, as applicable,
(xv) Records indicating use of the bypass stack, including dates, times, and durations, and
(xvi) …;
(xvii) For affected facilities as defined in § 60.50c(a)(3) and (4), records of the annual air pollution control device inspections, any required maintenance, and any repairs not completed within 10 days of an inspection or the timeframe established by the Administrator.
(xviii) For affected facilities as defined in § 60.50c(a)(3) and (4), records of each bag leak detection system alarm, the time of the alarm, the time corrective action was initiated and completed, and a brief description of the cause of the alarm and the corrective action taken, as applicable.
(xix) For affected facilities as defined in § 60.50c(a)(3) and (4), concentrations of CO as determined by the continuous emissions monitoring system.

(3) Identification of calendar days for which data on emission rates or operating parameters specified under paragraph (b)(2) of this section have not been obtained, with an identification of the emission rates or operating parameters not measured, reasons for not obtaining the data, and a description of corrective actions taken.

(4) Identification of calendar days, times and durations of malfunctions, a description of the malfunction and the corrective action taken.

(5) Identification of calendar days for which data on emission rates or operating parameters specified under paragraph (b)(2) of this section exceeded the applicable limits, with a description of the exceedances, reasons for such exceedances, and a description of corrective actions taken.

(6) The results of the initial, annual, and any subsequent performance tests conducted to determine compliance with the emissions limits and/or to establish or re-establish operating parameters, as applicable, and a description, including sample calculations, of how the operating parameters were established or re-established, if applicable.

(7) All documentation produced as a result of the siting requirements of § 60.54c;

(8) Records showing the names of HMIWI operators who have completed review of the information in § 60.53c(h) as required by § 60.53c(i), including the date of the initial review and all subsequent annual reviews;

(9) Records showing the names of the HMIWI operators who have completed the operator training requirements, including documentation of training and the dates of the training;

(10) Records showing the names of the HMIWI operators who have met the criteria for qualification under § 60.53c and the dates of their qualification; and

(11) Records of calibration of any monitoring devices as required under § 60.57c(a) through (d).

(12) In accordance with **§ 60.58c(c)**, "the owner or operator of an affected facility shall submit the information specified in paragraphs (c)(1) through (c)(4) of this section no later than 60 days following the initial performance test. All reports shall be signed by the facilities manager.

(1) The initial performance test data as recorded under § 60.56c(b)(1) through (b)(14), as applicable.
(2) …
(3) The waste management plan as specified in § 60.55c.
(4) For each affected facility as defined in § 60.50c(a)(3) and (4) that uses a bag leak detection system, analysis and supporting documentation demonstrating conformance with EPA guidance and specifications for bag leak detection systems in § 60.57c(h).

(13) In accordance with **§ 60.58c(d)**, "an annual report shall be submitted 1 year following the submissions of the information in paragraph (c) of this section and subsequent reports shall be submitted no more than 12 months following the previous report (once the unit is subject to permitting requirements under title V of the Clean Air Act, the owner or operator of an affected facility must submit these reports semiannually). The annual report shall include the information specified in paragraphs (d)(1) through (11) of this section. All reports shall be signed by the facilities manager.

(1) ….
(2) ….
(3) ….
(4) Any information recorded under paragraphs (b)(3) through (b)(5) of this section for the calendar year being reported.

(5) Any information recorded under paragraphs (b)(3) through (b)(5) of this section for the calendar year preceding the year being reported, in order to provide the Administrator with a summary of the performance of the affected facility over a 2-year period.

(6) If a performance test was conducted during the reporting period, the results of that test.

(7) If no exceedances or malfunctions were reported under paragraphs (b)(3) through (b)(5) of this section for the calendar year being reported, a statement that no exceedances occurred during the reporting period.

(8) Any use of the bypass stack, the duration, reason for malfunction, and corrective action taken.

(9) For affected facilities as defined in § 60.50c(a)(3) and (4), records of the annual air pollution control device inspection, any required maintenance, and any repairs not completed within 10 days of an inspection or the timeframe established by the Administrator.

(10) For affected facilities as defined in § 60.50c(a)(3) and (4), records of each bag leak detection system alarm, the time of the alarm, the time corrective action was initiated and completed, and a brief description of the cause of the alarm and the corrective action taken, as applicable.

(11) For affected facilities as defined in § 60.50c(a)(3) and (4), concentrations of CO as determined by the continuous emissions monitoring system." **[Reference 40 CFR § 60.58c(d)(1)-(11)]**

(14) In accordance with **§ 60.58c(e)**, "the owner or operator of an affected facility shall submit semiannual reports containing any information recorded under paragraphs (b)(3) through (b)(5) of this section no later than 60 days following the reporting period. The first semiannual reporting period ends 6 months following the submission of information in paragraph (c) of this section. Subsequent reports shall be submitted no later than 6 calendar months following the previous report. All reports shall be signed by the facilities manager.

(15) In accordance with **§ 60.58c(f)**, "all records specified under paragraph (b) of this section shall be maintained onsite in either paper copy or computer-readable format, unless an alternative format is approved by the Administrator.

(16) In accordance with **§ 60.58c(g)**, "for affected facilities, as defined in § 60.50c(a)(3) and (4), that choose to submit an electronic copy of stack test reports to EPA's WebFIRE data base, as of December 31, 2011, the owner or operator of an affected facility shall enter the test data into EPA's data base using the Electronic Reporting Tool located at *http://www.epa.gov/ttn/chief/ert/ert_tool.html*.

(17) The Permittee shall maintain at the facility for at least five (5) years, and shall make available to the Department upon request, records necessary to support annual certifications of emissions and demonstrations of compliance for toxic air pollutants. Such records shall include, if applicable, the following:

(a) mass emissions rates for each regulated pollutant, and the total mass emissions rate for all regulated pollutants for each registered source of emissions;

(b) accounts of the methods and assumptions used to quantify emissions;

(c) all operating data, including operating schedules and production data, that were used in determinations of emissions;

(d) amounts, types, and analyses of all fuels used;

(e) any records, the maintenance of which is required by this permit or by State or federal regulations, that pertain to the operation and maintenance of continuous emissions monitors, including:

(i) all emissions data generated by such monitors;

(ii) all monitor calibration data;

(iii) information regarding the percentage of time each monitor was available for service; and

(iv) information concerning any equipment malfunctions.

(f) information concerning operation, maintenance, and performance of air pollution control equipment and compliance monitoring equipment, including:

(i) identifications and descriptions of all such equipment;

(ii) operating schedules for each item of such equipment;

(iii) accounts of any significant maintenance performed;

(iv) accounts of all malfunctions and outages; and

(v) accounts of any episodes of reduced efficiency.

(g) limitations on source operation or any work practice standards that significantly affect emissions; and

(h) other relevant information as required by the Department.

(18) The owner or operator of an affected facility shall maintain documentation at the facility that address the following:

(1) Summary of the applicable standards under this subpart;
(2) Description of basic combustion theory applicable to an HMIWI;
(3) Procedures for receiving, handling, and charging waste;
(4) HMIWI startup, shutdown, and malfunction procedures;
(5) Procedures for maintaining proper combustion air supply levels;
(6) Procedures for operating the HMIWI and associated air pollution control systems within the standards established under this subpart;
(7) Procedures for responding to periodic malfunction or conditions that may lead to malfunction;
(8) Procedures for monitoring HMIWI emissions;
(9) Reporting and recordkeeping procedures; and
(10) Procedures for handling ash.

(19) The information listed in paragraph (h) of this section shall be kept in a readily accessible location for all HMIWI operators. This information, along with records of training shall be available for inspection by the EPA or its delegated enforcement agent upon request.

(20) The Permittee shall submit to the Department by April 1 of each year a certification of emissions for the previous calendar year. The certifications shall be prepared in accordance with requirements, as applicable, adopted under COMAR 26.11.01.05 – 1 and COMAR 26.11.02.19D.

(a) Certifications of emissions shall be submitted on forms obtained from the Department.

(b) A certification of emissions shall include mass emissions rates for each regulated pollutant, and the total mass emissions rate

for all regulated pollutants for each of the facility's registered sources of emissions.

(c) The person responsible for a certification of emissions shall certify the submittal to the Department in the following manner:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

(21) The Permittee shall submit to the Department by April 1 of each year a written certification of the results of an analysis of emissions of toxic air pollutants from the Permittee's facility during the previous calendar year. Such analysis shall include either:

(a) a statement that previously submitted compliance demonstrations for emissions of toxic air pollutants remain valid; or
(b) a revised compliance demonstration, developed in accordance with requirements included under COMAR 26.11.15 & 16, that accounts for changes in operations, analytical methods, emissions determinations, or other factors that have invalidated previous demonstrations.

(22) The Permittee shall report, in accordance with requirements under COMAR 26.11.01.07, occurrences of excess emissions to the Compliance Program of the Air and Radiation Administration.

For natural gas fired emergency generator (Record Keeping & Reporting)

(23) For each emergency generator, the Permittee shall maintain records of all maintenance conducted on the engine and documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR, Parts 90, 1048, 1054, and 1060, as applicable. **[Reference: 40 CFR §60.4245(a)]**

(24) For each emergency generator, if the engine is not certified to non-emergency standards in Table 1 to 40 CFR 60, Subpart JJJJ, the Permittee shall maintain records of the hours of operation of the emergency generator that are recorded through the non-resettable hour meter. The Permittee must document how many hours are spent for emergency operation, including what classified the operation as emergency, and how many hours are spent for non-emergency operation. **[Reference: 40 CFR §60.4245(b)]**

(25) All records must be kept for at least two (2) years and must be readily accessible in hard copy or electronic format, and readily available for expeditious review.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

AIR AND RADIATION ADMINISTRATION

SUPPLEMENTAL INFORMATION REFERENCES

The Code of Maryland Regulations (COMAR) is searchable by COMAR citation at the following Division of State Documents website:
https://dsd.maryland.gov/Pages/default.aspx

The Code of Federal Regulations (CFR), including New Source Performance Standards (NSPS) at 40 CFR, Part 60 and National Emission Standards for Hazardous Air Pollutants (NESHAP) at 40 CFR, Parts 61 and 63, is searchable by CFR citation at the following U.S. Government Publishing Office website:
http://www.ecfr.gov

Information on National Ambient Air Quality Standards (NAAQS) is located at the following U.S. Environmental Protection Agency (EPA) website:
https://www.epa.gov/criteria-air-pollutants/naaqs-table

Information on Maryland's Ambient Air Monitoring Program is located at the following Maryland Department of the Environment website:
http://mde.maryland.gov/programs/Air/AirQualityMonitoring/Pages/index.aspx

Information on the U.S. EPA's Screen3 computer model and other EPA-approved air dispersion models is located at the following U.S. EPA website:
https://www.epa.gov/scram/air-quality-dispersion-modeling-screening-models

Information on the U.S. EPA TANKS Emission Estimation Software is located at the following U.S. EPA website:
https://www.epa.gov/air-emissions-factors-and-quantification/tanks-emissions-estimation-software-version-5

Information on the U.S. EPA Emission Factors and AP-42 is located at the following U.S. EPA website:
https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emission-factors