

CHAPTER 115 MINOR MODIFICATION AIR LICENSE APPLICATION

Gould Academy
November 2024



[MainlyEnvironmental.com](https://www.MainlyEnvironmental.com)

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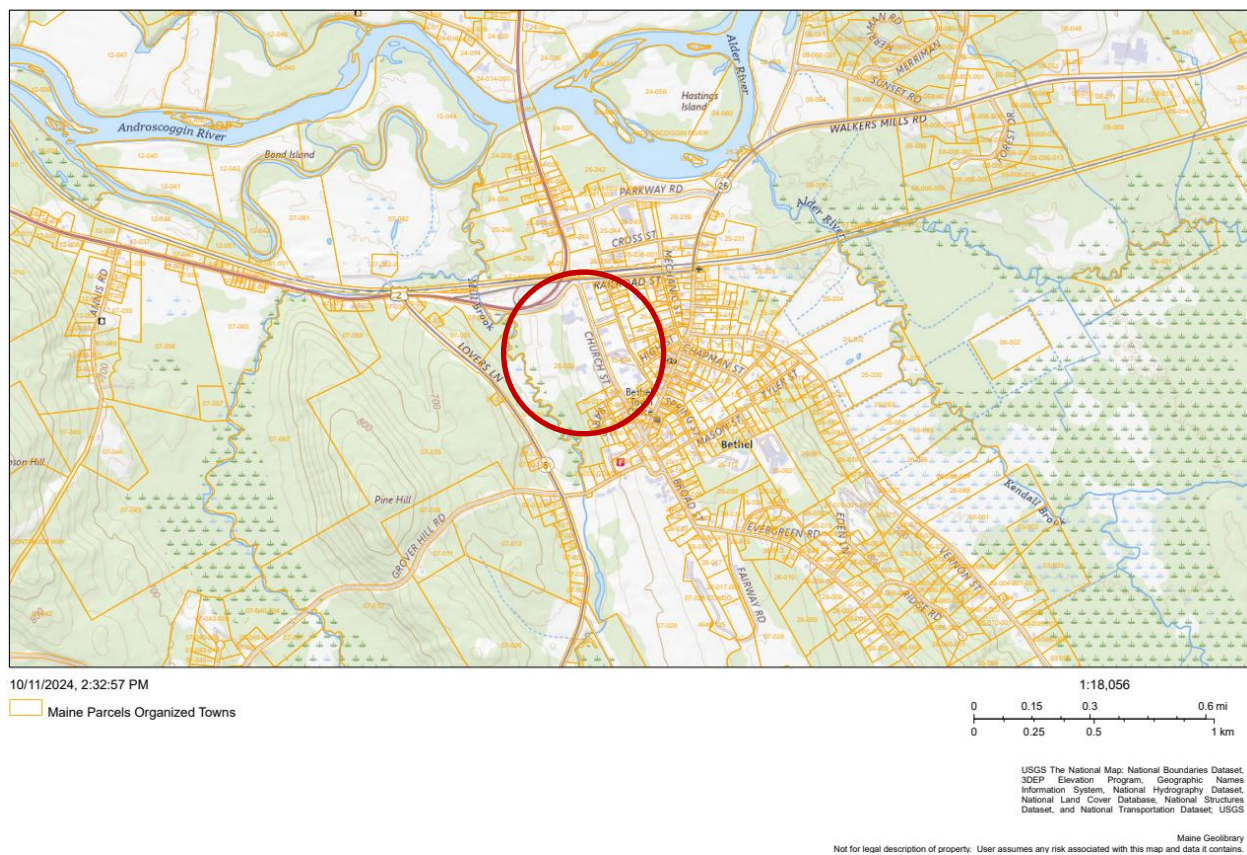
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1. INTRODUCTION

Gould Academy is applying for an air emissions license to construct boilers at its High School located at 39 Church Street in Bethel, Maine. See Figure 1-1 below. Gould Academy is removing 6.0 MMBtu/hr Kewanee Boilers #1 and 2 and at the main heating plant in Bingham Hall and adding a new dual fuel Smith Boiler (28HE-S-18) with a Limpsfield Burner rated at 38.3 GPH oil and 5.25 MMBH propane, designated Boiler #8. The existing Burnham Boiler #3 shall remain at Bingham Hall, however, its Limpsfield burner will be retrofitted to allow it to fire either #2 or propane and will be derated from 10.5 MMBtu/hr to 6.3 MMBtu/hr. Boiler #8 and #3 will both vent through existing Stack #1. Additionally, a new 1.75 MMBtu/hr Smith Boiler (Boiler #9) with a Limpsfield LC dual fuel burner rated at 12.8 GPH oil and 1.75 MMBH propane will be added at Holden Hall.

Figure 1-1: Facility Location Map



1.1 Report Organization

A description of the affected equipment is provided in Section 1-2. Section 2 identifies the project emissions and licensing classification. Section 3 includes the required Best Available Control Technology (BACT) analyses.

The required Maine DEP application forms, including the certification of a responsible official, are included in Appendix A. Copies of the Public Notice, run in the Bethel Citizen, and email to the Town of Bethel are included in Appendix B. Appendix C includes a Building Layout Plan, and Appendix D includes the new boiler and burner specification sheets.

1.2 Regulated Equipment Description

In the Bingham Hall Heating Plant, Gould Academy is planning to install new Boiler #8, convert Boiler #3 to dual fuel, and remove Boilers #1 and #2. In Holden Hall Gould is planning to install Boiler #9.

Affected emission units at Gould are identified in Tables 1-1.

Table 1-1: Fuel Burning

Equipment ID	Make/Model	Maximum Design Capacity	Fuel Type (Sulfur Content)	Maximum Hourly Fuel Usage	Manufacture Date	Install Date	Control Equipment
		[MMBtu/hr]		[gal/hr]			
Boiler #1	To Be Removed						
Boiler #2	To Be Removed						
Boiler #3	Burnham/Limpsfield	6.3*	#2 (0.0015 % S) & Propane	Oil – 45.9 GPH Propane – 6.3 MMBtu/hr	1998	1998	N/A
Boiler #8	Smitt/Limpsfield	5.25*	#2 (0.0015 % S) & Propane	Oil – 38.3 GPH Propane – 5.25 MMBtu/hr	2024	2024	N/A
Boiler #9	Smitt/Limpsfield	1.75	#2 (0.0015 % S) & Propane	Oil – 12.8 GPH Propane – 1.75 MMBtu/hr	2024	2024	N/A

*Max heat input capacities are based on Limpsfield Burner nameplate capacities. #3 Boiler is Derated from 10.5 MMBtu/hr to 6.3 MMBtu/hr.

2. PROJECT CLASSIFICATION

2.1 Overview

This application qualifies as a New Source Review (NSR) Chapter 115 Minor Modification because its potential emissions changes are below the major source thresholds for this existing minor source. Table 2-1 below includes emissions for the each of the modified and/or new fuel-burning units proposed, specifically Boilers #3, #8, and #9. Table 2-2 summarizes the plant-wide emissions and compares them against key regulatory modeling and major source licensing thresholds. Because Gould Academy’s facility-wide Potential to Emit (PTE) is below both the modeling thresholds and major source thresholds it is classified as minor source of air emissions and is not required to submit an air emissions modeling analysis. Further the total potential for the new and modified equipment is below the major source threshold, qualifying this application as a “minor” modification to an existing minor source or air emissions.

2.2 Site Emissions (Emission Units & Aggregate Site Total)

Table 2-1: New & Modified Emission Units

Boiler #3							
Make & Model:	Burnham						
Fuel Type:	#2 Oil & Propane						
Max #2 Oil (gal/hr):	46.0						
Max Heat Input (MMBtu/hr):	6.3						
Pollutant	AP-42 Propane Emission Factors (lb/1000 gal)	Propane - Emission Rate (lb/MMBtu)	Propane Limit (lb/hr)	AP-42 #2 Oil Emission Factors (lb/1000 gal)	#2 Oil - Emission Rate (lb/MMBtu)	#2 Oil Limit (lb/hr)	PTE (TPY)
Nox	13	0.14	0.90	20	0.15	0.92	4.0
PM/PM ₁₀ /PM _{2.5}	0.7	0.01	0.05	3.3	0.02	0.15	0.7
CO*	7.5	0.08	0.52	5	0.04	0.23	2.3
VOC (TOC)	1	0.01	0.07	0.6	0.00	0.03	0.30
SO ₂	0.05	0.00	0.003	0.21	0.00	0.01	0.04
Boiler #8							
Make & Model:	Smith						
Fuel Type:	#2 Oil & Propane						
Max #2 Oil (gal/hr):	38.3						
Max Heat Input (MMBtu/hr):	5.25						
Pollutant	AP-42 Propane Emission Factors (lb/1000 gal)	Propane - Emission Rate (lb/MMBtu)	Propane Limit (lb/hr)	AP-42 #2 Oil Emission Factors (lb/1000 gal)	#2 Oil - Emission Rate (lb/MMBtu)	#2 Oil Limit (lb/hr)	PTE (TPY)
Nox	13	0.14	0.75	20	0.15	0.77	3.4
PM/PM ₁₀ /PM _{2.5}	0.7	0.01	0.04	3.3	0.02	0.13	0.6
CO*	7.5	0.08	0.43	5	0.04	0.19	1.9
VOC (TOC)	1	0.01	0.06	0.6	0.00	0.02	0.25
SO ₂	0.05	0.00	0.003	0.21	0.00	0.01	0.04
Boiler #9							
Make & Model:	Smith						
Fuel Type:	#2 Oil & Propane						
Max #2 Oil (gal/hr):	12.8						
Max Heat Input (MMBtu/hr):	1.75						
Pollutant	AP-42 Propane Emission Factors (lb/1000 gal)	Propane - Emission Rate (lb/MMBtu)	Propane Limit (lb/hr)	AP-42 #2 Oil Emission Factors (lb/1000 gal)	#2 Oil - Emission Rate (lb/MMBtu)	#2 Oil Limit (lb/hr)	PTE (TPY)
Nox	13	0.14	0.25	20	0.15	0.26	1.1
PM/PM ₁₀ /PM _{2.5}	0.7	0.01	0.01	3.3	0.02	0.04	0.2
CO*	7.5	0.08	0.14	5	0.04	0.06	0.6
VOC (TOC)	1	0.01	0.02	0.6	0.00	0.01	0.08
SO ₂	0.05	0.00	0.001	0.21	0.00	0.00	0.01

Table 2-2: Facility Wide Annual Potential to Emit (TPY) & Regulatory Thresholds

Annual Potential to Emit (TPY) & Regulatory Thresholds					
	NOx	PM/PM₁₀/PM_{2.5}	CO	VOC	SO₂
New/Modified Emission Units					
Boiler #3	4.03	0.66	2.26	0.30	0.04
Boiler #8	3.36	0.55	1.88	0.25	0.04
Boiler #9	1.12	0.18	0.63	0.08	0.01
Total:	8.5	1.4	4.8	0.6	0.1
Existing Emission Units (Emission Estimates based on Air License)					
Boiler #4	1.7	0.9	0.4		
Boiler #5	1.7	0.9	0.4		
Boiler #6	3.1	1.1	1.8	0.2	
Boiler #7	3.1	1.1	1.8	0.2	
Generator #1	0.1		0.1		
Generator #2	0.2		0.2		
Total (New + Existing):	18.4	5.4	9.5	1.0	0.1
Modeling Threshold	50	15/25	250	0	50
Major Threshold	100	100	100	100	100

3. BEST AVAILABLE CONTROL TECHNOLOGY

3.1 Overview

The proposed modification of Gould Academy's emission units including adding two new dual fuel fired Smith Boilers (#8 & #9) and modification to the Burnham Boiler's (#3) Limpsfield Burner to accommodate both Propane and #2 oil represent a minor modification to an existing minor source in accordance with Maine DEP Chapter 115 regulations. As such Gould Academy must demonstrate that the emissions from the proposed air emission units will receive Best Available Control Technology (BACT) as defined in Maine DEP Chapter 100 regulations. See Maine DEP Regulation Chapter 115 § 4(A)(4)(d). BACT is defined as:

An emission limitation (including a visible emissions standard) based on the maximum degree of reduction for each pollutant emitted from or which results from the new or modified emissions unit which the Department on a case by case basis, taking into account energy, environmental and economic impacts and other costs, determines is achievable for such emissions unit through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combination techniques for control of each pollutant. In no event shall the application of BACT result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Part 60 and 61 or any applicable emission standard established by the Department. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emission reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results. (Maine DEP Regulation Chapter 100 § 18)

The proposed air emission units have the potential to emit the following criteria air pollutants: Volatile organic compounds (VOCs), particulate matter (PM/PM₁₀/PM_{2.5}), nitrous oxides (NO_x), carbon monoxide (CO), and sulfur dioxide (SO₂). The BACT review prepared for the proposed equipment has been prepared following the Northeast States for Coordinated Air Use Management (NESCAUM) BACT Guideline. There are five key steps in the BACT Procedure:

1. Identify all control technologies applicable to the process;
2. Eliminate technically infeasible options;
3. Rank remaining control technologies by control effectiveness;
4. Evaluate technically feasible control alternatives (energy, environmental, and economic impacts) if a control technology less effective than the top option is proposed as BACT; and
5. Select BACT in consideration of energy, environmental, and economic impacts.

Provided in the following sections is a detailed BACT analysis for the proposed emission units.

3.2 Boilers #3, #8 & #9 (ULS Distillate Oil & Propane)

The air pollution control options available for dual fuel fired Boilers #3, #8, & #9, with maximum heat input capacities of 6.3, 5.25 & 1.75 MMBtu/hr, respectively, includes the installation of add-on pollution control devices, the use of clean fuels, and combustion control technologies and good practices. The technologies listed in Table 3-1 are determined to be potentially available control technologies for emissions generated by #2 oil fired boilers. The technologies are listed in order of effectiveness.

Table 3-1: Control Technology Options for Small Distillate Oil Boilers

Pollutant	Control Technology
NO _x	<ul style="list-style-type: none"> • Add-On Controls (i.e., Selective Catalytic Reduction, Selective Non-Catalytic Reduction) • Combustion Control Technologies (i.e. Low NO_x Burners, Flue Gas Recirculation, Fuel to Air Optimization) • Clean Fuel • Good Combustion Practices
PM/PM ₁₀ /PM _{2.5}	<ul style="list-style-type: none"> • Add-On Controls (i.e., particulate filtration) • Combustion Control Technologies (i.e. Flue Gas Recirculation, Fuel to Air Optimization) • Clean Fuel • Good Combustion Practices
CO	<ul style="list-style-type: none"> • Add-on Controls (i.e, oxidation catalyst) • Combustion Control Technologies (i.e. Flue Gas Recirculation, Fuel to Air Optimization) • Clean Fuel • Good Combustion Practices
VOCs	<ul style="list-style-type: none"> • Add-on Controls (i.e, oxidation catalyst) • Combustion Control Technologies (i.e. Flue Gas Recirculation, Fuel to Air Optimization) • Clean Fuel • Good Combustion Practices
SO ₂	<ul style="list-style-type: none"> • Low Sulfur Fuel

3.2.1 Control of NO_x/PM(s)/CO/VOC & SO₂

Potential control technologies to control air emission from fuel oil and propane combustion sources include: 1. Add-on Controls; 2. Combustion Control Technologies; 3. Combustion of Clean Fuels; and 4. Good Combustion Practices. Because of the low level of emissions (see table below) add on control are not warranted.

Combustion control technologies, however, are deemed feasible and selected for installation. Each of the boilers will incorporate Limpsfield LC series, dual fuel oil/propane, with Autoflame MK 8 combustion management systems, which minimize NO_x and CO emissions. A schematic Autoflame system is included in Appendix D.

The Autoflame system continuously measures the fuel and air flows to compensate for any variations from stored values, in an effort to maintain the commissioned burner efficiency. To compensate for changes the MM will trim the air damper position to try to maintain the commissioned excess air. In addition, the Autoflame system will move the fuel valve, to try to achieve the firing rate required to maintain the commissioned heat input. The fully metered combustion control works with the commissioned fuel valve and air damper positions, storing the mass or volume flow of the fuel and air at each point. The fuel-air mixture will determine the combustion performance; poor mixing of the fuel and air will reduce the burner's combustion performance, and in turn, decrease the combustion efficiency. Too fuel rich a fuel-air ratio will result in incomplete combustion, leaving unburnt fuel in the combustion products. Unburnt fuel will cause soot build-up or release harmful CO emissions. On the contrast, too much air in the combustion process can result in elevated NO_x emissions and may waste the heat generated by the fuel burning resulting in system inefficiency and wasted fuel.

Flue Gas Recirculation (FGR) combustion controls were also considered, however, due to the rapid cycling of heating demand needs for each of the boilers and the small boiler sizes, under 250 hp, FGR was not determined to be practical or feasible for the three boiler installations.

In addition to selection of low emissions Limpsfield Burner with MK8 Autoflame combustion controls for Boilers #3, 8, & 9, Gould Academy will use a very clean burning and low ash ultra-low sulfur fuel oil or propane and service the boilers in accordance with manufacturer recommendations, thereby operating it in accordance with good engineering practices. Provided below are the emission rates anticipated from these units, which represent BACT.

Boiler #3							
Make & Model:	Burnham						
Fuel Type:	#2 Oil & Propane						
Max #2 Oil (gal/hr):	46.0						
Max Heat Input (MMBtu/hr):	6.3						
Pollutant	AP-42 Propane Emission Factors (lb/1000 gal)	Propane - Emission Rate (lb/MMBtu)	Propane Limit (lb/hr)	AP-42 #2 Oil Emission Factors (lb/1000 gal)	#2 Oil - Emission Rate (lb/MMBtu)	#2 Oil Limit (lb/hr)	PTE (TPY)
Nox	13	0.14	0.90	20	0.15	0.92	4.0
PM/PM ₁₀ /PM _{2.5}	0.7	0.01	0.05	3.3	0.02	0.15	0.7
CO*	7.5	0.08	0.52	5	0.04	0.23	2.3
VOC (TOC)	1	0.01	0.07	0.6	0.00	0.03	0.30
SO ₂	0.05	0.00	0.003	0.21	0.00	0.01	0.04
Boiler #8							
Make & Model:	Smith						
Fuel Type:	#2 Oil & Propane						
Max #2 Oil (gal/hr):	38.3						
Max Heat Input (MMBtu/hr):	5.25						
Pollutant	AP-42 Propane Emission Factors (lb/1000 gal)	Propane - Emission Rate (lb/MMBtu)	Propane Limit (lb/hr)	AP-42 #2 Oil Emission Factors (lb/1000 gal)	#2 Oil - Emission Rate (lb/MMBtu)	#2 Oil Limit (lb/hr)	PTE (TPY)
Nox	13	0.14	0.75	20	0.15	0.77	3.4
PM/PM ₁₀ /PM _{2.5}	0.7	0.01	0.04	3.3	0.02	0.13	0.6
CO*	7.5	0.08	0.43	5	0.04	0.19	1.9
VOC (TOC)	1	0.01	0.06	0.6	0.00	0.02	0.25
SO ₂	0.05	0.00	0.003	0.21	0.00	0.01	0.04
Boiler #9							
Make & Model:	Smith						
Fuel Type:	#2 Oil & Propane						
Max #2 Oil (gal/hr):	12.8						
Max Heat Input (MMBtu/hr):	1.75						
Pollutant	AP-42 Propane Emission Factors (lb/1000 gal)	Propane - Emission Rate (lb/MMBtu)	Propane Limit (lb/hr)	AP-42 #2 Oil Emission Factors (lb/1000 gal)	#2 Oil - Emission Rate (lb/MMBtu)	#2 Oil Limit (lb/hr)	PTE (TPY)
Nox	13	0.14	0.25	20	0.15	0.26	1.1
PM/PM ₁₀ /PM _{2.5}	0.7	0.01	0.01	3.3	0.02	0.04	0.2
CO*	7.5	0.08	0.14	5	0.04	0.06	0.6
VOC (TOC)	1	0.01	0.02	0.6	0.00	0.01	0.08
SO ₂	0.05	0.00	0.001	0.21	0.00	0.00	0.01

APPENDIX A: MAINE DEP CHAPTER 115 FORMS

CHAPTER 115 AIR EMISSION LICENSE APPLICATION
STATE OF MAINE DEP - BUREAU OF AIR QUALITY

**CHAPTER 115
AIR EMISSION LICENSE APPLICATION FORM**

State of Maine
Department of Environmental Protection
Bureau of Air Quality
17 State House Station
Augusta, Maine 04333-0017
Phone: (207) 287-7688 Fax: (207) 287-7641

Section A: FACILITY INFORMATION

Owner or Operator (*Legal name as registered with the Secretary of State*):

Facility Site Name: Gould Academy
Facility Site Address (*Physical, no post office boxes*): 39 Church St.
City/Town: Bethel Zip Code: 04217 County: Oxford
Facility Description: Private High School
Application Description: Air license amendment application to replace two boilers in the main heating plant with a dual fuel (#2 oil and propane) boiler and retrofit the remaining boiler with a dual fuel burner. A dual fuel boiler will also be added to Holden Hall.

Current License #: A-721-71-G-R

Check When Done:

All Sources	
<input checked="" type="checkbox"/>	Application Completed
<input checked="" type="checkbox"/>	Copy Sent to Town (date sent: 11/14/24)
<input checked="" type="checkbox"/>	Public Notice Published paper name & date: (Bethel Citizen - 11/14/24)
<input checked="" type="checkbox"/>	Enclosed Public Notice Tear Sheet
<input checked="" type="checkbox"/>	Signed Signatory Form (Section K)

Additional Requirements for New Sources N/A	
<input type="checkbox"/>	Schedule for construction or installation of equipment
<input type="checkbox"/>	Title, Right, or Interest (e.g. copy of deed or lease)
<input type="checkbox"/>	Check for Fee

Additional Requirements for New Major Sources and Major Modifications	
<input type="checkbox"/>	Notify Abutting Landowners (NA)

For Department Use	
Application #:	A- _____ - _____ - _____ - _____
App Track #:	_____

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Facility Contact:

Name: Jerry Bernier Title: Director of Building & Grounds
Company: Gould Academy
Mailing Address: 39 Church St.
City/Town: Bethel State: ME ZipCode: 04217
Phone: (207) 824-7777 Fax: _____
e-mail: bernierj@gouldacademy.org

Application Contact:

Name: Bill Babbin Title: Project Manager
Company: Building Infrastructure Management Solutions
Mailing Address: 400 Presumpscot Street
City/Town: Portland State: ME Zip Code: _____ Phone: 207-712-7332
Fax: _____
e-mail: bbabbin@mechanicalservices.com

Billing Contact:

Name: Jerry Bernier Title: Director of Building & Grounds
Company: Gould Academy
Mailing Address: 39 Church St.
City/Town: Bethel State: ME ZipCode: 04217
Phone: (207) 824-7777 Fax: _____
e-mail: bernierj@gouldacademy.org

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Section B1: STATIONARY FUEL BURNING EQUIPMENT

(List equipment such as boilers, hot water heaters, etc.)

Emission Unit ID	Type of Equipment (boiler, water heater, etc.)	Maximum Design Capacity	Maximum Firing Rate	Fuel Type	% Sulfur	Date of Manufacture	Date of Installation	Stack #
Boiler #1	Removed							
Boiler #2	Removed							
Boiler #3 (modified)	Heating Boiler	*6.3 MMBtu/hr (derated from 10.5)	Oil – 45.9 GPH Propane – 6.3 MMBtu/hr	Propane & #2 fuel oil	0.0015 for #2	1998	1998	1
Boiler #8 (28HE-S-18)	Heating Boiler	*5.25 MMBtu/hr	Oil – 38.3 GPH Propane – 5.25 MMBtu/hr	Propane & #2 fuel oil	0.0015 for #2	2024	2024	1
Boiler #9 (19HE-S-10)	Heating Boiler	1.75 MMBtu/hr	Oil – 12.8 GPH Propane – 1.75 MMBtu/hr	Propane & #2 fuel oil	0.0015 for #2	2024	2024	4

Note: Gould will also install a new 0.15 MMBtu/hr State Ultra Force propane fired water heater in Bingham Hall that meets the 1 MMBtu/hr Ch. 115 exemption threshold.

*Rating based on Limpsfield burner spec plate.

Section B2: INTERNAL COMBUSTION ENGINES (N/A)

(List equipment such as generators, diesel drive units, fire pumps, etc. Do not list wheeled mobile equipment such as loaders, backhoes, trucks, etc.)

Emission Unit ID	Serial Number	Maximum Design Heat Input Capacity (MMBtu/hr)	Maximum Output Capacity (kW or Hp)	Maximum Firing Rate	Fuel Type	% Sulfur	Date of Manf	Date of Installation	Portable	Stationary	Spark Ignition Engines Only			
											2-Stroke	4-Stroke	Rich	Lean

Does your facility participate in a Demand Response program in which the generator(s) may be operated for more than 15 hours per calendar year?

yes no

If yes, what units? _____

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Control Equipment for Fuel Burning Equipment

If applicable, indicate the types of required/operated add-on pollution control equipment, including baghouses, cyclones/multiclones, SCR, SNCR, etc.

Emission Unit	Type of Control	Pollutant Controlled	Control Efficiency
Boiler #3, 8 & 9	No add-on controls		

Monitors for Fuel Burning Equipment: - None Proposed

If applicable, indicate types of required/operated monitors, including Continuous Emission Monitors (CEM), Continuous Opacity Monitors (COM), parameter monitors for operational purposes, etc.

Emission Unit	Type of Monitor	Data Measured

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Section C: INCINERATORS (N/A)

	Incinerator Unit 1	Incinerator Unit 2
Incinerator Type (medical waste, municipal, etc.)		
Waste Type		
Make (Shenandoah, Crawford, etc.)		
Model Number		
Date of Manufacture		
Date of Installation		
Number of Chambers		
Max. Initial Charge	lb	lb
Max. Design Combustion Rate	lb/hr	lb/hr
Heat Recovery? (Yes or No)		
Retention Time of Exhaust Gases	seconds	seconds
Automatic Feeder? (Yes or No)		
Temperature Range Primary	to °F	to °F
Secondary	to °F	to °F
Auxiliary Burner - Primary Chamber max. rating (MMBtu/hr)		
type of fuel used		
Auxiliary Burner - Secondary Chamber max. rating (MMBtu/hr)		
type of fuel used		
Annual Waste Combusted for ____ (yr)		
Pollution Control Equipment (if any)		
Stack Number		
Monitors (ie - temperature recorder)		

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Section D: PROCESS EQUIPMENT (NA)

Emission Unit ID	Type of Equipment	Maximum Raw Material Process Rate (name and rate)	Maximum Finished Material Process Rate (name and rate)	Date of Manufacture	Date of Installation	Stack #	Control Device

*Kilns have a 5-7 day residence time but varies seasonally.

Solvent Cleaners
(Also known as Parts Washers and/or Solvent Degreasers) **(NA)**

Emission Unit ID	Capacity (gallons)	Solvent Used	Solvent % VOC
<i>Degreaser #1 (Example)</i>	<i>15 (Example)</i>	<i>Kerosene (Example)</i>	<i>100% (Example)</i>

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PROCESS EQUIPMENT (section D cont'd)

Chemical Usage **(NA)**

Note: Complete this section for any chemicals integral to your process, for example, a cementing process for outsoles, dyes, surface coating, printing, cleaning, etc. Attach additional pages or MSDS sheets as needed.

Process	Chemical substance used in process	Actual Usage (gal or lb for yr ____)	Hazardous chemical(s) in substance	Percent VOC ¹ (%)	Percent HAP ² (%)	Total VOC emitted (lb/year)	Total HAP emitted (lb/year)

¹ Volatile Organic Compounds

² Hazardous Air Pollutants

Describe method of record keeping (ie. monthly calculations from purchase records, flow monitors on solvent tanks, etc.)

Describe methods used to calculate VOC/HAP emitted (ie – test results, if control equipment was taken into account; if conditions exist where solvents remain in the substrate rather than complete volatilization, etc.)

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Section E: STACK DATA

Stack #	Height Above Ground (ft)	Inside Diameter (ft)	Exit Temperature ° F	Exhaust Flow Rate (ft ³ /smin) [indicate actual or standard]
#1	~65(ft)	28"	275 - 383	1769 dscf/m
#4	~40(ft)	12"	275 - 383	268 dscf/m

Section F: ANNUAL FACILITY FUEL USE – NO Limit Proposed

Total Fuel Consumption by Month for: (school year)

Fuel type: _____	Fuel type: _____	Fuel type: _____
Avg % sulfur (oil) _____	Avg % sulfur (oil) _____	Avg % sulfur (oil) _____
Avg % moisture (wood) _____	Avg % moisture (wood) _____	Avg % moisture (wood) _____
(circle one: gal, tons, scf)	(circle one: gal, tons, scf)	(circle one: gal, tons, scf)
January _____	_____	_____
February _____	_____	_____
March _____	_____	_____
April _____	_____	_____
May _____	_____	_____
June _____	_____	_____
July _____	_____	_____
August _____	_____	_____
September _____	_____	_____
October _____	_____	_____
November _____	_____	_____
December _____	_____	_____
Total _____	_____	_____
Proposed Annual Limit _____	_____	_____

**CHAPTER 115 AIR EMISSION LICENSE APPLICATION
STATE OF MAINE DEP - BUREAU OF AIR QUALITY**

Section G: LIQUID ORGANIC MATERIAL STORAGE (NA)

Tank #						
Capacity (gallons)						
Materials Stored						
Reid Vapor Pressure (RVP)						
Annual Throughput						
Above or Below Ground?						
Tank Type (floating or fixed, riveted or bolted, etc.)						
Physical Description – year installed						
Physical Description – color						
Dimensions - height (ft)						
Dimensions - Diameter (ft)						
Construction Material						
Control Device						

Section H: MISCELLANEOUS

Note: Use this section to describe any equipment, activities, or other air emission sources that did not fit in any of the above categories. Include descriptions of the associated emissions. Attach additional pages if necessary.

CHAPTER 115 AIR EMISSION LICENSE APPLICATION
STATE OF MAINE DEP - BUREAU OF AIR QUALITY

Section I: BPT/BACT AND OTHER ATTACHMENTS

BPT/BACT Analysis:

For a license renewal for existing equipment, the applicant is required to submit a Best Practical Treatment (BPT) analysis to the Department. A BPT analysis establishes what equipment or requirements are appropriate for control or reduction of emissions of regulated pollutants to the lowest possible level considering the existing state of technology, the effectiveness of available alternatives, and the economic feasibility.

For a new license or the addition of new equipment to an existing license, the applicant is required to submit a Best Available Control Technology (BACT) analysis. A BACT analysis is a top-down approach to selecting air emission controls. It is done on a case-by-case basis and develops emission limits based on the maximum degree of reduction for each pollutant emitted taking into account economic, environmental and energy impacts.

I certify that, to the best of my knowledge, the control equipment, fuel limitations, and process constraints outlined in this application represent BPT / BACT for the equipment and processes listed.

OR

I have attached a separate BPT / BACT analysis to this application.

Other Attachments:

Please list any other attachments included with this application.

Application Report Attached (with BACT)

Appendix A: Maine DEP Chapter 115 Forms

Appendix B: Public Notice and Cover Letters to Town of Bethel

Appendix C: Building Layout Plan

Appendix D: Boiler Spec Sheets

**CHAPTER 115 AIR EMISSION LICENSE APPLICATION
STATE OF MAINE DEP - BUREAU OF AIR QUALITY**

Please indicate any rules you believe may be applicable to your facility by checking the associated box.


	Citation	Title
X	06-096 CMR 101	Visible Emissions
X	06-096 CMR 103	Fuel Burning Equipment Particulate Emission Standard
	06-096 CMR 104	Incinerator Particulate Emission Standard
	06-096 CMR 105	General Process Source particulate Emission Standard
	06-096 CMR 106	Low Sulfur Fuel Regulation
	06-096 CMR 111	Petroleum Liquid Storage Vapor Control
	06-096 CMR 112	Bulk Terminal Petroleum Liquid Transfer Requirements
	06-096 CMR 117	Source Surveillance
	6-096 CMR 118	Gasoline Dispensing Facilities Vapor Control
	06-096 CMR 121	Emission Limitations and Emission Testing of Resource Recovery Facilities
	06-096 CMR 123	Paper Coating Regulation
	06-096 CMR 124	Total Reduced Sulfur Control from Kraft Mills
	06-096 CMR 125	Perchloroethylene Dry Cleaner Regulation
	06-096 CMR 126	Capture Efficiency Test Procedures
	06-096 CMR 129	Surface Coating Facilities
	06-096 CMR 130	Solvent Degreasers
	06-096 CMR 131	Cutback Asphalt and Emulsified Asphalt
	06-096 CMR 132	Graphic Arts – Rotogravure and Flexography
	06-096 CMR 133	Petroleum Liquids Transfer Vapor Recovery at Bulk Gasoline Mills
	06-096 CMR 134	Reasonably Available Control Technology for Facilities That Emit Volatile Organic Compounds
	06-096 CMR 137	Emission Statements
	06-096 CMR 138	Reasonably Available Control Technology for Facilities That Emit Nitrogen Oxides
	06-096 CMR 140	Part 70 Air Emission License Regulations
	06-096 CMR 145	NOx Control Program
	06-096 CMR 153	Mobile Equipment Repair and Refinishing
	06-096 CMR 159	Control of Volatile Organic Compounds from Adhesives and Sealants
	06-096 CMR 161	Graphic Arts – Offset Lithography and Letterpress Printing
	40 CFR Part 60	New Source Performance Standards (NSPS) (please list Subpart(s): Subpart Dc)
	40 CFR Part 63	
	Other (list)	
	Other (list)	

CHAPTER 115 AIR EMISSION LICENSE APPLICATION
STATE OF MAINE DEP - BUREAU OF AIR QUALITY

Section K: SIGNATORY REQUIREMENT

Each application submitted to the Department must include the following certification signed by a Responsible Official*:

"I certify under penalty of law that, based on information and belief formed after reasonable inquiry, I believe the information included in the attached document is true, complete, and accurate."

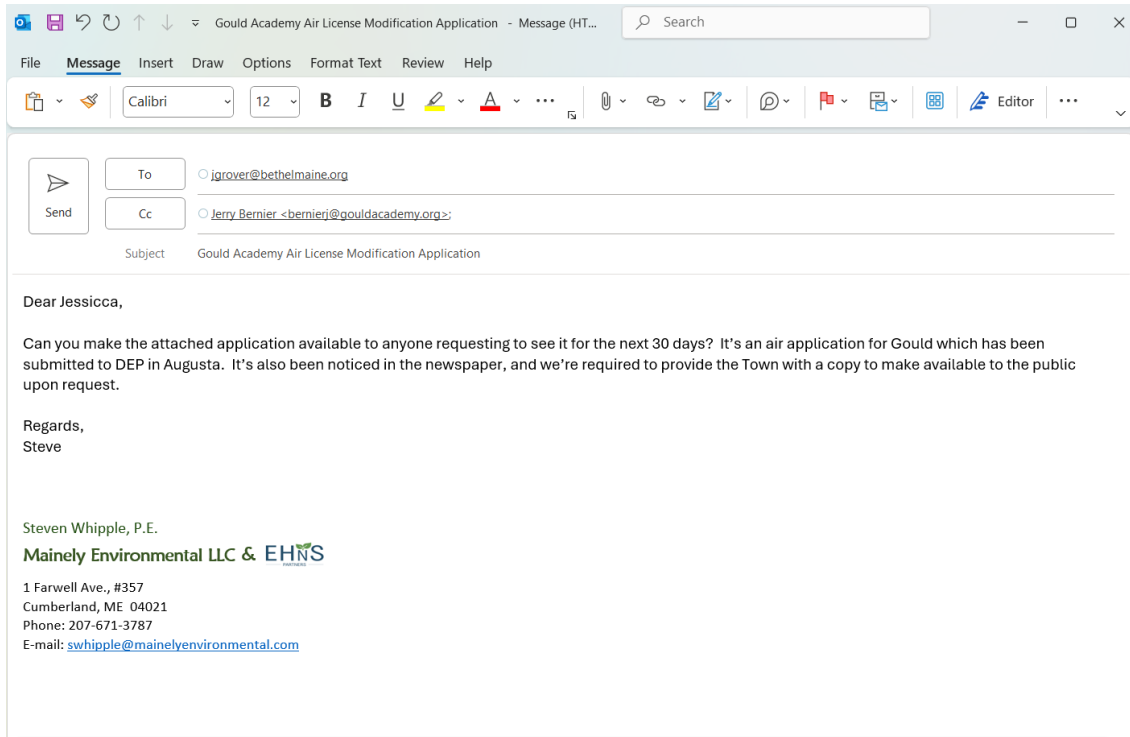
 _____ Responsible Official Signature	<u>10-30-24</u> _____ Date
Jerry Bernier _____ Responsible Official (Printed or Typed)	<u>Director of Buildings & Grounds</u> _____ Title

* A Responsible Official is defined by MEDEP Rule, Chapter 100 as:

- A.** For a corporation: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:
 - (1) The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars); or
 - (2) The delegation of authority to such representatives is approved in advance by the permitting authority;
- B.** For a partnership or sole proprietorship: a general partner or the proprietor, respectively;
- C.** For a municipality, State, Federal, or other public agency: Either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of EPA).

APPENDIX B: PUBLIC NOTICE AND EMAIL TO THE TOWN OF BETHEL

Copy of Application Sent to Town



Bethel Citizen (11/14/24) Tear Sheet

PUBLIC NOTICE OF INTENT TO FILE

Please take notice that Gould Academy, 39 Church St., Bethel, ME 04217, and phone: (207) 824-7777 intends to file an Air Emission License application with the Maine Department of Environmental Protection (DEP) pursuant to the provisions of 38 M.R.S., Section 590 on or about November 15. The application is for modifications to its heating boilers at its Bethel Campus. According to Department regulations, interested parties must be publicly notified, written comments invited, and if justified, an opportunity for public hearing given. A request for a public hearing must be received by the Department, in writing, no later than 20 days after the application is accepted by the Department as complete for processing.

The application and supporting documentation will be made available for review by contacting the DEP Bureau of Air Quality offices in Augusta, (207) 287-7688, during normal working hours. A copy of the application and supporting documentation may also be available at the municipal office in Bethel, Maine.

Written public comments may be sent to Jane Gilbert at the Bureau of Air Quality, State House Station #17, Augusta, Maine 04333.

APPENDIX C: BUILDING LAYOUT PLAN

- ORDWAY DINING**
1. HEATING: PROPANE FIRED HW BOILER, ENERGY SUPPLY CONTRACT (2017 INSTALL, MULTIPLE PROBLEMS)
 2. HEATING: 2, SMITH 28A, OIL FIRED HW BOILERS, WEBSTER BURNERS (1998/ORIGINAL)
 3. HEATING: HW RADIANT FLOOR ON 1ST FLOOR, AHU'S ON UPPER FLOOR
 4. CONTROLS: GOOD, MC
 5. DHW: BOILERMATE
 6. VENTILATION: AHU'S

- GEHRING HALL (RESIDENTIAL)**
1. HEATING: STEAM HX TO HW FOR ALL RADIATION AND F/B AHU COILS
 2. CONTROLS: MC
 3. DHW: 2, PROPANE FIRED MIGHTY THERMS W/ 4 DHW STORAGE TANKS
 4. VENTILATION: BASEMENT AHU (HALLWAYS), ATTIC AHU (BATHROOMS)
 5. READY TO INSTALL VRF SIMILAR TO HOLDEN.

- HANSCOM HALL**
1. HEATING: STEAM HX TO HW FOR AHUS (2015 INSTALL), DUCT COILS, FTR
 2. COOLING: SPLIT DUCTLESS FOR OFFICES, BUT HAS OPERATIONAL PROBLEMS (COND UNIT CRUSHED, VALVES STICKING)
 3. CONTROLS: SOME MC
 4. VENTILATION: ERV'S (2) AND OLD AHU ON UPPER FLOOR

- FIELD HOUSE**
1. HEATING: 2, LOCHINVAR HE HW BOILERS (2019)
 2. CONTROLS: TRANE
 3. DHW: ELECTRIC STORAGE (PLATE/FRAHE DHW VALVED OFF)
 4. VENTILATION: PROPANE (DIRECT FIRED) IN GYM, WINDOWS IN OFFICES (DIRECT FIRED PROPANE CREATES HUMIDITY PROBLEM IN WINTER.)

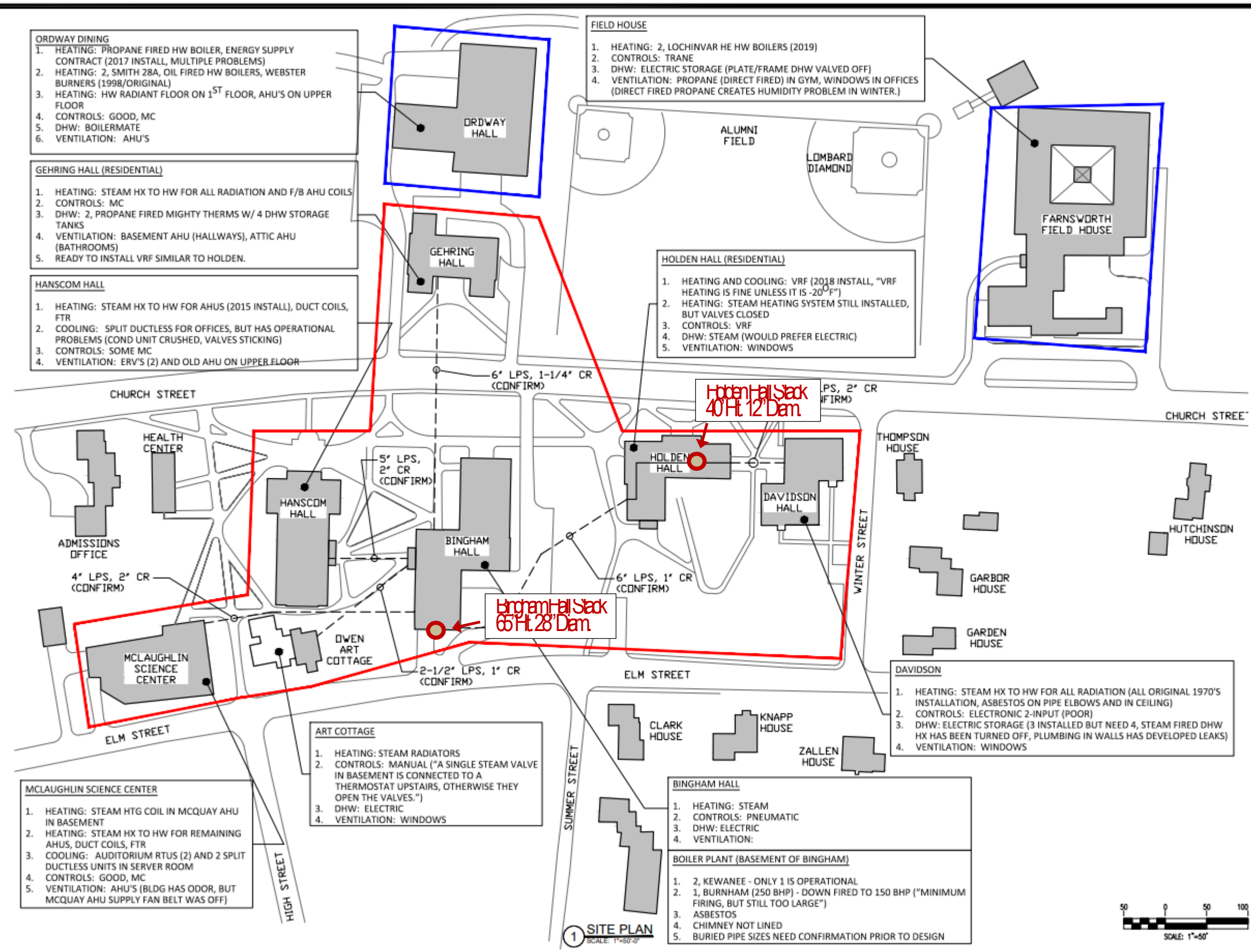
- HOLDEN HALL (RESIDENTIAL)**
1. HEATING AND COOLING: VRF (2018 INSTALL, "VRF HEATING IS FINE UNLESS IT IS -20°F")
 2. HEATING: STEAM HEATING SYSTEM STILL INSTALLED, BUT VALVES CLOSED
 3. CONTROLS: VRF
 4. DHW: STEAM (WOULD PREFER ELECTRIC)
 5. VENTILATION: WINDOWS

- DAVIDSON**
1. HEATING: STEAM HX TO HW FOR ALL RADIATION (ALL ORIGINAL 1970'S INSTALLATION, ASBESTOS ON PIPE ELBOWS AND IN CEILING)
 2. CONTROLS: ELECTRONIC 2-INPUT (POOR)
 3. DHW: ELECTRIC STORAGE (3 INSTALLED BUT NEED 4, STEAM FIRED DHW HX HAS BEEN TURNED OFF, PLUMBING IN WALLS HAS DEVELOPED LEAKS)
 4. VENTILATION: WINDOWS

- BINGHAM HALL**
1. HEATING: STEAM
 2. CONTROLS: PNEUMATIC
 3. DHW: ELECTRIC
 4. VENTILATION:
- BOILER PLANT (BASEMENT OF BINGHAM)**
1. 2, KEWANEE - ONLY 1 IS OPERATIONAL
 2. 1, BURNHAM (250 BHP) - DOWN FIRED TO 150 BHP ("MINIMUM FIRING, BUT STILL TOO LARGE")
 3. ASBESTOS
 4. CHIMNEY NOT LINED
 5. BURIED PIPE SIZES NEED CONFIRMATION PRIOR TO DESIGN

- MCLAUGHLIN SCIENCE CENTER**
1. HEATING: STEAM HTG COIL IN MCQUAY AHU IN BASEMENT
 2. HEATING: STEAM HX TO HW FOR REMAINING AHUS, DUCT COILS, FTR
 3. COOLING: AUDITORIUM RTUS (2) AND 2 SPLIT DUCTLESS UNITS IN SERVER ROOM
 4. CONTROLS: GOOD, MC
 5. VENTILATION: AHU'S (BLDG HAS ODOR, BUT MCQUAY AHU SUPPLY FAN BELT WAS OFF)

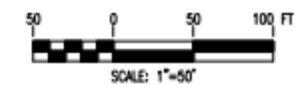
- ART COTTAGE**
1. HEATING: STEAM RADIATORS
 2. CONTROLS: MANUAL ("A SINGLE STEAM VALVE IN BASEMENT IS CONNECTED TO A THERMOSTAT UPSTAIRS, OTHERWISE THEY OPEN THE VALVES.")
 3. DHW: ELECTRIC
 4. VENTILATION: WINDOWS



Holden Hall Stack
40 Ft. 12" Dam

Bingham Hall Stack
65 Ft. 28" Dam

1 SITE PLAN
SCALE: 1"=50'



Drawing Issue & Revision Status

REV	DATE	ISSUED BY	DESCRIPTION
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

DRAWN BY:	DATE:
MAS	1/12/2024
SCALE:	FILE NAME:
NONE	XXX

PROJECT:
GOULD ACADEMY
39 CHURCH STREET
BETHEL, MAINE

SHEET TITLE:
EXISTING
SITE PLAN

SHEET NUMBER:
M-0

**APPENDIX D: #8 & #9 SMITH BOILERS & LIMPSFIELD BURNER
SPECIFICATION SHEETS**

Smith Boilers #8 & #9

19HE Series – Water and Steam

Cast iron wet-base design provides superior performance and longevity in all commercial and light commercial applications. Choose a variety of burners from PowerFlame, Carlin and Beckett in either No. 2 fuel oil, natural gas or combination gas/oil configurations. Boilers are available as knocked down, assembled sections or completely packaged to suit individual job-site needs. Optional tankless heaters and 3-way thermostatic valves available. Ten sizes from 308 to 1750 MBH. All units are ASHRAE 90.1 compliant.

REFERENCE: 19HE Series brochure.

19HE Series Specifications							
Boiler Model Number	Boiler Horse-power	I=B=R Gross Output MBH	I=B=R Burner Capacity		Flue Pipe Diameter	Thermal Efficiency	
			Oil GPH	Gas MBH		Oil	Gas
19HE - 3	9	308	2.6	375	7"	84.6	82.1
19HE - 4	12	421	3.6	520	7"	84.1	81.5
19HE - 5	17	587	5.0	722	8"	83.9	81.3
19HE - 6	22	762	6.5	938	8"	83.7	81.2
19HE - 7	27	924	7.9	1140	9"	83.5	81.1
19HE - 8	32	1087	9.3	1342	10"	83.5	81.0
19HE - 9	37	1262	10.8	1559	10"	83.5	81.0
19HE - 10	42	1424	12.2	1761	10"	83.4	80.9
19HE - 11	47	1587	13.6	1963	10"	83.4	80.8
19HE - 12	52	1750	15.0	2165	10"	83.4	80.8

Maximum allowable working pressure 15 psi steam, 80 psi water.



28RTS-HE and 28HE Series – High Efficiency Water and Steam

High efficient RTS HE units offer high thermal and combustion efficiencies. Up to 86% oil and 83.6% gas. Return Temperature Stabilizer equalizes water temperatures to minimize stress and help prevent thermal shock, further extending boiler life. Fuel options include gas, oil and combination gas/oil configurations making RTS units ideal for schools, apartments and commercial buildings. Optional burner configurations and tankless domestic hot water coils available. Sizes from 931 to 4,622 MBH.

REFERENCE: RTS HE Series brochure and 28HE Series brochure.

RTS HE and 28HE Series Specifications																
Designed and tested to the ASME boiler and pressure vessel code, section IV for maximum allowable working pressure, water 80 psig.																
28 RTS HE Number of Sections	Boiler Horse-power	I=B=R Gross Output (MBH)	Net I=B=R Ratings					Heating Surface (Sq Ft)	Furnace Volume (Cu Ft)	Water Contents (Gals) Steam	Water Working Weight (Lbs)	Thermal Efficiency		Combustion Efficiency		
			Water		Steam		I=B=R Burner Capacity					Oil	Gas	Oil	Gas	
			MBH	Sq Ft	MBH	Oil GPH	Gas MBH									Oil
4	27	931	810	2908	698	7.9	1143	81.2	12.04	103.8	4215	83.9	81.4	86.2	83.6	
5	35	1194	1038	3733	896	10.2	1458	105.3	16.14	125.8	5038	84.4	81.9	86.2	83.6	
6	43	1458	1268	4625	1110	12.2	1773	129.4	20.24	147.8	5861	84.8	82.2	86.1	83.5	
7	51	1722	1497	5542	1330	14.4	2088	153.5	24.34	169.8	6684	85.0	82.5	86.1	83.5	
8	59	1985	1726	6421	1541	16.6	2403	177.6	28.44	191.8	7507	85.2	82.6	86.1	83.5	
9	67	2249	1956	7275	1746	18.8	2718	201.7	32.54	213.8	8331	85.3	82.7	86.1	83.5	
10	75	2513	2185	8129	1951	21.0	3033	225.8	36.64	235.8	9169	85.4	82.8	86.1	83.5	
11	83	2776	2414	8979	2155	23.0	3348	249.9	40.74	257.8	9992	85.5	82.9	86.0	83.5	
12	91	3040	2643	9833	2360	25.5	3663	274.0	44.84	279.8	10,815	85.6	83.0	86.0	83.5	
13	98	3304	2873	10,688	2565	27.5	3978	289.1	48.94	301.8	11,649	85.6	83.0	86.0	83.5	
14	106	3567	3102	11,538	2769	29.5	4293	322.2	53.04	323.8	12,467	85.7	83.1	86.0	83.5	
15	114	3831	3331	12,392	2974	32.0	4608	346.3	57.14	345.8	13,511	85.7	83.1	86.0	83.4	
16	122	4095	3561	13,246	3179	34.0	4923	370.4	61.24	367.8	14,375	85.7	83.2	86.0	83.4	
17	130	4358	3790	14,100	3384	36.5	5238	394.5	65.34	389.8	15,239	85.8	83.2	86.0	83.4	
18	138	4622	4019	14,954	3589	38.5	5553	418.6	69.44	411.8	16,103	85.8	83.2	86.0	83.4	

Net I=B=R Ratings for steam boilers are based on piping and pick-up factor as follows:
 4 and 5 section = 1.333 6 section = 1.305 8 section and larger = 1.288
 * Light oil having a heat content of 140,000 BTU/Gal.
 * Gas having a heat content of 1,000 BTU/Gal. Ft., 0.60 specific gravity.



Spec Plate for Boiler #3



Spec Plate for Boiler #8



Limpsfied LC – AutoFlame MK 8 System



CONTROL

Limpsfield Combustion offers its users control panels to accompany the burners. These are designed and built around advanced combustion control equipment which will further enhance the reliability and performance of the LC burner.

A range of products are available as below:

- Micro Modulation Burner Control units
- EGA with combustion trim functions and CEMS
- Water Level TDS, BBD Control and First Out
- Boiler Sequencing Package

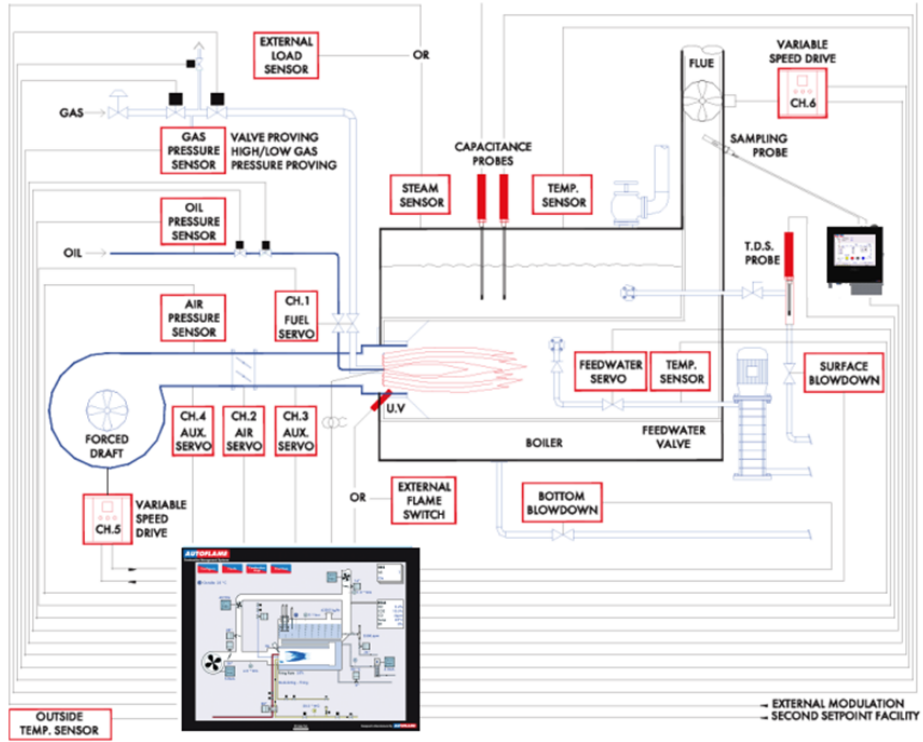


In addition, panel design and specification can be tailored to the end user's specific requirements. All panels are UL approved and built in an ISO9001 environment.

As well as custom designed panels, Limpsfield Combustion also offer UL approved burner mounted control panels to allow users to commission and alter the combustion firing process quickly and easily. This neat package gives customers a more cost effective option for applications that may not require a fully tailored control panel. The Limpsfield POD mounted burner is available from the LC9 through to the LC100 burner, fitted with a choice of either the Autoflame Mini Mk8 unit or the Autoflame Mk8 touch screen control system.

All options are available as single fuel or dual fuel burners.

AutoFlame MK 8 Sensor Diagram



MainelyEnvironmental.com

1 Farwell Ave., #357
Cumberland, ME 04021
207-671-7387