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STATE OF MAINE

DEPARTMENT OF ENVIRONMENTAL PROTECTION

ANGUS S. KING, JR.
GOVERNOR

EDWARD O. SULLIVAN
COMMISSIONER

Mid-Maine Waste Action Corporation)
Androscoggin County)
Auburn, Maine)
A-378-72-E-A)

Departmental
Finding of Fact and Order
Air Emission License
Amendment #2

After review of the air emissions license application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., Section 344 and Section 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

Mid-Maine Waste Action Corporation (MMWAC), in Auburn, Maine has applied to amend their Air Emissions License, to comply with Chapter 138 of the DEP Regulations, since the facility has the potential to emit more than 100 ton per year (TPY) of NOx. MMWAC provides comprehensive waste management services, including two (2) waste-to-energy combustors with a combined rated throughput at 200 tons per day (TPD), a transfer station for unacceptable and bulky waste, and a recycling facility. The municipally owned and operated facility has twelve member municipalities and is governed through a public board of directors.

B. NOx Emission Equipment

MMWAC is licensed to operate two refractory lined mass-burn Municipal Waste Combustors (MWC). Each combustor is connected to a water tube heat recovery boiler rated at 43.4 MMBtu/hr. Each unit is subject to Section 3 (G) of Chapter 138 of the Maine State Regulations which addresses NOx emission standards for Mass Burn Municipal Solid Waste (MSW) incinerators.

C. Additional Equipment

The following is a list of equipment at MMWAC which is exempt from Chapter 138:

<u>Equipment</u>	<u>Reason for exemption</u>
Diesel Fire pump	emit < 10 TPY NOx
Diesel Generator	emit < 10 TPY NOx

D. Application Classification

The application for MMWAC does not include the licensing of increased emissions or the installation of new equipment. This application is considered an amendment to comply with Chapter 138 (NOx RACT) of the DEP Regulations.

Serving Maine People & Protecting Their Environment

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II. REASONABLY AVAILABLE CONTROL TECHNOLOGY (RACT)

RACT means that method of treatment that is reasonably available as a retrofit to existing processes or equipment involved and shall be determined by the Department for the class or category of such source considering:

- the existing state of technology;
- current federal guidelines for determining the degree of emission reduction achievable
- the type and unique character of affected sources.

This amendment shall incorporate Chapter 138 of the DEP Regulations which applies to any existing stationary source that has the potential to emit quantities of NOx emissions greater than or equal to 100 TPY. MMWAC is subject to Section 3 (G) of Chapter 138, however MMWAC has opted to comply with Section 3 (I) of Chapter 138, and in accordance with that section, is proposing an Alternative RACT.

A. Combustors

Combustors 1 & 2 each are connected to a boiler with a heat input rating of 43.4 MMBtu/hr and each has a nominal rating of 100 ton/day of municipal solid waste (MSW).

1. Air Distribution

Adjusting overfire/underfire air distribution in the primary and secondary combustion chambers may possibly lower NOx emissions, however the configuration of the combustor does not allow for these types of adjustments without major equipment modifications. Adding additional excess combustion air would not likely have an effect on NOx emissions, since the combustor currently operates at approximately 12% O₂ excess air.

2. Water Quenching

MMWAC investigated steam and/or water injection in the combustion and tranquilization chambers of the combustors as a possible option for lowering NOx emissions. Severe ash slagging in these areas indicates high gas temperatures. Lowering the peak flame temperature in the primary chamber and tranquilization chamber appeared to be a viable approach.

Since it is not known where the majority of NOx is formed in the combustor, two approaches were used to inject controlled quantities of water into the combustion

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process. The first method was to inject water into the primary chamber through existing ports at the charging end of the primary chamber, and the second method was to inject water through the auxiliary gas burner port at the ash discharge end of the combustor. Air atomizing spray nozzles were used to enable water flowrate control independent of spray pattern and droplet size.

Water was injected in the primary chamber at the point believed to have a maximum effect on NOx reductions. The second injection point was at the ash discharge end of the combustor, since the water droplets become vapor and flow over the ashbed and into the tranquilization chamber without affecting the primary chamber.

Water was introduced into the combustor at rates up to ten gallons per minute (gpm) in one gpm increments. Testing was performed for each of the two water injection points. Carbon monoxide emissions were closely measured, to ensure allowable levels were not exceeded. Sulfur dioxide, acid, and metal emissions were not significantly affected. No significant NOx reductions were achieved during the testing periods. Test results do not support further testing of water quenching.

3. Economics

Several analyses of urea injection control on a per ton cost basis were performed by various vendors. The calculated annual cost of NOx control using the urea injection method is approximately \$1,500 per ton of NOx removed. Assumptions used for this calculation were provided in the proposal, current actual and proposed allowable NOx emission limits and maximum heat input rates for the units. Other control technologies are not considered since none are available at a lower cost.

There are twelve (12) member municipalities which own the MMWAC plant and currently they each pay an additional \$15/ton of trash or 38% higher than competitive market rates paid by most of the private customers who currently utilize the plant. The additional financial burden of NOx control would have an adverse impact on facility operations. NOx control would add approximately \$10/ton to all tipping fees. Non-member municipalities have shown evidence that an increase of such magnitude would promote them to seek alternative sources for waste disposal. The twelve member municipalities would then most likely be forced to abandon the facility for an alternative, less expensive facility.

NOx reduction techniques are not feasible for a facility this size due to the design of MMWAC's combustors. RACT for this facility shall be NOx emission rates based on past data and optimum combustion practices.

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B. Additional Equipment

The diesel units are utilized primarily to power the emergency fire pumps. The diesel units shall not operate more than 500 hours/year each, during any consecutive 12 month period, to keep NOx emissions under 10 ton/yr per unit, and be exempt from Section 1 (B) (1) of Chapter 138.

III. EMISSION STANDARDS

In accordance with Chapter 138 of the Department's Regulations, MMWAC's common stack NOx emission rates shall be calculated corrected to 7% O₂ dry basis, on a 24-hour daily block arithmetic average. Since past test data shows a distinct difference in NOx emissions between summer and winter, MMWAC shall meet the following seasonal NOx limits:

<u>Season</u>	<u>ppmdv</u>
May 1 - Sept. 15 (ozone)	315
Sept. 16 - Apr. 30	330

IV. AIR QUALITY ANALYSIS

According to the Maine Regulation Chapter 115, the level of air quality analyses required for a modification shall be determined on a case-by-case basis. Based on the fact that MMWAC is not proposing to increase emissions an air quality analysis will not be required for this amendment.

V. COMPLIANCE ASSURANCE

- A. MMWAC shall monitor NOx emissions through the use of a continuous emissions monitoring system that satisfies the requirements of Department Regulation Chapter 117.
- B. Each diesel unit shall be equipped with an hour meter. Logbooks for the diesel units shall be maintained indicating monthly meter readings.
- C. MMWAC shall keep a copy of this Order on site, and have the operator(s) be familiar with the terms of this Order.

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ORDER

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

- will receive Reasonably Available Control Technology,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License #A-378-72-E-A, subject to the conditions found in Air Emission License #A-378-72-B-A, and in the following conditions:

(y) Combustors

In accordance with Chapter 138 of the Department's Regulations, MMWAC's common stack NOx emission rates shall be calculated corrected to 7% O₂ dry basis, on a 24-hour daily block arithmetic average. Since past test data shows a distinct difference in NOx emissions between summer and winter, MMWAC shall meet the following seasonal NOx limits:

<u>Season</u>	<u>ppmdv @ 7% O₂</u>
May 1 - Sept. 15 (ozone)	315
Sept. 16 - Apr. 30	330

NOx emissions shall be documented through the use of a continuous emissions monitoring system that satisfies the requirements of Department Regulation Chapter 117.

(z) Diesel units

1. The diesel units are utilized primarily to power the emergency fire pumps. The diesel units shall not operate more than 500 hours/year each, during any consecutive 12 month period, to keep NOx emissions under 10 ton/yr per unit, and be exempt from Section 1 (B) (1) of Chapter 138.

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2. Each diesel unit shall be equipped with an hour meter. Logbooks for the diesel units shall be maintained for at least six years indicating monthly meter readings.
- (aa) This terms of this amendment shall be effective from the date of signature and shall be concurrent with the existing Air Emission License A-378-72-B-A.

DONE AND DATED IN AUGUSTA, MAINE THIS *16th* DAY OF *October* 1996.

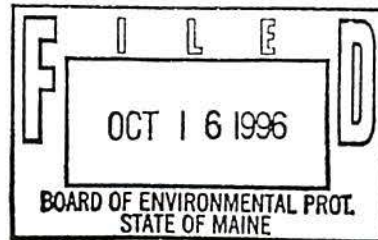
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BY: *James P. Brooks for*
Edward O. Sullivan, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: February 6, 1995

Date of application acceptance: February 24, 1995



Date filed with Board of Environmental Protection: _____

This order prepared by Robert Leavitt, Bureau of Air Quality