



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

DEVAL L. PATRICK
Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

Mr. John J. Daley
North Shore Medical Center Inc.
81 Highland Avenue
Salem, MA 01970

RE: **SALEM** - Metropolitan
Boston/Northeast Region
**FINAL RESTRICTED
EMISSION STATUS APPROVAL**
310 CMR 7.02(9)
Transmittal No. X257566
Application No. NE-13-022

Dear Mr. Daley:

Date Stamped: April 22, 2014

The Metropolitan Boston/Northeast Regional Office (“NERO”) of the Department of Environmental Protection, Bureau of Waste Prevention (“MassDEP”) has determined that the referenced Restricted Emission Status (“RES”) Application is administratively and technically complete. MassDEP hereby approves the RES Application legally limiting the amount of federal potential emissions from North Shore Medical Center Inc. located at 81 Highland Avenue, Salem Massachusetts through a restriction on the raw materials used and/or another restriction as noted herein. This RES Approval shall supersede RES Approval No. 94-RES-138, issued to you by MassDEP on July 24, 1995, in its entirety.

This FINAL RES APPROVAL is being issued in accordance with 310 CMR 7.02(9) of the Air Pollution Control Regulations (“Regulations”), 310 CMR 7.00 as adopted pursuant to M.G.L. c.111, Sections 142A-142K.

Notice of the proposal to approve the Final RES was published in The Salem News on March 10, 2014 in accordance with the requirements of 310 CMR 7.02(9). No comments were received.

Included as part of this FINAL RES APPROVAL are the following:

- 1) BWPAQ-09 RES Application Form;
- 2) Special Conditions for RES;
- 3) General Conditions for RES; and
- 4) Appeal Rights

Please review the entire FINAL RES APPROVAL carefully as it stipulates the particular conditions the facility owner/operator must comply with for the facility to be operated in compliance with the Regulations.

MassDEP has determined that the filing of an Environmental Notification Form ("ENF") with the Secretary of Environmental Affairs, for air quality purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act and Regulation 310 CMR 11.00, Section 11.04, provide certain "Fail-Safe Provisions" which allow the Secretary to require the filing of an ENF and/or Environmental Impact Report at a later time.

Should you have any questions concerning this FINAL RES APPROVAL, please contact Susan McConnell at (978) 694-3292.

Very truly yours,

This final document copy is being provided to you electronically by the
Department of Environmental Protection. A signed copy of this document
is on file at the DEP office listed on the letterhead.

Susan McConnell
Environmental Engineer

James E. Belsky
Regional Permit Chief,
Bureau of Waste Prevention

copy: Fire Headquarters, 48 Lafayette Street, Salem, MA 01970
Board of Health, 9 North Street, Salem, MA 01970
Donald Dahl, U.S. EPA - New England Regional Office, 5 Post Office Square, Suite 100,
Mail Code OEP05-2, Boston, MA 02109-3912
Marc Altobelli, DEP, NERO
Mary Persky, DEP, NERO
Yi Tian, DEP, Boston
Mayor's Office, 93 Washington Street, Salem, MA 01970
Metropolitan Area Planning Council, 60 Temple Place, Boston, MA 02111

I.

SPECIAL CONDITIONS FOR RESTRICTED EMISSION STATUS APPROVAL

A. EQUIPMENT DESCRIPTION

North Shore Medical Center (“the Facility”) has submitted information via a BWP AQ 09 RES Application Form which indicates that the Facility both has removed equipment and plans to remove certain existing combustion equipment subject to MassDEP Approval No. MBR-94-RES-138, and also plans to install combustion equipment which shall be subject to Regulation 310 CMR 7.26, Industry Performance Standards, at its 81 Highland Avenue, Salem, MA location. Table 1 below shows the various combustion equipment associated with North Shore Medical Center Inc. and the operational status of said equipment:

Table 1			
EU Number	Description of Unit	Manufacturer & Model Number	Operational Status
1	20.1 MMBtu/hr Low Pressure Package Boiler	Superior Combustion N4GAA6600A	Existing equipment restricted via MBR-94-RES-138, and which shall be removed
2	20.1 MMBtu/hr Low Pressure Package Boiler	Superior Combustion N4GAA6600A	
3	12.6 MMBtu/hr Low Pressure Package Boiler	Cleaver Brooks SFB-300-16	
4	0.9 MMBtu/hr High Pressure Package Boiler	Orr & Sembower 4024201	
5	1.12 MMBtu/hr High Pressure Package Boiler	Orr & Sembower 4024201	
6	1.12 MMBtu/hr High Pressure Package Boiler	Orr & Sembower 4024201	
7	1.12 MMBtu/hr High Pressure Package Boiler	Orr & Sembower 4028022	
8	0.9 MMBtu/hr High Pressure Package Boiler	Orr & Sembower 4028022	
12	750 kW Emergency Generator	Caterpillar 3508	
9	5.0 MMBtu/hr Thermal Oil Heat Transfer System	Konus Systems KV1/25	Existing equipment restricted via MBR-94-RES-138, and which has been removed
10	520 kW ULSD-fired Emergency Generator	Caterpillar 3412	Existing equipment restricted via MBR-94-RES-138, and which will be retained
11	1000 kW ULSD-fired Emergency Generator	Caterpillar 3512	
13	455 kW ULSD-fired Emergency Generator (installed after Approval No. MBR-94-RES-138)	Caterpillar 3412	

Table 1			
EU Number	Description of Unit	Manufacturer & Model Number	Operational Status
1A	12.02 MMBtu/hr Low Pressure Dual fired Boiler	Cleaver Brooks CB-LE-200-300-15ST	Equipment to be installed, which shall be subject to Regulation 310 CMR 7.26(30) through (37)
2A	23.53 MMBtu/hr Low Pressure Dual fired Boiler	Cleaver Brooks CB-LE-200-600-15ST	
3A	23.53 MMBtu/hr Low Pressure Dual fired Boiler	Cleaver Brooks CB-LE-200-600-15ST	
4A	2.0 MMBtu/hr High Pressure Natural Gas Boiler	Cleaver Brooks FLX-200-700	Equipment to be installed, exempt from Regulation
5A	2.0 MMBtu/hr High Pressure Natural Gas Boiler	Cleaver Brooks FLX-200-700	
6A	820 kW Natural Gas-fired engine based cogeneration unit	Caterpillar G3516LE with Miratech SCR system	Equipment to be installed, which shall be subject to Regulation 310 CMR 7.26(43)
7A	1000 kW ULSD-fired Emergency Generator	Caterpillar C32DITA	Equipment to be installed, which shall be subject to Regulation 310 CMR 7.26(42)
8A	250 kW ULSD-fired Emergency Generator	Caterpillar C9	
9A	50 kW ULSD-fired Emergency Generator	Caterpillar D50-6	

Table 1 Notes:

EU = Emission Unit

MMBtu/hr = 1,000,000 British thermal units per hour

kW = 1,000 watts

ULSD = ultra low sulfur distillate oil, having a sulfur content not to exceed 0.0015 percent by weight

Dual fired = unit is capable of firing either Natural Gas or ULSD

SCR = selective catalytic reduction

Table 2 below shows the Facility-wide federal potential emission limits for nitrogen oxides (NO_x) and sulfur dioxide (SO₂) restricted via MBR-94-RES-138 compared to those from this FINAL RES APPROVAL. The Final Facility-wide Restricted Emission Limits shall include the Emission Units listed above in Table 1 as well as any future installations of equipment at the Facility which are either exempt from Plan Approval pursuant to Regulation 310 CMR 7.02(2), or which will be installed in compliance with the Industry Performance Standards for Boilers, Regulation 310 CMR 7.26(30) through 7.26(37) and/or the Industry Performance Standards for Engines and Combustion Turbines, Regulation 310 CMR 7.26(40) through 7.26(44).

Table 2		
Pollutant	Nitrogen oxides (NO _x)	Sulfur dioxide (SO ₂)
Current Facility-Wide Restricted Emission Limit, tons per month	11.87	24.73
Final Facility-Wide Restricted Emission Limit, tons per month	15.1	N/A ¹
Current Facility-Wide Restricted Emission Limit, tons per consecutive 12 month time period	47.1	98.9
Final Facility-Wide Restricted Emission Limit, tons per consecutive 12 month time period	42.7²	N/A ¹

Table 2 Notes:

1: Not Applicable, because potential SO₂ emissions are far below 100 tons per year.

2: Based on operating EU1A, EU2A, and EU3A each on ultra low sulfur distillate oil (“ULSD”) for 8,760 hours per year each, operating EU4A, EU5A, and EU6A each on Natural Gas for 8,760 hours per year, and operating generators EU7A, EU8A, EU9A, EU10, EU11, and EU13 each on ULSD for 300 hours per consecutive twelve month period.

B. EMISSION LIMITS (SHORT TERM & LONG TERM)

The emissions from North Shore Medical Center, 81 Highland Avenue, Salem, MA shall be restricted to **15.1 tons of nitrogen oxides (NO_x) per month and 42.7 tons of NO_x per any consecutive twelve month time period.**

C. PRODUCTION LIMITS

Not Applicable

D. OPERATING LIMITS

1. No emergency generator shall operate for more than 300 hours per any consecutive twelve month time period. The emergency generators shall be used only during: normal maintenance and testing procedures; and periods of electric power outage due to failure of the grid, in whole or in part, on-site disaster, local equipment failure, flood, fire or natural disaster; and when the imminent threat of a power outage is likely due to failure of the electrical supply or when capacity deficiencies result in a deviation of voltage from the electrical supplier to the premises of 3% above or 5% below standard voltage, or periods during which the regional transmission organization directs the implementation of voltage reductions, voluntary load

curtailments by customers, or automatic or manual load shedding within Massachusetts in response to unusually low frequency, equipment overload, capacity or energy deficiency, unacceptable voltage levels or other emergency conditions.

2. The sulfur content of the No. 2 fuel oil used by the Facility shall not exceed 0.0015 percent by weight.
3. The Facility shall restrict the maximum fuel usage in its fuel utilization equipment as described in the following two equations, such that neither of the facility-wide federally enforceable emission caps of 15.1 tons of NO_x per month and 42.7 tons of NO_x per any consecutive twelve month time period shall be exceeded.

MONTHLY RESTRICTIONS

$$\left\{ \begin{array}{l} \frac{0.112 \text{ lb NO}_x(\text{R})}{\text{MMBtu}} + \frac{0.035 \text{ lb NO}_x(\text{S})}{\text{MMBtu}} + \frac{15.62 \text{ lb NO}_x(\text{T})}{1,000,000 \text{ cf}} + \frac{16.0 \text{ lb NO}_x(\text{U})}{\text{hour}} + \frac{2.6 \text{ lb NO}_x(\text{V})}{\text{hour}} + \\ \frac{1.1 \text{ lb NO}_x(\text{W})}{\text{hour}} + \frac{16.9 \text{ lb NO}_x(\text{Y})}{\text{hour}} + \frac{29.5 \text{ lb NO}_x(\text{X})}{\text{hour}} + \frac{17.5 \text{ lb NO}_x(\text{Z})}{\text{hour}} \end{array} \right\}$$

≤ 30,200 lb NO_x per month

where:

- R** = total amount of MMBtu from oil used in EU1A, EU2A, and EU3A per month
- S** = total amount of MMBtu from Natural Gas used in EU1A, EU2A, EU3A, EU4A, and EU5A per month
- T** = total cubic feet of Natural Gas used in EU6A per month
- U** = total hours of operation of EU7A per month
- V** = total hours of operation of EU8A per month
- W** = total hours of operation of EU9A per month
- X** = total hours of operation of EU10 per month
- Y** = total hours of operation of EU11 per month
- Z** = total of hours of operation of EU13 per month
- EU = Emission Unit
- NO_x = nitrogen oxides
- lb = pounds
- cf = cubic feet
- MMBtu = 1,000,000 British thermal units

CONSECUTIVE TWELVE MONTH TIME PERIOD RESTRICTIONS

$$\left\{ \begin{array}{l} \frac{0.112 \text{ lb NO}_x(\text{R})}{\text{MMBtu}} + \frac{0.035 \text{ lb NO}_x(\text{S})}{\text{MMBtu}} + \frac{15.62 \text{ lb NO}_x(\text{T})}{1,000,000 \text{ cf}} + \frac{16.0 \text{ lb NO}_x(\text{U})}{\text{hour}} + \frac{2.6 \text{ lb NO}_x(\text{V})}{\text{hour}} + \\ \frac{1.1 \text{ lb NO}_x(\text{W})}{\text{hour}} + \frac{16.9 \text{ lb NO}_x(\text{Y})}{\text{hour}} + \frac{29.5 \text{ lb NO}_x(\text{X})}{\text{hour}} + \frac{17.5 \text{ lb NO}_x(\text{Z})}{\text{hour}} \end{array} \right\}$$

≤ 85,400 lb NO_x per any consecutive twelve month time period

where:

- R** = total amount of MMBtu from oil used in EU 1A, EU2A, and EU3A per any consecutive twelve month time period
- S** = total amount of MMBtu from Natural Gas used in EU 1A, EU2A, EU3A, EU4A, and EU5A per any consecutive twelve month time period
- T** = total cubic feet of Natural Gas used in EU6A per any consecutive twelve month time period
- U** = total hours of operation of EU7A per any consecutive twelve month time period
- V** = total hours of operation of EU8A per any consecutive twelve month time period
- W** = total hours of operation of EU9A per any consecutive twelve month time period
- X** = total hours of operation of EU10 per any consecutive twelve month time period
- Y** = total hours of operation used in EU11 per any consecutive twelve month time period
- Z** = total hours of operation used in EU13 per any consecutive twelve month time period
- EU = Emission Unit
- NO_x = nitrogen oxides
- lb = pounds
- cf = cubic feet
- MMBtu = 1,000,000 British thermal units

E. MONITORING REQUIREMENTS

See GENERAL CONDITIONS I. and J. below.

Facility personnel shall monitor Facility operations to ensure compliance with the NO_x emission limits and operational limits specified herein including but not limited to: a) maintaining efficient operation of the subject emission units; b) tracking ULSD usage; c) tracking natural gas consumption by operating and maintaining meter(s) that measure and totalize for the Facility personnel to read and record on a monthly basis, d) operating and maintaining non-resettable run time meters. In addition, Facility personnel shall perform compliance testing on the subject equipment when and if in the opinion of MassDEP such is deemed necessary.

F. RECORD KEEPING REQUIREMENTS

See GENERAL CONDITION K. below.

Specifically, Facility personnel shall be required to maintain fuel purchase receipts on file and fuel and operational usage logs for the subject emission units which must reflect actual fuel usage in EU1A, EU2A, EU3A, EU4A, EU5A, and EU6A and operating hours on EU7A, EU8A, EU9A, EU10, EU11, and EU13 individually, both on a monthly and consecutive twelve month time period basis. Said fuel usage logs shall also contain: the total fuel usage for each type of fuel burned each month, the sulfur content of fuel oil used, the resulting monthly emissions from said fuel usage, and the total fuel usage and resulting emissions on a consecutive twelve month time period basis (the total from the current month's fuel usage plus the sum of fuel usage for the eleven months preceding the current month). Said operating time logs shall also contain: the total operating hours for each generator per month, the sulfur content of fuel oil used, the resulting monthly emissions from said fuel usage, and the total fuel usage and resulting emissions on a consecutive twelve month time period basis. A copy of these fuel usage logs must be kept on site. An interactive Microsoft Excel on-site record keeping form can be downloaded at <http://www.mass.gov/dep/air/approvals/aqforms.htm#report>.

In addition, Facility personnel shall maintain accurate and timely records documenting all combustion equipment retirements, replacements and installations on-site and shall make said records available to MassDEP personnel upon request.

G. REPORTING REQUIREMENTS

See GENERAL CONDITION L. below.

Facility personnel shall submit a Restricted Emission Status Exceedance Report (RESER) to MassDEP should it exceed any limitation/restriction established within this RES Approval. Said RESER shall be submitted to this Office within seven (7) days of documentation of the exceedance of any limitation/restriction by Facility personnel. The RESER shall include identification, duration, and reason for the exceedance, and remedial action plan to prevent future exceedances.

Facility personnel shall be required to submit, on or before March 15th of each year, an Annual RES Compliance Report (ARESCR) to the Northeast Regional Office of MassDEP that documents the compliance status of the facility, for the previous Calendar Year, with respect to the limitations/restrictions established within this RES Approval. Facility personnel shall utilize MassDEP's Annual Emissions Reporting Form, available in interactive Microsoft Excel format at <http://www.mass.gov/dep/air/approvals/aqforms.htm#report>.

II.

GENERAL CONDITIONS FOR RESTRICTED EMISSION STATUS APPROVAL

- A. OPERATION - No person shall operate this Facility except in conformance with the requirements established in this Restricted Emission Status Approval.
- B. SUSPENSION - This Approval may be suspended, modified, or revoked by MassDEP if, at any time, MassDEP determines that the Facility is violating any condition or part of the Approval.
- C. OTHER REGULATIONS - This Approval does not negate the responsibility of the owner/operator to comply with this or any other applicable federal, state, or local regulations now or in the future. Nor does this Approval imply compliance with any other applicable federal, state or local regulation now or in the future.
- D. EXISTING APPROVALS - All plan Approvals issued under Regulation 310 CMR 7.02 prior to the effective date of this RES Approval shall continue to meet the emission rates and approved conditions specified in the applicable plan Approval(s) unless specifically altered by this RES Approval.
- E. VISIBLE EMISSIONS - The Facility shall be operated in a manner to prevent the occurrence of visible emissions which cause or contribute to a condition of air pollution as defined in Regulations 310 CMR 7.01 and 7.06.
- F. DUST AND ODOR - The Facility shall be operated in a manner to prevent the occurrence of dust or odor conditions which cause or contribute to a condition of air pollution as defined in Regulations 310 CMR 7.01 and 7.09.
- G. NOISE - Noise from the Facility during routine operation, including startups and shutdowns, shall not exceed MassDEP noise guidelines and shall not cause a condition of air pollution as defined in Regulations 310 CMR 7.01 and 7.10.
- H. ASBESTOS - Should asbestos remediation/removal be required as a result of this RES Approval, such asbestos remediation/removal shall be done in accordance with Regulation 310 CMR 7.15.
- I. MONITORING - Equipment or emission monitoring systems installed for the purpose of documenting compliance with this Approval shall be installed, calibrated, maintained and operated in sufficient manner to ensure continuous and accurate operation at all times.
- J. TESTING - Any emission testing to be compared to limitations in this Approval must be conducted in accordance with the Environmental Protection Agency test methods as specified in the Code of Federal Regulations, Title 40, Part 60, Appendix A - Standards of Performance for

New Stationary Sources or by another method correlated to the above method to the satisfaction of MassDEP and in accordance with the requirements noted in Regulation 310 CMR 7.13.

In accordance with Regulation 310 CMR 7.04(4)(a), each fuel utilization facility having an energy input capacity equal to or greater than 3,000,000 Btu per hour shall be inspected and maintained in accordance with the manufacturer's recommendations and tested for efficient operation at least once in each calendar year. The results of said inspection, maintenance and testing and the date upon which it was performed shall be recorded and posted conspicuously on or near the subject equipment.

K. RECORD KEEPING - A record keeping system shall be established and continued on site. All records shall be maintained up-to-date such that year-to-date information is readily available for MassDEP examination. Record keeping shall, at a minimum, include:

a) Compliance records sufficient to demonstrate that emissions have not exceeded what is allowed by this RES Approval. Such records may include daily production records, raw material usage rates, fuel purchase receipts, emissions test results, monitoring equipment data and reports.

b) Maintenance: A record of routine maintenance activities performed on emission unit control equipment and monitoring equipment including, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.

c) Malfunctions: A record of all malfunctions of emission unit control and monitoring equipment including, at a minimum: the date and time the malfunction occurred; a description of the malfunction and the corrective action taken; the date and time corrective actions were initiated; and the date and time corrective actions were completed and the emission unit returned to compliance.

d) All records shall be kept on site for five (5) years and shall be made available to MassDEP upon request.

L. REPORTING - In accordance with Regulation 310 CMR 7.12, the Facility shall file Source Registration on-line detailing information regarding the Facility's emissions. The required information may include:

a) The nature and amounts of emissions from the Facility.

b) Information which may be needed to determine the nature and amounts of emissions from the Facility.

c) Any other information pertaining to the Facility which MassDEP requires.

d) In accordance with Regulation 310 CMR 7.12(2), information required by Regulation 310 CMR 7.12(1)(a) shall be submitted annually.

e) The Regional Bureau of Waste Prevention, Compliance and Enforcement Office must be notified by telephone or fax as soon as possible after the occurrence of any upsets or malfunctions to the Facility equipment, air pollution control equipment, or monitoring equipment which result in an excess emission to the air and/or a condition of air pollution.

M. MODIFICATIONS - Any proposed increase in emissions above the limits contained in this RES Approval must first be approved in writing by MassDEP pursuant to Regulation 310 CMR 7.02. In addition, any increase may subject the Facility to additional regulatory requirements.

N. REMOVAL OF AIR POLLUTION CONTROL EQUIPMENT - No person shall cause, suffer, allow, or permit the removal, alteration or shall otherwise render inoperative any air pollution control equipment or equipment used to monitor emissions which has been installed as a requirement of Regulation 310 CMR 7.00, other than for reasonable maintenance periods or unexpected and unavoidable failure of the equipment, provided that MassDEP has been notified of such failure, or in accordance with specific written Approval of MassDEP.

III. APPEAL RIGHTS

This Final Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date you received this document.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts which are the grounds for the request and the relief sought. Additionally, the request must state why the Final Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P. O. Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.

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The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

The MassDEP may waive the adjudicatory hearing filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.