



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

TIMOTHY P. MURRAY  
Lieutenant Governor

RICHARD K. SULLIVAN JR.  
Secretary

KENNETH L. KIMMELL  
Commissioner

Issued September 14, 2011

Mr. Chuck Bouchrouche  
Bagel Boy, Inc.  
485 South Union Street  
Lawrence, MA 01843

RE: **LAWRENCE-**  
Metropolitan Boston/Northeast Region  
310 CMR 7.02 – Air Quality Non-Major  
Comprehensive Plan Application  
Transmittal No. X237412  
Application No. MBR-11-IND-016  
**FINAL APPROVAL**

Dear Mr. Bouchrouche:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Protection, Bureau of Waste Prevention (“MassDEP”), has reviewed your Non-Major Comprehensive Plan Application (“Application”) listed above. This Application concerns the operation of four existing tunnel ovens and the installation and operation of one new tunnel oven at Bagel Boy Inc.’s (“Bagel Boy”) facility located at 485 South Union Street in Lawrence, Massachusetts. This Application was submitted to MassDEP as a result of an Administrative Consent Order with Penalty issued to Bagel Boy on February 11, 2011 (ACOP-11-9002-27). The submitted Application bears the seal and signature of Paul Murphy, Massachusetts P.E. No. 41840.

MassDEP has determined that your Application is administratively and technically complete and that the subject equipment is in conformance with current air pollution control engineering practice, and hereby grants **Final Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Approval carefully, as it stipulates the particular conditions with which the facility owner/operator must comply in order for the facility to be operated in compliance with the Regulations. Failure to comply with this Approval will constitute a violation of the Regulations and can result in the revocation of the Approval.

### **1. BACKGROUND AND DESCRIPTION OF FACILITY**

Bagel Boy, located at 485 South Union Street in Lawrence, Massachusetts (“the Facility”) houses two existing tunnel ovens that bake bagels, one tunnel oven that bakes pita chips, one that bakes flat bread, and one small oven used for research and development (R&D). Bagel Boy is also proposing to install and operate a tunnel oven to bake a yeast leavened product called “bagel flats.” The two bagel ovens (Ovens 1 and 2, respectively) are manufactured by

Babbco and each have a heat input capacity of 6.4 million British thermal units per hour (MMBtu/hr). The pita chip oven (Oven 3) is manufactured by Baker Perkins and has a heat input rating of 0.5 MMBtu/hr. The flatbread oven (Oven 4) is manufactured by ABI and has a heat input rating of 3.0 MMBtu/hr. The R&D oven (Oven 5) is manufactured by Babbco and has heat input rating of 0.5 MMBtu/hr. The Proposed bagel flats oven (Oven 6) will be manufactured by Babbco (or equivalent) and will have a heat input rating of 3.2 MMBtu/hr. One tunnel oven with a heat input rating of 1.5 MMBtu/hr exists but is inactive, with utility connections severed from the oven. All fuel utilization equipment at the facility combusts natural gas. The Facility bakes yeast-leavened bagel and flatbread products using what may be described as the “straight dough process.”

The primary air emissions from the bakery operations are volatile organic compounds (VOC) which are emitted by the Bagel and Flatbread ovens. The primary VOC emitted is ethanol. In yeast-leavened breads, yeast metabolizes sugars in an anaerobic fermentation, producing carbon dioxide (CO<sub>2</sub>) that is largely responsible for the bread rising. Besides the CO<sub>2</sub>, equimolar amounts of ethanol and small amounts of other VOC are produced. The oven is the predominant emissions source since ethanol is emitted when the dough is exposed to high temperatures in the oven, with yeast concentration, total fermentation time, and amount of product produced being the critical factors in determining VOC emissions. VOC emissions are proportional to the amount of bread baked.

Presuming compliance with this Approval, the Facility will be categorized as a minor source of air pollution with potential VOC and Nitrogen Oxides (NO<sub>x</sub>) emissions each less than fifty (50) tons per year.

## **2. EMISSION UNIT IDENTIFICATION/REQUIREMENTS**

The baking process consists of the following equipment contained in Table 1 which is subject to and regulated by this Approval:

TABLE 1				
DESCRIPTION OF NATURAL GAS-FIRED OVENS AND ASSOCIATED SINGLE WALL STAINLESS STEEL STACKS				
PROCESS	DESCRIPTION OF EQUIPMENT	MAXIMUM OVEN DESIGN CAPACITY in MMBtu/hr <sup>1</sup>	HEIGHT OF STACK ABOVE GROUND in feet	HEIGHT OF STACK ABOVE ROOF in feet
Oven 1	Babbco	6.4	38	10 <sup>2</sup>
Oven 2	Babbco (Capway)	6.4	38	10 <sup>2</sup>
Oven 3	Baker Perkins	0.5	38	10 <sup>2</sup>
Oven 4	ABI	3.0	38	10 <sup>2</sup>
Oven 5	Babbco	0.5	38	10 <sup>2</sup>
Oven 6	Babbco	3.2	38	10 <sup>2</sup>

Note: 1: MMBtu/hr means 1,000,000 British thermal units per hour  
 2: See Section 4 “Special Terms and Conditions” requirement a.

This facility stores flour in three silos and sugar in one silo located outside of the building. The flour and sugar are pneumatically conveyed from the storage silos outside through a totally enclosed delivery system to the mixing room. Each of the silos has a woven fabric filter bag house system with a control efficiency of at least 99.5 percent. These silos shall comply with Regulation 310 CMR 7.03(12).

### **3. APPLICABLE REQUIREMENTS**

#### **A. EMISSION LIMITS AND PRODUCTION RESTRICTIONS**

1. The total facility-wide emissions of **VOC** from the Facility shall be restricted to no more than:

**5.0 tons of VOC per month, and  
16.5 tons of VOC per consecutive twelve month time period.**

2. The total facility-wide quantities of yeast-leavened product baked at the Facility shall be restricted to no more than:

**6,000 tons of baked product per month, provided the monthly VOC emission cap is not exceeded, and  
30,000 tons of baked product per consecutive twelve month time period, provided the twelve month rolling VOC emission cap is not exceeded.**

3. The total facility-wide emissions of **CO<sub>2</sub>** from the Facility, including the combustion of natural gas and from the process of yeast fermentation of sugar, shall be restricted to no more than:

**2,400 tons of CO<sub>2</sub> per month, and  
7,200 tons of CO<sub>2</sub> per consecutive twelve month time period.**

**B. COMPLIANCE DEMONSTRATION**

The Facility owner/operator shall comply with the monitoring/testing, record keeping, and reporting requirements as contained in Tables 2, 3, and 4 below:

<b>Table 2</b>																					
<b>MONITORING/TESTING REQUIREMENTS</b>																					
Facility-wide	<p>Monitor the following on a daily basis:</p> <ul style="list-style-type: none"> <li>a. The name and type of each product baked;</li> <li>b. The baker's percent of yeast used to the nearest tenth of a percent, for each product baked;</li> <li>c. The fermentation time (total yeast action time) in hours to the nearest tenth of an hour, for each product baked;</li> <li>d. The amount of product baked in tons, for each product baked;</li> <li>e. The corresponding daily emission rate for each product baked, based on the emission factors developed as a result of emissions testing (listed below):</li> </ul> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Product</th> <th style="text-align: right; border-bottom: 1px solid black;">VOC Emission factor in pounds VOC per ton of product baked</th> </tr> </thead> <tbody> <tr> <td colspan="2"><b>Bagels</b></td> </tr> <tr> <td>4 ounce 9oz.)</td> <td style="text-align: right;">0.57</td> </tr> <tr> <td>5 oz.</td> <td style="text-align: right;">0.41</td> </tr> <tr> <td>3.66 oz.</td> <td style="text-align: right;">1.05</td> </tr> <tr> <td>Mini</td> <td style="text-align: right;">2.13</td> </tr> <tr> <td colspan="2"><b>Flat Bread</b></td> </tr> <tr> <td>Whole wheat</td> <td style="text-align: right;">1.01</td> </tr> <tr> <td>7 Grain</td> <td style="text-align: right;">1.00</td> </tr> <tr> <td>Whole grain</td> <td style="text-align: right;">1.32</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>f. The corresponding daily emission rate for each product baked that was not included in emissions testing, based on the following straight dough formula:</li> </ul> $VOC = (P)(0.95Y + 0.195T + 1.90)$ <p>Where: VOC = emissions in pounds per day  P = tons of product per day  Y = baker's percent of yeast  T = total yeast action time in hours</p> <p><math>CO_{2\text{bread}} = VOC</math> (unless based on actual emissions test data)  Where: <math>CO_{2\text{bread}}</math> = emissions of CO<sub>2</sub> from bread baking in pounds per day  VOC = emissions in pounds per day</p>	Product	VOC Emission factor in pounds VOC per ton of product baked	<b>Bagels</b>		4 ounce 9oz.)	0.57	5 oz.	0.41	3.66 oz.	1.05	Mini	2.13	<b>Flat Bread</b>		Whole wheat	1.01	7 Grain	1.00	Whole grain	1.32
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<b>Table 2</b>	
<b>MONITORING/TESTING REQUIREMENTS</b>	
Facility-wide	<p>Monitor the natural gas usage of all combustion equipment at the facility on a monthly basis. Natural gas consumption billing records are acceptable. The corresponding monthly emission rate of CO<sub>2</sub> emitted from the combustion equipment shall be based on the following formula (unless based on actual emissions testing data):</p> $CO_{2\text{ovens}} = NG_{\text{usage}} \times (60 \text{ tons } CO_2/MM\text{scf})$ <p>Where: CO<sub>2ovens</sub>= emissions of CO<sub>2</sub> in tons from combusting natural gas per month including ovens, heaters, and air make-up units.            NG<sub>usage</sub> = monthly natural gas used in the combustion equipment at the facility in million standard cubic feet            MMscf = million standard cubic feet</p>
	<p>For each product baked, monitor the actual monthly production in tons of baked product, actual monthly VOC emissions in tons, and actual monthly CO<sub>2</sub> emissions in tons.</p>
	<p>For each product baked, monitor the actual consecutive twelve month time period production in tons of baked product, actual consecutive twelve month time period VOC emissions in tons, and actual consecutive twelve month time period CO<sub>2</sub> emissions in tons.</p>
	<p>Monitor facility operations such that the total facility-wide monthly and twelve month time period emissions of VOC and CO<sub>2</sub> do not exceed the emissions limits established in Section 3.A. of this Approval.</p>
	<p>Monitor facility operations such that the total facility-wide monthly and twelve month rolling tons of total product produced do not exceed the production restrictions established in Section 3.A. of this Approval, provided that VOC emissions do not exceed the VOC emission limits contained in Section 3.A.1. above.</p>
	<p>Monitor facility operations such that accurate reports regarding Greenhouse Gas emissions (i.e. CO<sub>2</sub>) can be submitted in accordance with applicable requirements contained in 310 CMR 7.71.</p>
	<p>Monitor facility operations such that accurate reports can be submitted to MassDEP in accordance with 310 CMR 7.12</p>

**Table 3**

**RECORD KEEPING REQUIREMENTS**

<p>Facility-wide</p>	<p>Maintain the following records, on a daily basis:</p> <ul style="list-style-type: none"> <li>a. The name and type of each product baked;</li> <li>b. The baker's percent of yeast used to the nearest tenth of a percent, for each product baked;</li> <li>c. The fermentation time (total yeast action time) in hours to the nearest tenth of an hour, for each product baked;</li> <li>d. The amount of product baked in tons, for each product baked;</li> <li>e. The corresponding daily emission rate for each product baked, based on the specified emission factors and formulas specified in Table 2 above:</li> </ul>
	<p>Record the natural gas usage of all combustion equipment at the facility on a monthly basis. Natural gas consumption billing records are acceptable. The corresponding monthly emission rate of CO<sub>2</sub> emitted from the combustion equipment shall be based on the following formula:</p> $CO_{2\text{ovens}} = NG_{\text{usage}} \times (60 \text{ tons } CO_2/\text{MMscf})$ <p>Where: CO<sub>2ovens</sub> = emissions of CO<sub>2</sub> in tons from combusting natural gas per month including ovens, heaters, and air make-up units.        NG<sub>usage</sub> = monthly natural gas used in the combustion equipment at the facility in million standard cubic feet        MMscf = million standard cubic feet</p>
	<p>For each product baked, maintain a record of the actual monthly production in tons of baked product per month, actual monthly VOC emissions in tons, and actual monthly CO<sub>2</sub> emissions in tons.</p>
	<p>For each product baked, maintain a record of the actual consecutive twelve month time period production in tons of baked product, actual consecutive twelve month time period VOC emissions in tons, and actual consecutive twelve month time period CO<sub>2</sub> emissions in tons.</p>
	<p>Maintain a record of the facility-wide total monthly and consecutive twelve month time period emissions of VOC and CO<sub>2</sub> in tons in order to verify that the actual facility-wide VOC and CO<sub>2</sub> emissions do not exceed the emissions limits established in Section 3.A. of this Approval. The electronic version of the MassDEP approved Record Keeping Form can be downloaded at (<a href="http://www.mass.gov/dep/air/approvals/aqforms.htm#report">http://www.mass.gov/dep/air/approvals/aqforms.htm#report</a>).</p>

<b>Table 3</b>	
<b>RECORD KEEPING REQUIREMENTS</b>	
Facility-wide	Maintain a record of facility-wide operations and production rates in order to verify that the actual monthly and consecutive twelve month time period tons of total product produced do not exceed the production restrictions established in Section 3.A. of this Approval, provided that VOC emissions do not exceed the VOC emission limits contained in Section 3.A.1. above.
	Maintain facility records such that accurate reports regarding Greenhouse Gas emissions (i.e. CO <sub>2</sub> ) can be submitted in accordance with applicable requirements contained in 310 CMR 7.71.
	Record facility operations such that accurate reports can be submitted to MassDEP in accordance with 310 CMR 7.12
	Maintain on-site and accessible at or near the subject equipment, at all times, a copy of this Approval letter.
	Maintain copies of all records or reports required by this Approval on-site for five (5) years and make said records or reports available to MassDEP personnel upon request.

<b>Table 4</b>	
EU#	<b>REPORTING REQUIREMENTS</b>
Facility-wide	By January 30 <sup>th</sup> of each year, submit an Annual Emissions Report to this Office containing the actual VOC and CO <sub>2</sub> emissions rates in tons, on both a monthly and consecutive twelve month time period. The electronic version of the MassDEP approved Report Form in Microsoft Excel format can be downloaded at <a href="http://www.mass.gov/dep/air/approvals/aqforms.htm#report">http://www.mass.gov/dep/air/approvals/aqforms.htm#report</a> .
	By April 15 <sup>th</sup> of each year, the Facility shall report and certify direct emissions of greenhouse gases for the previous calendar year in accordance with applicable requirements contained in 310 CMR 7.71(5) through (7).
	On an annual basis accurately report to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The Facility shall note any minor changes, which did not require Plan Approval (under 310 CMR 7.02, 7.03, etc.) therein.

#### **4. SPECIAL TERMS AND CONDITIONS**

The Facility owner/operator is subject to, and shall comply with, the following special terms and conditions:

- a) Bagel Boy shall increase the height of the existing stacks associated with the subject ovens listed above, to a minimum of ten (10) feet above the rooftop by November 15, 2011. Each stack shall be configured to discharge the exhaust gases vertically and shall not be

equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including but not limited to rain protection devices such as “shanty caps” or “egg beaters”. Rain sleeves or properly weighted flappers are acceptable. Bagel Boy shall notify MassDEP in writing within seven (7) days of the completion of modifications to the existing stacks. The notifications shall be sent attention Permit Chief, MassDEP Northeast Regional Office, 205B Lowell Street, Wilmington, MA 01887. The notification shall include the date when each stack modification was completed and a photograph of each modified stack.

b) Notify MassDEP by telephone, electronic mail or facsimile within three (3) business days after confirmation of any monthly or consecutive twelve-month time period exceedance of any of the emission limits and/or production restrictions specified in Section 3.A. above. This must be followed up within seven (7) days thereafter by submitting to this Office partially completed copies of the MassDEP approved On-Site Record Keeping and Report Forms which can be downloaded at [www.state.ma.us/nero/bwp/nerobwp/.htm](http://www.state.ma.us/nero/bwp/nerobwp/.htm) . Include with said submittal a description of the reason for the exceedance and the steps being taken to prevent its re-occurrence in the future.

c) Obtain prior written Approval from MassDEP in accordance with the applicable requirements of Regulation 310 CMR 7.02 for any proposed modifications of existing equipment or for the proposed installation of new equipment which will increase the facility-wide potential emissions of any air contaminant by one (1.0) ton or more per calendar year.

d) The visible emissions from this Facility shall not exceed 10 percent opacity.

## **5. GENERAL CONDITIONS**

The Facility owner/operator is subject to, and shall comply with, the following general conditions:

a) Should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur, as the result of the operation of the Facility, then the Facility owner/operator shall immediately take appropriate steps to abate said nuisance condition(s).

b) The Facility owner/operator shall allow MassDEP personnel access to the site, buildings, and all pertinent records at all reasonable times for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.

c) This Approval consists of the Application materials and this Approval letter. If conflicting information is found between these two documents, then the requirements of the Approval letter shall take precedence over the documentation in the Application materials.

d) This Approval does not negate the responsibility of the Facility 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 this or any other applicable federal, state, or local regulations now or in the future.



e) This Approval may be suspended, modified, or revoked by MassDEP if, at any time, MassDEP determines that the Facility owner/operator is violating any condition or part of this Approval.

f) If asbestos remediation/removal should be required as a result of the approved construction, reconstruction, or alteration of this Facility, removal/remediation of asbestos shall be done in accordance with Regulation 310 CMR 7.15 in its entirety and 310 CMR 4.00.

g) MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and Regulation 301 CMR 11.00, Section 11.04, provide certain "Fail-Safe Provisions" which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

h) Failure to comply with any of the above stated conditions will constitute a violation of the "Regulations", and can result in the revocation of the Approval granted herein and/or other appropriate enforcement action as provided by law. MassDEP may also revoke this Approval if the construction work is not begun within two years from the date of issuance of this Approval, or if the construction work is suspended for one year or more.

## **6. APPEAL PROCESS**

This 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 Approval.

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 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 (\$100.00) must be mailed to:

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

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

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.

Should you have any questions concerning this Approval, please contact Thomas A. Hannah by telephone at (978) 694-3287, or in writing at the following address: Department of Environmental Protection (MassDEP), 205B Lowell Street, Wilmington, Massachusetts 01887.

Sincerely,

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.

Thomas A. Hannah  
Environmental Engineer

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.

James E. Belsky  
Permit Chief  
Bureau of Waste Prevention

ecc: Board of Health, c-ganley@cityoflawrence.com  
Fire Headquarters, M\_Gaffney@cityoflawrence.com  
MassDEP/Boston - Yi. Tian (E-Copy)  
cc: MassDEP/NERO- Marc Altobelli (E-Copy & Hard Copy), Mary Persky, Tom Hannah  
Lawrence Board of Health, 200 Common St, Basement Room 107, Lawrence, MA 01840