



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

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Commissioner

January 30, 2012

Mr. William Bottiggi
Braintree Electric Light Department
150 Potter Road
Braintree, Massachusetts 02184

RE: **PLAN APPROVAL**
Sound Level Compliance Demonstration
310 CMR 7.02: Plan Approval and Emission Limitations
Transmittal No.: W120701
Application No.: 4P07014
Facility No.: 133487

AT: Braintree Electric Light Department
150 Potter Road
Braintree, Massachusetts 02184

Dear Mr. Bottiggi:

The Department of Environmental Protection (the “Department” or “MassDEP”), Southeast Regional Office (SERO), Bureau of Waste Prevention, has reviewed Epsilon Associates, Inc. sound level compliance testing reports dated December 23, 2009, July 8, 2011 and October 7, 2011 for the Braintree Electric Light Department Watson Station and Potter Station. In addition, the Department reviewed a letter from CITGO Petroleum Corporation dated July 14, 2011 enclosed with Epsilon Associates, Inc. letter dated July 19, 2011. The reports were submitted in response to Section XII. Sound, Condition 6 and 7, of the March 14, 2008 Conditional Approval issued by the Department to Braintree Electric Light Department (BELD) (the “Applicant”) for construction and operation of a 116 MW quick-start, simple-cycle, dual-fuel generating unit (Watson Station) located at BELD’s existing 150 Potter Road site in Braintree, Massachusetts.

The sound level compliance reports including the identification of post construction mitigation measures were submitted in accordance with Section 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 “Air Pollution Control Regulations,” adopted by the Department pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-M. The Department’s review has been limited to compliance with applicable Air Pollution Control Regulations

pertaining to sound and does not relieve you of the obligation to comply with all other permitting requirements contained in other regulations or statutes.

Review of the information submitted reveals that BELD has completed the post-construction sound emission mitigation program and has demonstrated through sound level compliance testing that the BELD Watson Station and Potter Station sound level impacts are in compliance with 310 CMR 7.10 Noise of the Massachusetts Air Pollution Control Regulations. The Department hereby APPROVES the operation of the Watson Station and Potter Station subject to the following revised Section XII Sound provisions. Section XII of the March 14, 2008 Conditional Approval is superseded in its entirety. The below revised Section XII addresses: the additional mitigation measures employed; adjustments to Receptor R5, R7 and R10 allowable sound impacts; acknowledgement from CITGO in a letter dated July 14, 2011 that the BELD facility sound impacts were acceptable; information on sound level compliance testing; and clarified that an additional sound level test would not need to be performed.

XII. SOUND

Background sound levels were monitored at several representative locations that surround the project site. In general, monitoring locations were selected on the basis of where sound impact from the Project was anticipated to be greatest. A review of the existing land use in the vicinity of the project site was conducted to identify the closest and most representative inhabited residential locations. The selected locations generally correspond to the nearest sound-sensitive locations in various directions from the site, as well as elevated and over-water residential locations. A comprehensive sound level assessment and modeling program using short-term and continuous monitoring techniques was conducted. This program was performed on June 16-20, 2006 and December 8-13, 2006.

In total, existing sound levels were measured at nine representative community locations. These locations are identified in Tables 3a, 3b, and 4 below. The monitors were programmed to record the following hourly A-weighted sound levels: L_{max} , L_{min} , L_{90} , L_{10} percentile sound levels, and L_{eq} (average energy equivalent sound level). A-weighted sound level, which is reported in decibels designated as "dB(A)," emphasizes the middle frequency sounds to which the human ear is most sensitive and de-emphasizes lower and higher frequency sounds. The L_{90} level represents the sound level exceeded 90 percent of the time and is used by the Department for the regulation of sound emissions. The objective of the measurements performed at these locations was to characterize typical daytime and late night/early morning sound at the nearby residential properties that surround the Project site.

MassDEP Noise Policy limits increases over the existing L_{90} background level to 10 dB(A). Additionally, "pure tone" sounds, defined as any octave band level which exceeds the levels in adjacent octave bands by 3 dB or more, are also prohibited.

The sound level measurement study identified receptor position R10 as potentially subject to a 16 dB(A) daytime increase when the project (Watson Station) begins operation. This receptor, CITGO Petroleum Corporation, operates a petroleum tank farm, and is not noise-sensitive land. The predicted 68 dB(A) sound level complies with the Town of Braintree Zoning Bylaws for commercial zones. The Department has received written comments from CITGO Petroleum (dated July 14, 2011), indicating they are aware of these noise impacts, and do not object to them.

- 1) The facility shall be designed, constructed, operated and maintained such that at all times:
 - a) No condition of air pollution shall be caused by sound as provided in 310 CMR 7.01;
 - b) No sound emissions resulting in noise shall occur as provided in 310 CMR 7.10 and the MassDEP's Policy 90-001 other than as approved herein; and
 - c) Sound emissions from the site shall not exceed the levels set forth in Tables 3a, 3b, and 4 at the locations as identified in said Tables 3a, 3b, and 4.

- 2A) BELD shall install and have the following Watson Station noise mitigation measures:
 - a) Weatherproof, baseplate-mounted enclosure for housing the gas turbine, inlet plenum, fuel and oil systems, and enclosure ventilation air systems.
 - b) Combustion air inlet silencer and ducting.
 - c) Intake ducting and silencing for the gas turbine enclosure ventilation intake system, the gas turbine enclosure ventilation exhaust system, and the gas turbine bleed air exhaust.
 - d) Weatherproof, base plate-mounted enclosure for housing the AC generator, exciter, line and neutral cubicles.
 - e) Evaporative coolers in the gas turbine air inlets.
 - f) Gas compressors housed within an enclosed building.
 - g) Increasing the length of the silencer within the SCR by 6 feet (14 feet total).
 - h) Doubling the thickness of the SCR shell steel (from 0.25-inch to 0.5-inch).
 - i) Gas turbine stack exhaust silencers.
 - j) Sound barrier walls in strategic locations along the south side of the Project site.
 - k) Orienting the gas turbine air inlets to face north, and away from the residential area to the south.

- 2B) Watson Station commenced operation in June, 2009 with all noise mitigation measures in XII.2A in place. Noise measurements were performed in October 2009 and demonstrated compliance with the Conditional Approval Permit Limits of March 14, 2008 at all locations with the exception of R3, R5, R7, and R10. BELD subsequently evaluated, designed, and implemented a comprehensive and extensive custom-built post-construction noise mitigation program at a cost of more than one million dollars. The post-construction noise mitigation measures were constructed and installed between December 2009 and May 2011 and included the following:
 - a) Replaced gas compressor building rooftop ventilation fans with quieter fans
 - b) Installed additional AcoustiBlok insulation to the interior walls of the gas compressor building.
 - c) Stiffened and wrapped compressor building gas pipes with sound insulation material.
 - d) Widened the inlet and replaced the outlet duct of the SCR cooling fans with a larger duct and more nozzles in order to reduce the SCR fan speed.
 - e) Added an additional double-length silencer to each ASC fan.
 - f) Installed a custom engineered four sided absorbing barrier around each set of water injection pumps.
 - g) Installed a custom engineered silencer around each ammonia injection fan duct.
 - h) Added custom-designed cladding around each fabric joints between the compressor and ventilation inlet ducts and the ventilation housing.
 - i) Installed custom-designed cladding and absorbing material around each compressor inlet

- duct and ventilation housing.
- j) Installed a custom engineered silencer on each turbine flame arrestor (to eliminate the popping sound at shut-down).
- k) Replaced SCR purge fans with fans that are 20 dBA quieter.
- l) Replaced mechanical building rooftop ventilation fans with quieter fans.

2C) Noise measurements performed on June 8, 2011 demonstrated compliance at R3 and substantial improvement at all other locations. BELD requested relief from the conditional approval permit limits at R5, R7, and R10 in a report to the Department on July 8, 2011. The total sound levels at residential receptors R5 and R7 are equal to or less than those at R3. The increase in ambient is either less than or within 1 dBA of the increase at R3 during quiet nighttime hours as shown in Table 3b, and the increase in ambient at R5 and R7 is below the MassDEP policy and within the range of recent decisions of EFSB. The noise levels at the CITGO/BELD property line receptor, R10, are acceptable to CITGO and comply with the noise requirements of the Town of Braintree zoning bylaws. Accordingly, MassDEP finds that there is no adverse conditions at R5, R7, and R10 and modifies the limits in the Conditional Approval Permit to those shown in Tables 3a and 3b.

3) The Watson Station shall not exceed the sound levels in Tables 3a and 3b. No combination of sound emitting sources shall result in a “pure tone condition,” as previously defined.

Table 3a: Watson Station Allowable Sound Impacts (Day / Evening)				
Receptor	T. A. Watson Plant dB(A)	Lowest L90 Background dB(A)	Lowest L90 Background dB(A)	Change dB(A)
R1 – woods SE of BELD	47	44	49	+5
R1A – 196 Glenrose Ave. (near R1)	45	44	48	+4
R2 – woods SW of BELD	44	42	46	+4
R2A – 108 Glenrose Ave. (near R2)	43	42	45	+3
R3 – Glenrose Ave/Vinedale Rd	42	45	47	+2
R3A – 156 Glenrose Ave. (near R3)	44	45	48	+3
R4 – Ferncroft Rd/Trefton Dr.	39	44	45	+1
R5 – Newell Park	40	44	45	+1
R6 – Veranda Rd/Marietta Ave	29	48	48	0
R7 – 56 Bluff Rd	44	41	45	+4
R8 – Quirk parcel PL	45	46	49	+3
R9 – Quirk parcel – mid-site	36	42	43	+1
R10 – Northern BELD PL with CITGO	68	46	68	+22

Table 3b: Watson Station Allowable Sound Impacts (Nighttime)

Receptor	T. A. Watson Plant dB(A)	Lowest L90 Background dB(A)	Lowest L90 Background dB(A)	Change dB(A)
R1 – woods SE of BELD	47	40	48	+8
R1A – 196 Glenrose Ave. (near R1)	45	40	46	+6
R2 – woods SW of BELD	44	36	45	+9
R2A – 108 Glenrose Ave. (near R2)	43	36	44	+8
R3 – Glenrose Ave/Vinedale Rd	42	39	44	+5
R3A – 156 Glenrose Ave. (near R3)	44	39	45	+6
R4 – Ferncroft Rd/Trefton Dr.	39	37	41	+4
R5 – Newell Park	40	38	42	+4
R6 – Veranda Rd/Marietta Ave	29	40	40	0
R7 – 56 Bluff Rd	44	39	45	+6
R8 – Quirk parcel PL	45	42	47	+5
R9 – Quirk parcel – mid-site	36	40	41	+1
R10 – Northern BELD PL with CITGO	68	42	68	+26

- 4) The 2006 comprehensive sound level measurement study revealed a potential 1 dB(A) exceedance of DEP's 10 dB(A) noise policy limit at receptor R2A with both the new Watson Station and the Potter II Station in operation (See Table 4 below). To minimize this potential, the applicant shall apply to the Department to modify the current Potter II Station operating permit to preclude operation of the Potter II Station on Sundays between the hours of midnight and 5:00 a.m. unless required solely by ISO-NE to dispatch the unit as a result of a local or regional system contingency (i.e. VAR Control or transmission reliability) or Security Constrained Unit Commitment. This condition assumes that the new Watson Station is already running and would require concurrent operation of the Potter II Station.
- 5) The Watson and Potter II Stations, in total, shall not exceed sound levels in Table 4:

Table 4: Allowable Sound Impacts (Nighttime)

Receptor	Projected Watson Plant dB(A)	Measured Potter II dB(A)	Lowest Background L 90, dB(A)	Watson & Potter & Background dB(A)	Increase Over background dB(A)
R1 – woods SE of BELD	47	50	40	52	+12
R1A – 196 Glenrose Ave. (near R1)	45	48	40	50	+10
R2 – woods SW of BELD	44	45	36	48	+12
R2A – 108 Glenrose Ave. (near R2)	43	45	36	47	+11 ^a
R3 – Glenrose Ave/Vinedale Rd	42	47	39	49	+10
R3A – 156 Glenrose Ave. (near R3)	44	47	39	49	+10

Note

a: The increase over background dB(A) will be no greater than +10 dB(A), other than under the exception allowed by Proviso XII.4. above.

- 6) The Applicant shall conduct a noise survey (during daytime and nighttime operations) in accordance with Departmental procedures/guidelines within 180 days of the startup of both Watson Station turbines to verify compliance with the allowable noise impacts specified in Tables 3a and 3b of this APPROVAL. Receptor stations shall include the three nearest residences to the South and the Weymouth neighborhoods to the North and East. The Applicant shall provide the Department with a written report describing the results of said noise survey, within 60 days of its completion. The Applicant performed noise surveys and submitted reports to the Department, Epsilon Associates, Inc. reports dated December 23, 2009 and July 8, 2011, demonstrating compliance with Table 3a and Table 3b, above.
- 7) The Applicant shall conduct an additional noise survey to demonstrate compliance with Table 4 of this APPROVAL within 180 days of completion of BELD's project to upgrade transmission cables necessary to operate Watson Station and Potter II Station at full load concurrently. The Applicant shall provide the Department with a written report describing the results of said noise survey, within 60 days of its completion. The Applicant performed a noise survey and submitted a report to the Department, Epsilon Associates, Inc. report dated October 8, 2011, demonstrating compliance with Table 4, above.

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 of issuance of 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 Plan Approval is not consistent with the 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
P.O. Box 4062
Boston, Massachusetts 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. 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.

Please be advised that this Approval does not negate the responsibility of the BELD 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.

Should you have any questions concerning this matter, please contact the undersigned at (508) 946-2779.

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.

John K. Winkler, Permit Chief
Bureau of Waste Prevention

ecc: John-Erik Nelson, Braintree Electric Light Department, Braintree, MA
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