SDMS Doc ID 548549

CITY OF NEW BEDFORD
JONATHAN F. MITCHELL, MAYOR

September 13, 2013

James T. Owens
Director
Office of Site Restoration & Remediation
US Environmental Protection Agency
5 Post Office Square, Suite 100
Boston, MA 02109

Re: Palmer's Island Lighthouse

Dear Mr. Owens:

The Massachusetts Clean Energy Center recently brought to our attention correspondence from the Massachusetts Historical Commission contending that underwater blasting associated with the South Terminal project poses a risk to the structural integrity of the Palmer's Island Lighthouse. I write to express that as the steward of the lighthouse, I am satisfied with MassCEC's determination, which was based on an independent engineering study, that the blasting poses no such risk.

We understand the nature of MHC's concerns. The lighthouse is near and dear to New Bedford. It has stood for over 150 years, and played an indispensable role in ensuring the safe passage of New Bedford's world renown whaling fleet in the 19th Century. The iconic structure in fact is depicted on the City's seal. Over the last several years, the City has devoted significant effort and resources to providing public access and cleaning up Palmer's Island itself. The lighthouse and the island figure prominently in our long term recreation and tourism plans. We take any threat to the lighthouse seriously.

We have reviewed the engineering evaluation performed by GZA GeoEnvironmental, Inc., a reputable engineering firm, which is attached to this letter. The report unequivocally indicates that the anticipated vibrations from the blasting and other associated construction activities is much lower than any level that would cause damage to the structure. As noted in the report, the maximum anticipated vibration at the lighthouse is approximately 0.034 in/sec. This is approximately *fifteen times lower* than the recommended level established by United States Bureau of Mines and the Massachusetts Building Code (0.5 in/sec). Based on this finding the report concludes that "we feel confident that the vibrations associated with blasting will not have an impact on the Palmer's Island lighthouse."

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To be doubly sure to avoid damage to the lighthouse, MassCEC intends to undertake a rigorous underwater monitoring of the effects, if any, of the blasting. Monitoring activities will include an assessment by a structural engineer during and after blasting as well as real-time vibration monitoring of the structure. The City believes that these efforts are appropriate to give the public confidence that the blasting will not place the lighthouse in jeopardy.

We appreciate your attention to this matter and the larger project that is the New Bedford Marine Commerce Terminal, which, as you know, is a critical infrastructure project for the City and the Commonwealth alike.

Sincerely,

Jon Mitchell

Memo

To: Chet Meyers, John McAllister (Apex Companies, LLC)

From: Diane Baxter, David Carchedi (GZA GeoEnvironmental, Inc.)

File: 33734.04 Mem-05

Date: September 11, 2013

Re: Blasting Impacts on the Palmer Island Lighthouse
New Bedford Marine Commerce Terminal
New Bedford, Massachusetts

GZA GeoEnvironmental Inc. (GZA) is pleased to provide you with this memorandum on blasting impacts to the Palmer Island Lighthouse.

Blasting Limitations

Blasting limitations have been imposed on the Contractor for this project in the Blasting Specification to limit the impacts of blasting on adjacent structures. The limits are based on the Massachusetts Building Code, 527 CMR 13.00 Explosives. The code requires that vibrations, measured in Peak Particle Velocity (PPV) in units of inches per second, fall below levels recommended by the U.S. Bureau of Mines as follows:

- Historic Structures PPV<0.5 in/sec
- Residential Structures in Massachusetts PPV<0.8 in/sec
- Other Structures PPV<2.0 in/sec

Based on years of data, it has been shown that vibrations measured below the readings listed above are unlikely to result in damage to the respective structures.

GZA's Blasting Impacts Report

GZA has performed an extensive study on the impacts of blasting for this project on adjacent structures (GZA Report, Assessment of Blasting Impacts to the New Bedford-Fairhaven Hurricane Barrier, New Bedford Marine Commerce Terminal, New Bedford, Massachusetts, October 2012, revised August 2013). As a result, we are able to produce estimates of the anticipated vibrations for structures that are located various distances from the nearest blasting location. The equation utilized to determine the potential vibration impact is:

'PPV' = 'H' X ['D' / (SQUARE ROOT OF 'W')]^ 'B'

Where:

'PPV' = The Peak Particle Velocity in inches per second.
'H' = The Peak Particle Velocity intercept in inches per second (as formulated from historic blasting data from the United States Bureau of Mines)

'B' = The Slope Factor (as formulated from historic blasting data from the United States Bureau of Mines)
'W' = Weight of charge per delay in pounds
'D' = Distance in feet to the structure in question.

In this case, the following values were utilized:

H = 50 (the upper range of historic United States Bureau of Mines data)
B = -1.6 (the upper range of historic United States Bureau of Mines data)
W = 200 pounds, the maximum charge evaluated.
D = 1,350 feet, the distance from the nearest charge to the Palmer's Island lighthouse.

The results of this analysis indicates that the maximum anticipated vibration at the Palmer's Island lighthouse is approximately 0.034 in/sec. This value is approximately 15 times lower than the recommended level issued by U. S. Bureau of Mines and in the MA Building Code (0.5 in/sec) and included in the Contractor's requirements. As a result, we feel confident that the vibrations associated with blasting will not have an impact on the Palmer's Island lighthouse.