



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

September 16, 2013

Brona Simon
State Historic Preservation Officer
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125

Re: South Terminal Project
New Bedford Harbor State Enhanced Remedy

Dear Ms. Simon:

On May 20, 2013, the Commonwealth of Massachusetts submitted a request to the United States Environmental Protection Agency, Region 1 ("EPA") for approval of a Second Modification (the "Second Modification") to the Agency's November 19, 2012 Final Determination for the South Terminal Project ("the Final Determination"). The Commonwealth's letter requested that the Agency approve, among other modifications, the inclusion of blasting as a rock removal method. As part of its pre-construction investigations, the Commonwealth determined that blasting in three specific areas in the New Bedford Harbor channel between Palmer's Island and the shoreline at the terminal location would be necessary to construct the bulkhead wall of the terminal facility.

EPA is in receipt of your September 6, 2013 letter concerning the Palmer Island Light Station (the Light Station), a historic property listed on the National Register located within the potential area of affect of the South Terminal Project as contemplated by the proposed Second Modification. More specifically, the Light Station is located on Palmer's Island, which is at the outer edge of the 1500 foot zone where potential vibrations may occur from blasting. Blasting was not addressed in EPA's November 19, 2012 Final Determination. Accordingly, the Light Station was neither included in the Commonwealth's previous historic property assessments nor addressed in our September 28, 2012 letter to you concerning the Agency's determination that the proposed South Terminal Project will not affect historic properties. As a result, your September 6, 2013 letter encouraged EPA to determine whether or not blasting has the potential to affect the Light House.

In a September 11, 2013 memorandum from the Commonwealth's contractors in support of its request to allow blasting, GZA GeoEnvironmental Inc. presented the modeled anticipated maximum vibration for the Light Station structure that could potentially result from the planned blasting program. That maximum estimated vibration, or peak particle

velocity ("PPV"), was 0.034 in/sec, as calculated using a standard engineering equation and site-specific information. The Massachusetts Building Code, at 527 CMR 13.09, regulates allowable maximum vibrations from blasting activities. As noted in the code, "allowable limits are based, with a conservative factor of safety, upon extensive government, university, and engineering research which has established the amount and character of vibration so as to prevent damage and to insure the safety of the public and the protection of property adjacent to the blast area." The most conservative limit established in the Massachusetts Building Code for PPV to ensure the protection of structures with plaster is <0.5 in/sec. As such, the PPV estimated for the Light Station as a result of the proposed blasting is approximately 15 times lower than the allowable maximum vibration for potential damage to plaster structures. A copy of GZA GeoEnvironmental Inc.'s September 11, 2013 memorandum is included as Attachment A.

Even with this margin of safety, the Commonwealth has included additional measures to ensure that the Light Station is protected from blasting impacts. In particular, in partnership with the New Bedford Harbor Development Commission, the Commonwealth conducted extensive pre-blast photography and a video of the Light Station to establish pre-blast conditions, and will take post-blast photographs and a video of the Light Station to document post-blasting conditions. The Commonwealth will also conduct public informational meetings to describe the blasting events. The Massachusetts Clean Energy Center will also conduct a pre-construction structural review of the Light Station. A description of the additional measures is included in a September 10, 2013 letter from the Massachusetts Clean Energy Center to Carl Dierker, EPA, and attached as Attachment B.

In addition, the Commonwealth will take real-time measurements of the actual vibrations generated during blasting to confirm modeling results. In the unlikely event that actual vibrations exceed modeling results and/or impacts are detected during implementation of the Project, as a condition of its approval, EPA will require the Commonwealth to provide immediate notification to EPA. The Agency will immediately engage in consultation with the Massachusetts Historical Commission, the Commonwealth, and the City of New Bedford to discuss and implement measures to avoid, minimize, or mitigate potential impacts to the Light Station.

The Light Station is owned and maintained by the City of New Bedford. On September 13, 2013, EPA received a letter from New Bedford Mayor John Mitchell acknowledging the historic value of the Light Station to the City and describing the City's view of the modeling performed by GZA. In his letter, the Mayor expressed his belief that the Commonwealth's "efforts are appropriate to give the public confidence that the blasting will not place the lighthouse in jeopardy." A copy of Mayor Mitchell's September 13, 2013 letter is attached as Attachment C.

EPA has considered the blast modeling performed by the Commonwealth's consultant, the September 10, 2013 letter from the Massachusetts Clean Energy Center, the September 13, 2013 letter from New Bedford Mayor Mitchell, and your letter to EPA

dated September 6, 2013. **In light of this modeling and the actions that will be taken to avoid effects to historic properties, in accordance with 36 CFR 800.4, EPA has concluded that approval of the Second Modification will not affect historic properties.** If you have any questions regarding this finding, contact LeAnn Jensen at (617) 918-1072.

It is EPA's understanding that the Commonwealth, through the Massachusetts Executive Office of Energy and Environmental Affairs and the Massachusetts Clean Energy Center, has a strong interest in proceeding with the modifications to the Project, including the blasting program, to meet project timelines. Therefore, we would appreciate it if you could inform us at your earliest convenience whether you object to our determination, and would be happy to meet with you and the Commonwealth later this week to discuss any remaining issues.

In any event, in accordance with the Advisory Council regulation at 36 CFR 800.4, please respond within 30 days of your receipt of this letter. If we do not hear from you within this time period, we will assume that you concur with the Agency's finding and will proceed with our final decision concerning the Commonwealth's Second Modification, subject to the provisions contained in 36 CFR Section 800.13 for treating historic properties discovered during implementation of the Project.

Sincerely,



James T. Owens, III
Director, Office of Site Restoration and Remediation

Attachments

cc: Bettina Washington, Wampanoag Tribe of Gayhead (Aquinnah)
Ramona Peters, Mashpee Wampanoag Tribe
Victor Masone, Massachusetts Bureau of Underwater Archaeological Resources
Gary Davis, Jr., Executive Office of Energy and Environmental Affairs
Chet Myers, Apex Companies, LLC
LeAnn Jensen, U.S. Environmental Protection Agency, Region 1



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:

$$'PPV' = 'H' \times ['D' / (\text{SQUARE ROOT OF 'W'})]^{\text{'B'}}$$

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.



September 10, 2013

Carl Dierker
General Counsel
U.S. Environmental Protection Agency, Region 1
5 Post Office Square
Boston, MA 02109-3912

Carl,

Please find below responses and answers to each of the comments and questions you submitted via email to MassCEC on September 6, 2013. Additionally, we were forwarded a September 6, 2013 letter from the Massachusetts Historic Commission to EPA on potential impacts to the Palmer's Island Lighthouse, and we have taken the liberty of including a response into this communication.

Response to EPA Comments/Questions from email dated 9/6/2013:

1. EPA Comment/Question: MassCEC's response to our question related to timing (see pages 4-5 of the MassCEC letter) states that all the blasting work will end on Nov. 15. It is important that MassCEC understand and acknowledge condition 2 in our June 13, 2013 letter (which we have also included as condition 3 in the letter we sent today to NMFS reinitiating consultation). Specifically, we have stated that EPA will need to evaluate the effects of any blasting that takes place in one area in September before we can agree to allow further blasting before November 15.

Response: MassCEC's letter of August 28, 2013 states that MassCEC anticipates that, due to thicker rock, blasting would take two months rather than one. MassCEC also indicated that if blasting began on September 15, 2013, it could conclude by November 15, 2013. However, given that MassCEC and USEPA are still working together on the blasting permit, and given that the contractor will need several weeks to mobilize equipment prior to blasting, it is likely that blasting will extend beyond November 15, 2013. MassCEC recognizes that it cannot blast after the January 15, 2014 time of year restriction. Additionally, MassCEC understands and acknowledges Condition 2 of EPA's June 13, 2013 letter which states that EPA will carefully evaluate the effects of the blasting that takes place in the first area (the bulkhead area) prior to allowing further blasting before November 15th.

2. EPA Comment/Question: It would be helpful if MassCEC would confirm that, in addition to installing silt and bubble curtains at the blast sites, it intends to install

an additional silt curtain north of the blast sites to deflect migrating juvenile anadromous fish from any blasting before Nov. 15, as we stated in our June 13 letter (condition 3).

Response: MassCEC confirms that it will comply with Condition #3 from EPA's June 13th letter on silt/bubble curtains for blasting that would occur prior to November 15, 2013.

3. EPA Comment/Question: It would be helpful if MassCEC would identify where the additional blasted rock will be disposed.

Response: MassCEC has directed its contractor to excavate the blasted rock, transfer it to the land side, and process the blasted rock so that it can be utilized in the construction of the New Bedford Marine Commerce Terminal (NBMCCT). MassCEC intends to utilize the blasted rock onsite.

4. Please explain why the substantive requirements of State explosive regulations 527 CMR Section 13 which regulate the transportation, storage and handling of explosives on land and vessels, have not been identified as an ARAR and not included in the State's ARARs letters. Alternatively, please revise your ARARs analysis and provide an addendum including these regulations. (There appears to be an intent to comply with these regulations since Section 12 of the Blasting Plan references these regulations and the blasting specs (1.1.1) also require compliance with these regulations.)

Response: The previous ARARs analysis and the Commonwealth's ARARs letters did not list 527 CMR Section 13 because MassDEP was aware at the time it generated the letter that the contractor would be required to fully comply with this regulation. Instead of handling this as an ARARs issue, MassCEC and the Contractor shall comply with the State explosive Regulations 527 CMR 13, and will be obtaining all necessary permits associated with 527 CMR 13.

5. EPA Comment/Question: EPA has reviewed the submitted Operational Blasting Plan

1) DOT licenses/permits (section 2.2.1):

a) Explosives Supply Inc.

i) Certificate of Registration expired 6/30/13

ii) Hazardous Material Safety Permit expired 4/30/13

b) John Joseph Inc.

i) Certificate of Registration expired 6/30/13

ii) Hazardous Material Safety Permit expired 6/30/12 or 2013

iii) Truck Annual Inspections expired; last performed for all trucks on 11/25/13 (Section 4.1.3)

Response: MassCEC, through its resident engineer, will return the Operational Blast Plan to Cashman-Weeks NB stamped "revise and resubmit", with each of the

highlighted points, amongst other technical comments, and require the contractor to update the Plan prior to the initiation of blasting.

6. Section 4.1.2 is missing the transportation route from explosives supplier to Fish Island.

Response: MassCEC, through its resident engineer, will return the Operational Blast Plan to Cashman-Weeks NB stamped "revise and resubmit", with this point highlighted, amongst other technical comments, and require the contractor to update the Plan prior to the initiation of blasting.

7. Section 5.4 and 5.6 will need updating; reflects EPA conditions in June and July letters with 50lb charge per delay limit.

Response: MassCEC, through its resident engineer, will return the Operational Blast Plan to Cashman-Weeks NB stamped "revise and resubmit", with this point highlighted, amongst other technical comments, and require the contractor to update the Plan prior to the initiation of blasting.

8. Section 12.2.1 cites 527 CMR Section 13 but the actual text of the regulations is missing.

Response: MassCEC, through its resident engineer, will return the Operational Blast Plan to Cashman-Weeks NB stamped "revise and resubmit", with this point highlighted, amongst other technical comments, and require the contractor to update the Plan prior to the initiation of blasting.

Finally, the Massachusetts Historic Commission forwarded a copy of their September 6, 2013 letter to USEPA on the Palmer's Island Lighthouse located in New Bedford Harbor, and we wanted to provide the following information for your consideration.

MassCEC fully appreciates and realizes the importance of the Palmer's Island Lighthouse to the local community. We are working very hard to insure that this vital landmark is protected from any impacts from this project.

As you know, USACE regulates the maximum vibrations that are allowable in association with the potential damage to adjacent structures. These values are measured in Peak Particle Velocity (or PPV) and have the units of inches per second:

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

That is, vibrations measured below the readings listed are unlikely to result in damage to the structure. We have performed extensive modeling of the blasting and have had a geotechnical engineering consultant work on analyzing the potential impacts from blasting. 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:

- $PPV = H \times [D / (\text{SQUARE ROOT OF } W)]^B$

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 by our geotechnical consultant.
- D = 1,350 feet, the distance from the nearest charge to the Palmer's Island lighthouse.

The result 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 USACE. As a result, we feel confident that the vibrations associated with blasting will not have an impact on the Palmer's Island lighthouse.

Nevertheless, we have a robust monitoring program for the lighthouse. In partnership with the New Bedford Harbor Development Commission, we have completed an extensive pre-blast photography and video of the Palmer's Island Lighthouse to document pre-blasting conditions. Additionally, we are committed to:

- A pre-construction structural review of the Lighthouse.
- Real-time measurement of the actual vibrations generated during blasting to confirm the results of the modeling; and
- Post-blast photography and video of the Lighthouse to document post-blasting conditions.

MassCEC is fully engaged on the importance of the Palmer's Island Lighthouse and believe the actions we have committed to will insure the integrity of this historic structure.

As blasting is the most critical path activity for the project, it is imperative that we move forward with a final modification as soon as possible.

Thank you,

Bill White

Bill White
Director, Offshore Wind Sector Development



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.

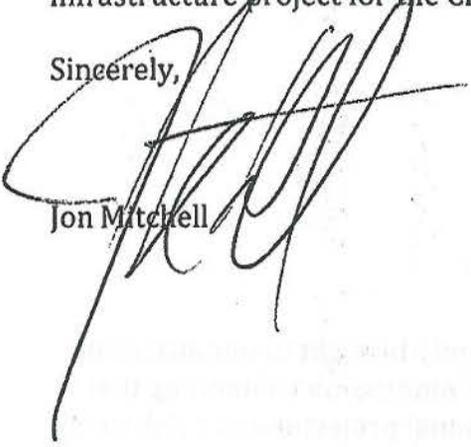
We understand the nature of MHC's concerns. The lighthouse is near and dear to New Bedford. It has stood for over 150 years, and played an indispensable role in ensuring the safe passage of New Bedford's world renown whaling fleet in the 19th Century. The iconic structure in fact is depicted on the City's 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."

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