UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

MAY - 6 2013

Phil Colarusso
Coastal and Ocean Protection Section
US Environmental Protection Agency, Region I
5 Post Office Square, Suite 100
Boston, Massachusetts 02109-3912

Re: Re-initiation of Section 7 for the Authorization of the New Bedford South Terminal Project in New Bedford, MA

Dear Mr. Colarusso,

We have completed an Endangered Species Act (ESA) section 7 consultation in response to your letter received on April 23, 2013 requesting re-initiation of the previously completed consultation for the New Bedford South Terminal Project, dated November 14, 2012. Re-initiation of the consultation was appropriate after several additional elements were considered in your final determination. We concur with your revised final determination that authorization of the project, including all new information analyzed in your determination, is not likely to adversely affect any species listed as threatened or endangered by the National Marine Fisheries Service (NMFS) under the ESA of 1973, as amended. Our supporting analysis is provided below.

New Bedford South Terminal Project

Project Description
The purpose of this project is to construct a 28-acre marine terminal, composed of a 6.85-acre shoreline confined disposal facility (CDF) adjacent to the existing upland, capable of supporting offshore renewable energy resources and other future uses. The secondary project purpose is to provide a site for the disposal of dredged material associated with the State Enhanced Remedy (SER) during construction of the facility and support staging of additional dredged material for beneficial reuse during facility operation. The project components include (1) installation 1,000 linear foot bulkhead in the harbor with placement of approximately 142,000 cubic yards of clean dredge material behind the bulkhead, referred to as the 6.85 acre CDF, (2) dredging to provide navigational access, to realign to the Gifford Street Boat Ramp Channel, and create new mooring areas, (3) dredging to create a confined aquatic disposal (CAD) cell, (4) disposal of contaminated material into new and existing CAD cells, including disposal of clean dredge material for CAD cell capping, and (5) compensatory mitigation to address impacts to wetlands, intertidal habitat, subtidal habitat, and shellfish resources.

For the coffer-dam style bulkhead, an overhanging pile-supported concrete deck will be constructed along the quay-side. Flat sheet piles will support this structure (to create the coffer dam structure), and z-shaped sheet piles (for the southern support wall), and pipe piles (to support the concrete deck) will also be used. For the cofferdam, the project will utilize approximately 3,034 thin flat steel sheets that are approximately 19 inches long and approximately 0.5 inches thick. These will be used to create the cellular structure of the coffer dam. For the return wall area, approximately 175 z-shaped steel sheet piles with 30 inch lengths and 3/8 inch diameter will be used. These sheets will be installed along the southern end of the facility. To support the concrete decking, three different types of pipe pilings will be installed: 65 pile piles with 24 inch diameters and 5/8 inch wall thicknesses, 22 pile piles with 30 inch diameters with ¾ inch diameters, and 94 pipe piles with 30 inch diameters and ¾ inch wall thickness. The first group of piles will be installed by drilling a "rock socket" in place, and then placing the piling in the hole, secured with grout. This set of piles will not require pile driving and will be installed with the "drill and pin to ledge" criteria. The second set of pipes will be installed after the cofferdams are installed, outside of the cofferdams. However, these pilings will also be installed by drilling a "rock socket" in place, and grouting the pile in place. Pile driving will not be required for these piles either. The third set of piles will be installed after the coffer dams are put in place and will be installed within the coffer dams. These piles will be driven, but since they will be installed in the dry behind the cofferdams, noise impacts to aquatic resources are not expected to occur.

The project may also require the removal of a small area of rock from some of the deeper dredge areas near the vessel berth area. At the time of the original 2012 consultation, blasting was not proposed, but has since been added to the action as a possible rock removal method. An additional rock removal method includes mechanical fracturing of shallow rock patches within the dredge footprint where rock may be encountered. This will occur using a bucket dredge, a "hoe-ram", or a hydraulic dredge capable of removing rock. Another method of removal includes the drilling of small holes into small patches of shallow rock, injected with expanding grout so that the rock fractures and can be dredged out with mechanical means. For blasting rock from the area, the proponent has proposed to use explosive charges of less than or equal to 50 pounds. The proponent anticipates instituting engineering controls to ameliorate vibrational energy in the water column. Noise minimization techniques will aim to keep sound levels below the recommended sound levels, which are as follows:

- Peak SPL: 206 decibels relative to 1 micro-Pascal (dB re 1 μPa).
- cSEL: 187 decibels relative to 1 micro-Pascal-squared second (dB re 1μPa^2-s) for fishes above 2 grams (0.07 ounces).
- cSEL: 183 dB re 1μPa^2-s for fishes below 2 grams (0.07 ounces).
- 150 dB re 1 μPa_{RMS} as a conservative indicator of the noise level at which there is the potential for behavioral effects.

The original proposed action required immediate dredging of approximately 45 acres of subtidal substrate. The revised action includes an additional 6 acres of dredging, for a total of 51 acres. Dredging is proposed to begin in April and continue for seven months. All dredging will be

performed by mechanical means. You will require the following measures to minimize effects to the aquatic environment:

1) The use of an environmental bucket for fine-grained sediments;
2) Implementation of turbidity monitoring with action levels, which may trigger the use of silt curtains or other engineering controls;
3) The use of a series of barriers to serve as fish exclusion devices around the project area. Silt barriers, bubble curtains, and weir nets will be deployed prior to construction and will remain in place through June 15th;
4) A fish monitoring program will be instituted for the project area during the time when fish exclusion devices are in place. Fish startle devices will also be used to move fish out of the area during work.

Project Location
New Bedford Harbor is located on the northern side of Buzzards Bay and supports a variety of marine resources. The Acushnet River flows from the north and provides a significant freshwater input to the harbor. This area serves as a migratory corridor for anadromous fish, although Atlantic sturgeon are not known to specifically use the Acushnet River for foraging habitat. The project will be a redevelopment of a previously industrialized portion of shoreline in New Bedford.

NMFS Listed Species in the Action Area

Atlantic Sturgeon

The Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) is a subspecies of sturgeon distributed along the eastern coast of North America from Hamilton Inlet, Labrador, Canada to Cape Canaveral, Florida, USA (Scott and Scott, 1988; ASSRT, 2007; T. Savoy, CT DEP, pers. comm.). NMFS has designated Atlantic sturgeon as a listed species under the ESA into five Distinct Population Segments (DPSs) (77 FR 5880 and 77 FR 5914) on February 6, 2012. The five DPSs are: Gulf of Maine—threatened, and New York Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs—endangered. Atlantic sturgeon are long lived (approximately 60 years), late maturing, estuarine dependent, anadromous fish (Bigelow and Schroeder, 1953; Vladykov and Greeley, 1963; Mangin, 1964; Pikitch *et al.*, 2005; Dadswell, 2006; ASSRT, 2007). Atlantic sturgeons are bottom feeders that suck food into a ventrally-located protruding mouth (Bigelow and Schroeder, 1953). Diets of adult and migrant subadult Atlantic sturgeon include mollusks, gastropods, amphipods, annelids, decapods, isopods, and fish such as sand lance (Bigelow and Schroeder, 1953; ASSRT, 2007; Guilbard *et al.*, 2007; Savoy, 2007). Juvenile Atlantic sturgeon feed on aquatic insects, insect larvae, and other invertebrates (Bigelow and Schroeder, 1953; ASSRT, 2007; Guilbard *et al.*, 2007).

Currently we have no records of any listed species, including Atlantic sturgeon, in New Bedford Harbor. However, Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) are known to use the nearby Taunton River as part of their estuarine/riverine habitat, and could be present anywhere within coastal waters as part of their marine habitat. Atlantic sturgeon in the area of New

Bedford Harbor could belong to any of the five distinct population segments. Eggs, larvae, and juveniles are not expected to be in or near the action area; only sub-adult or adult sturgeon undertaking marine migrations could potentially be present in the vicinity of New Bedford Harbor, during March through November.

Effects of the Action

As discussed, three elements of the project may affect any of the five DPSs of Atlantic sturgeon if they are present in New Bedford Harbor including pile driving, rock removal, and dredging. These activities may create unsuitable noise levels, impact foraging habitat, or entrain individuals in equipment, and are analyzed below. Several modifications have been made to the project including the expansion of dredging and the use of explosive rock removal methods, which are also analyzed below. It should be noted that New Bedford Harbor is not known to contain adequate forage or spawning habitat for Atlantic sturgeon, and thus, all effects of the project pertaining to the destruction of habitat will be insignificant and/or discountable.

Pile Driving

The installation of piles via pile driving can produce underwater sound pressure waves that can affect aquatic species. Pile driving affects fish through underwater noise and pressure that can cause effects to hearing and air containing organs, such as the swim bladder. The type and size of pile, type of installation method (i.e., vibratory vs. hammer), type and size of fish (smaller fish are more often impacted), and distance from the sound source (i.e., sound attenuates over distance so noise levels are greater closer to the source) all contribute to the likelihood of effects to an individual fish. Generally, however, the larger the pile and the closer a fish is to the pile, the greater the likelihood of effects. As the distance from the source increases, underwater sound levels produced by pile driving are known to attenuate rapidly (e.g., the driving of steel sheet piles will attenuate approximately 5 dB per doubling of distance, up to 66 feet, and from 66 feet on, attenuate approximately 10 dB per doubling of distance) (Illingworth and Rodkin, Inc. and Jones and Stoke, 2009).

An interagency work group, including the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), has reviewed the best available scientific information and developed criteria for assessing the potential of pile driving activities to cause injury to fish (Fisheries Hydroacoustic Working Group (FHWG), 2008). The workgroup established dual sound criteria for injury, measured 33 feet away from the pile, of 206 dB re 1 μPa_{Peak} and 187 dB accumulated sound exposure level (dBcSEL; re: $1\mu Pa^2 \cdot sec$) (183 dB accumulated SEL for fish less than 2 grams). While this work group is based on the U.S. West coast, species similar to Atlantic sturgeon were considered in developing this guidance (green sturgeon). As these species are biologically similar to the species being considered herein, it is reasonable to use the criteria developed by the FHWG.

In addition, for purposes of assessing behavioral effects of pile driving at several West Coast projects, NMFS has employed a 150 dB re 1 μPa_{RMS} sound pressure level criterion at several sites, including the San Francisco-Oakland Bay Bridge and the Columbia River Crossings. As we are not aware of any studies that have considered the behavior of Atlantic sturgeon in

response to pile driving noise, given the available information from studies on other fish species (*i.e.*, Anderson *et al.*, 2007; Purser and Radford, 2011; Wysocki *et al*, 2007), we consider 150 dB re 1 μPa_{RMS} to be a reasonable estimate of the noise level at which exposure may result in behavioral modifications. As such, for the purposes of this consultation, we will use 150 dB re 1 μPa_{RMS} as a conservative indicator of the noise level at which there is the potential for behavioral effects. That is not to say that exposure to noise levels of 150 dB re 1 μPa_{RMS} will always result in behavioral modifications, but that there is the potential, upon exposure to noise at this level, to experience some behavioral response (e.g., temporary startle to avoidance of an ensonified area).

The project design has incorporated our suggestions given during earlier discussions for best management practices and best available information regarding sound level thresholds that minimize the chance of effects to Atlantic sturgeon. All pile driving is proposed to occur in relatively shallow water along the bulkhead portion of the project (along the shoreline). As described previously, sheet pile driving activities will occur with vibratory hammers or impact hammers. Impact hammers on sheet pilings are not known to create noise levels above the noise thresholds of concern for Atlantic sturgeon. Vibratory hammers will also not reach these thresholds, and sound attenuation also occurs rapidly over small distances with this methodology, as noted. Other piles associated with the project will be drilled and pinned to ledge with rock socketing and grouting of the piles into place, which do not create noise levels above the specified noise thresholds. The largest group of piles to be drilled and pinned will be installed inside the cofferdams, in the dry, effectively removing noise impacts for this portion of the action.

The noise modeling you have provided also demonstrates that ample area for migratory passage exists in the harbor surrounding the action area. Should an Atlantic sturgeon approach the ensonified portion of the action area, it is reasonable to assume that sturgeon, on hearing the pile driving sound, would either not approach the source or move around it in the open area of the harbor where sound levels will not be elevated. If any movements away from the area where piles are being installed do occur, it is extremely unlikely that these movements will amount to substantial changes to essential Atlantic sturgeon behaviors (e.g., foraging, resting, and migration). Additionally, the extent of underwater noise is not likely to present a barrier to Atlantic sturgeon movements and as such, if individuals are present within the vicinity of the action area, they are likely to veer/swim away from the pile driving sites and continue normal behaviors (e.g., feeding, resting, and migrating) in other portions of New Bedford Harbor. Based on this and the best available information, we conclude that pile driving noise effects on Atlantic sturgeon behavior is insignificant.

Rock Removal

Non Blasting Alternatives

Rock may be removed through mechanical means or through cutterhead dredging, or other comparable means. Noise impacts from these activities are not expected to rise above the thresholds listed previously based on previous usage of this type of machinery in habitat where Atlantic sturgeon may be present. Additionally, mechanical dredging (detailed below) and

cutterhead dredges are not known to pose entrainment risk to this species. The usage of bubble curtains, silt barriers, and other exclusion devices may further minimize the potential for noise effects, and may also exclude Atlantic sturgeon from entering the action area in the first place if they were to enter New Bedford Harbor to search for foraging habitat near the action area. Because the project may be employing rock removal methods that are known to have minimal effects, and, mitigation measures will be employed to further minimize the potential of effects to Atlantic sturgeon (if present), we concur that rock removal activities are not likely to adversely affect this species. All effects will be insignificant.

Rock Blasting

Rock blasting may be necessary if mechanical means or cutterhead dredging is not feasible. Noise impacts from blasting in the action area adjacent to the terminal shoreline are expected to be minimal. Two scenarios, one using a peak pressure threshold of 75.6 pounds per square inch (psi) and one using an impulse level threshold of 18.4 psi-msec, were modeled to determine if adequate fish passage will be available in New Bedford Harbor if Atlantic sturgeon are present.

Currently, we have no acoustic guidelines or criteria for effects of blasting on listed species of fish. However, lethal threshold peak pressure levels for a variety of marine fish species exposed to open water (unconfined) dynamite blasts have been suggested by Hubbs and Rechnitzer (1952). These thresholds varied from 40 psi to 70 psi, the former being the more conservative in estimating mortality in fishes (Hempen et al., 2007; Keevin, 1995; ACOE, 2004) since this waveform of mortality for this value was established from an open-water testing program and not from confined shots, which are known to reduce the pressure waves of detonations. Keevin (1995) found no mortality or internal damage to bluegill exposed to a high explosive at pressures at or below 60 psi.

Although effects of blasting on Atlantic sturgeon have never been studied, effects of blasting on shortnose sturgeon have been examined and will serve as the best available information on potential effects of blasting on Atlantic sturgeon. Test blasting was conducted in Wilmington Harbor, North Carolina, in December 1998 and January 1999 in order to adequately assess the impacts of blasting on shortnose sturgeon and the size of the LDI area (defined as the lethal distance from the blast where 1% of the fish died). As explained in Moser (1999), the test blasting consisted of 32-33 blasts (3 rows of 10 to 11 blast holes per row with each hole and row 10 feet apart), about 24 to 28 kg (52 to 61 pounds) of explosives per hole, stemming each hole with angular rock, and an approximate 25 msec delay after each blast. During test blasting, 50 hatchery reared juvenile striped bass and shortnose sturgeon were placed in 0.25" plastic mesh cylinder cages (2 feet in diameter by 3 feet long) 3 feet from the bottom (worst case scenario for blast pressure as confirmed by test blast pressure results) at 35, 70, 140, 280, and 560 feet upstream and downstream of the blast location.

Results of the study indicated that there was a low survival rate for both species of fish located 35 feet from the detonation site; however, at distances of 70 feet, caged fish showed no sign of hemorrhage or swim bladder damage, although two fish exhibited extended intestines, which may have been caused by the blast. At distances at, and beyond 140 feet, there was no difference in survival or impulse pressure. In addition, necropsy results indicated that shortnose sturgeon

juveniles were less seriously impacted by test blasting than were the juvenile striped bass. It is believed, therefore, that survival rates for shortnose sturgeon would have been higher than striped bass following blasting treatments, even within the 35-foot distance of the blast area (i.e., 88% of shortnose sturgeon would have survived versus 34 % of the striped bass; Moser, 1999). Moser (1999) stipulated that shortnose sturgeon may be less susceptible and less sensitive to blasting effects due to the fact that the swim bladder in shortnose sturgeon is connected to the esophagus, allowing gas to be expelled rapidly without damage to the swimbladder (*i.e.*, physostomus). Atlantic sturgeon have a similar physiology and are expected to react similarly to blasting events.

Based on the Moser (1999) studies, peak pressure levels at, or below, 75.6 psi, and peak impulse levels at or below18.4 psi-msec, will cause no injury or mortality to species of sturgeon, including Atlantic sturgeon. The models indicate that blasting at these pressures and at charge sizes between 10 and 50 pounds, ample passage for Atlantic sturgeon in and out of New Bedford Harbor still exists. Under the 75.6 psi modeling, approximately 3,000 feet of passage exists throughout the harbor near the explosive site, and under the 18.4 psi-msec scenario, approximately 2,400 feet of passage exists. Because passage is maintained, and blasting will take place over a short duration of time, this portion of the action is not likely to adversely affect Atlantic sturgeon and all effects will be insignificant or discountable.

Mechanical Dredging

Our understanding of your proposed dredging plan indicates that mechanical dredges will be used for all dredging activities within the action area. Additionally, for fine surface sediments, an environmental bucket will be used, when feasible. Atlantic sturgeon are not known to be susceptible to entrainment in mechanical dredges, presumably because they are able to move out of the way of the slow-moving dredge bucket. The usage of an environmental bucket further reduces any small chance of dredge entrainment and will reduce turbidity associated with removal of fine materials within the dredge footprint. Subadult and adult Atlantic sturgeon tend to be highly tolerant of increased turbidity, so effects to this species resulting from increased suspended sediment are not likely to occur.

Since the potential presence of sub-adult or adult Atlantic sturgeon is low in New Bedford Harbor, due to lack of suitable foraging and/or spawning habitat, combined with the usage of mechanical dredges with environmental buckets which are not likely to impinge Atlantic sturgeon, the revised action that now includes a total of 51 acres of dredging, is not likely to adversely affect Atlantic sturgeon. All effects are expected to be insignificant or discountable.

Conclusions

Based on the above analysis of water quality and the determination that all effects will be insignificant, we are able to concur with your determination that the proposed issuance of a Final Determination for the New Bedford South Terminal project is not likely to adversely affect listed species. A "not likely to adversely affect" determination can only be made when effects on listed species are expected to be beneficial; or adverse effects are expected to be discountable and/or insignificant. As explained in the joint U.S. Fish and Wildlife and NMFS Section 7

Handbook, "beneficial effects are contemporaneous positive effects without any adverse effects. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur." At this time, no further consultation pursuant to Section 7 of the ESA is required. Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or (c) If a new species is listed or critical habitat designated that may be affected by the identified action. No take is anticipated or exempted. If there is any incidental take of a listed species, reinitiation would be required. We expect that you will alert us anytime there is a water quality based permit violation resulting from the operation of this facility.

Should you have any questions regarding these comments, please contact Chris Vaccaro at 978-281-9167 or by email at Christine.Vaccaro@noaa.gov.

Sincerely,

for John K. Bullard
Regional Administrator

Ec: Vaccaro, F/NER3
Boelke, F/NER4
Colarusso, Phil, EPA

File Code: H:\Section 7 Team\Section 7\Non-Fisheries\EPA\Informal\2012\New Bedford_South Terminal\Reinitiation
PCTS: NER-2012-9219

References

Atlantic Sturgeon Status Review Team (ASSRT). 2007. Status Review of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Gloucester (MA): Report to National Marine Fisheries Service, Northeast Regional Office. Web address: http://www.nmfs.noaa.gov/pr/pdfs/statusreviews/atlanticsturgeon2007.pdf.

EPA Gold Book 1986. Quality Criteria for Water. EPA 440/5-86-001.

Fisheries Habitat Working Group. 2008. Agreement in Principal for Interim Criteria for Injury to Fishfrom Pile Driving Activities. Memorandum of Agreement between NOAA Fisheries' Northwest and Southwest Regions; USFWS Regions 1 and 8; California, Washington, and Oregon Departments of Transportation; California Department of Fish and Game; and Federal Highways Administration. June 12, 2008.

Holland, B.F., Jr. and G.F. Yelverton. 1973. Distribution and biological studies of anadromous fishes offshore North Carolina. North Carolina Department of Natural and Economic Resources, Division of Commercial and Sports Fisheries, Morehead City. Special Scientific Report 24:1-132.

Illingworth and Rodkin, Inc. and Jones and Stokes. 2009. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Prepared for California Department of Transportation.

Laney, R.W., J.E. Hightower, B.R. Versak, M.F. Mangold, W.W. Cole Jr., and S.E. Winslow. 2007. Distribution, Habitat Use, and Size of Atlantic Sturgeon Captured during Cooperative Winter Tagging Cruises, 1988-2006. American Fisheries Society Symposium 56: 000-000.

McCauley, R.D., J. Fewtrell, A.J. Duncan, C. Jenner, M-N Jenner, J.D. Penrose, R.I.T. Prince, A Adhitya, J. Murdoch, and K. McCabe. 2000. Marine seismic surveys: A study of environmental implications. Appea Journal:692-706.