Peter Blum, Chief  
Planning Division  
Philadelphia District  
U.S. Army Corps of Engineers  
Wanamaker Building  
100 Penn Square East  
Philadelphia, PA 19107-3390

RE: Schuylkill River Dredging Above the Fairmount Dam – Rowing Racecourse

Dear Mr. Blum:

We have reviewed the information provided in your letter dated April 9, 2019, and emails dated April 29 and 30, 2019, for the proposed Schuylkill River dredging project in Philadelphia County, Pennsylvania. The U.S. Army Corps of Engineers, Philadelphia District (District), is proposing to dredge the Schuylkill River between the Fairmount Dam and an upstream location just beyond the Strawberry Mansion Bridge. Dredging will occur in four distinct locations, including in front of Boathouse Row, at two areas near Peter’s Island, and an area around the Strawberry Mansion Bridge, totaling approximately 20 acres. All dredging will be limited to a maximum depth of four feet NAVD 88 with one foot of over-depth, which represents approximately 60,000 cubic yards of sediment to be dredged from the river. According to the information provided, you will require the selected contractor to use only hydraulic suction cutter-head dredge and pipeline for all dredging operations. Dredged material will be transported via floating pipeline from the dredge downstream to the Fairmont Dam. The material will be transferred over the dam into barges and will then be taken downstream where it will be hydraulically unloaded into the Fort Mifflin Confined Disposal Facility (CDF). Decant water will be drained from the CDF back into the Schuylkill River. The stated purpose of the proposed project is to maintain the Schuylkill River rowing racecourse upstream of the Fairmount Dam by removing accumulated sediment shoals.

The Fish and Wildlife Coordination Act (FWCA) and the Magnuson-Stevens Fishery Conservation and Management Act (MSA) require you to consult with us on projects such as this that may affect essential fish habitat (EFH) and other aquatic resources. As the nation’s federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, we provide the following comments and recommendations pursuant to the authorities of the MSA and FWCA.
Magnuson Stevens Fishery Conservation and Management Act (MSA)

The Schuylkill River is important habitat for anadromous fish such as alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*) and American shad (*Alosa sapidissima*), which use the river including the areas in and around the proposed project site as migratory, spawning, nursery, resting, and foraging habitat. These species have complex lifecycles where individuals spend most of their lives at sea then migrate great distances to return to freshwater rivers to spawn. American shad (stocks north of Cape Hatteras, N.C.), alewife, and blueback herring are believed to be repeat spawners, generally returning to their natal rivers to spawn (Collette and Klein-MacPhee 2002).

These Alosine fish are important forage for several species managed by the New England Fishery Management Council and Mid-Atlantic Fishery Management Council as they provide trophic linkages between inshore and offshore systems. Buckel and Conover (1997) in Fahey et al. (1999) reports that diet items of juvenile bluefish (*Pomatomus saltatrix*) include *Alosa* species. Additionally, juvenile *Alosa* species have all been identified as prey species for summer flounder (*Paralichthys dentatus*) and windowpane flounder (*Scophthalmus aquosus*), in Steimle et al. (2000). The EFH final rule states that prey species are an important component of EFH and that loss of prey may be an adverse effect on EFH and managed species. As a result, actions that reduce the availability of prey species, either through direct harm or capture, or through adverse impacts to the prey species' habitat may also be considered adverse effects on EFH.

American shad, blueback herring, and alewife formerly supported the largest and most important commercial and recreational fisheries throughout their range, with fishing spanning rivers (both freshwater and saltwater), estuaries, tributaries, and the ocean. Commercial landings for these species have declined dramatically from historic highs (ASMFC 2018). The most recent American shad stock assessment report identified that American shad stocks remain highly depressed from historical levels. Of the 24 river-specific stocks of American shad for which sufficient information was available, 11 were depleted relative to historic levels, 2 were increasing, and 11 were stable (but still below historic levels). The status of 8 additional stocks could not be determined. Taken in total, American shad stocks do not appear to be recovering (ASMFC 2007). The 2007 assessment concluded that new protection and restoration actions needed to be identified and applied, which led to the development of Amendment 3 to the Interstate Fishery Management Plan for Shad and River Herring (American Shad Management). Amendment 3 identified significant threats to American shad, including spawning and nursery habitat degradation or blocked access to habitat, resulting from dam construction, increased erosion and sedimentation, and losses of wetland buffers. Protecting, restoring and enhancing American shad habitat, including spawning, nursery, rearing, production, and migration areas, are necessary for preventing further declines in American shad abundance, and restoring healthy, self-sustaining, robust, and productive American shad stocks to levels that will support the desired ecological, social, and economic functions and values of a restored Atlantic coast American shad population (ASMFC 2010).

In the Mid-Atlantic, landings of alewife and blueback herring, collectively known as river herring, have declined dramatically since the mid-1960s and have remained very low in recent years (ASFMC 2017). The 2012 river herring benchmark stock assessment found that of the 52
stocks of alewife and blueback herring assessed, 23 were depleted relative to historic levels, one was increasing, and the status of 28 stocks could not be determined because the time-series of available data was too short (ASMFC 2012a). The 2017 stock assessment update indicates that river herring remain depleted at near historic lows on a coast wide basis. Total mortality estimates over the final three years of the data time series (2013-2015) are generally high and exceed region-specific reference points for some rivers (ASMFC 2017). The “depleted” determination was used in 2012 and 2017 instead of “overfished” to indicate factors besides fishing have contributed to the decline, including habitat loss, habitat degradation and modification (including decreased water quality), and climate change (ASMFC 2017). Because landing statistics and the number of fish observed on annual spawning runs indicate a drastic decline in alewife and blueback herring populations throughout much of their range since the mid-1960s, river herring have been designated as Species of Concern by NOAA. Species of Concern are those about which we have concerns regarding their status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act (ESA). We wish to draw proactive attention and conservation action to these species.

A significant contributing factor to the dramatic declines in shad and river herring populations is decreases in water quality, channelization, dredging, and in-stream construction (ASMFC 2010; ASMFC 2017). Anthropogenic-induced elevated levels of turbidity and sedimentation, above background (e.g., natural) levels, can lead to various adverse impacts on diadromous fish and their habitats. Increases in turbidity due to the resuspension of sediments into the water column during activities such as dredging can degrade water quality, lower dissolved oxygen levels, and potentially release chemical contaminants bound to the fine-grained sediments (Johnsen et al. 2008). Suspended sediment can also mask pheromones used by migratory fishes to reach their spawning grounds and impede their migration and can smother immobile benthic organisms and demersal newly-settle juvenile fish (Auld and Schubel 1978; Breitburg 1988; Newcombe and MacDonald 1991; Burton 1993; Nelson and Wheeler 1997). Additionally, other effects may include (a) lethal and non-lethal damage to body tissues, (b) physiological effects including changes in stress hormones or respiration, or (c) changes in behavior (Kjelland et al. 2015). Furthermore, dredging can result in the impingement and entainment of eggs, larvae and free swimming diadromous fish, which can lead to injury and mortality (Thrush and Dayton 2002).

To avoid and minimize these adverse impacts, dredging activities should not be conducted in the Schuylkill River at times of the year when various life stages of diadromous fish are likely to be present. These times include from March 16 to June 30 near Boathouse Row, and from March 16 to August 31 near Peter’s Island and Strawberry Mansion Bridge. Additionally, because of impacts from the vessels and equipment, staging of equipment in the Schuylkill River, including barges, should be avoided from March 16 to June 30. This includes areas below the Fairmount Dam.

Understanding how the riverine environment and the geomorphic features (e.g., shoreline, nearshore wetlands, and shoals) associated with it function to provide habitat is the product of complex interactions between biological processes and physical factors. There is potential for physical, biological, and chemical impacts from dredging habitat in the Schuylkill River.
Potential impacts caused by dredging include physical removal of benthic faunal communities and disturbance of foraging, nursery, and migratory habitat for fish and invertebrates. Dredging and can also affect benthic communities by altering sediment transport characteristics, sediment texture, depth and vertical relief, and overall community structure. Systematic disturbances such as repeated dredging may result in cumulative and chronic changes in habitat quantity and quality. Therefore, dredging should be limited to the minimum amount necessary to complete the project purpose. Additionally, because the habitat below the dam is important staging and refuge habitat for various migrating diadromous fish species due to its position relative to the Dam, complexity of bottom types, and flow regimes, barges should avoid spudding and anchoring in the area just below the dam.

The area of the proposed project is uniquely important to diadromous fish in the Schuylkill River, Delaware River, and throughout the watershed because of the presence and operation of the Fairmount Dam Fishway. The fishway was completed in 1979, but the facility was repaired and improved significantly in May of 2009 to better facilitate the upstream migration of various diadromous fish including American shad, river herring, hickory shad, and striped bass. The fishway has allowed these species, and numerous others, to pass upstream, and later downstream, of the Fairmount Dam to access migration and spawning habitats that were historically inaccessible (Philadelphia Water Department [PWD] data; available upon request). The fishway is operated and maintained by the PWD, which also undertakes rigorous biomonitoring within the facility, as well as areas upstream and downstream of the facility. The fishway has successfully facilitated increased diadromous fish migration and spawning above and below the dam. For example, in 2016, 1,759 American shad were recorded ascending the fishway, while the number decreased to 1297 in 2017 (COOP 2018). Because of the importance of the fishway, dredges and dredging-related equipment, including barges and pipelines, should maintain a minimum 200-foot buffer between the upstream and downstream entrances of the fishway while it is in operation and being monitored (from March to August).

**Fish and Wildlife Coordination Act (FWCA)**

The Fish and Wildlife Coordination Act (FWCA), as amended in 1964, requires that all federal agencies consult with us when proposed actions might result in modifications to a natural stream or body of water. It also requires that they consider effects that these projects would have on fish and wildlife and must also provide for improvement of these resources. Under this authority, we work to protect, conserve and enhance species and habitats for a wide range of aquatic resources such as shellfish, diadromous species, and other commercially and recreationally important species that are not managed by the federal fishery management councils and do not have designated EFH. The Schuylkill River serves as important habitat for many aquatic species and their forage including American shad, alewife, blueback herring, striped bass (*Morone saxatilis*), state-listed hickory shad (*Alosa mediocris*), American eel (*Anguilla rostrata*) and other assorted baitfishes and invertebrates.

The area of the proposed project is regionally significant for striped bass because of its importance as migration, spawning, nursery, foraging, and resting habitat. Atlantic striped bass have formed the basis of one of the most important and valuable commercial and recreational
fisheries on the Atlantic coast for centuries; the fishery is also strongly tied to the cultural heritage of the eastern U.S (ASMFC 1981). However, overfishing and poor environmental conditions lead to the collapse of the fishery in the 1970s and 80s and development of the Striped Bass Fishery Management Plan (FMP) in 1981 (ASMFC 2003). After years of increasing numbers following implementation of the FMP, commercial and recreational landings of striped bass as well as female spawning stock biomass and recruitment, have declined since their peak in the early- to mid-2000s (ASMFC 2019). Most recently, the 2018 Atlantic Striped Bass Benchmark Stock Assessment found the resource overfished and that overfishing is occurring (ASMFC 2019). Accelerated declines in striped bass populations may result from the cumulative and synergistic effects of overfishing and non-fishing related activities that impact reproduction, recruitment and survival.

Mature female striped bass (age six and older) produce large quantities of eggs, which are fertilized by mature males (age two and older) as they are released into riverine spawning areas, including the Schuylkill and Delaware Rivers. While developing, the fertilized eggs drift with the downstream currents and eventually hatch into larvae (ASMFC 1981). Late larvae and early juveniles favor shallower water with slower currents, and likely reside in nearshore areas for increased feeding opportunities and reduced predation risk. Juveniles subsequently move out of the Schuylkill River downstream to overwinter in the lower Delaware River and Delaware Bay (Weisberg et al. 1996). They remain in coastal nursery habitat for two to four years and then join the coastal migratory population in the Atlantic Ocean. In the ocean, fish tend to move north during the summer and south during the winter. Important wintering grounds for the mixed stocks are located from offshore New Jersey to North Carolina. With warming water temperatures in the spring, resident and coastal contingents move upriver to the freshwater reaches of coastal rivers, including the Delaware and Schuylkill Rivers, to complete their life cycle. The spawning population of the Delaware River system contributes significantly to the coastal migratory stock (ASMFC 2003). Restrictions on dredging timing and equipment will avoid and minimize impacts to striped bass.

The area of the proposed project is migration, spawning, nursery, and foraging habitat for the American eel. Catadromous American eels spawn in the Sargasso Sea and transit the Delaware River then the Schuylkill River as elvers as part of their migration. They inhabit these freshwater areas until they return to the sea as adults. According to the 2012 benchmark stock assessment, the American eel population is depleted in U.S. waters. The stock is at or near historically low levels due to a combination of historical overfishing, habitat loss, food web alterations, predation, turbine mortality, environmental changes, exposure to toxins and contaminants, and disease (ASMFC 2012b). Actions being considered as part of the proposed project may impede the movements of these species between important freshwater habitats and the Atlantic Ocean in a number of ways including altering hydrologic conditions such as velocity and flow patterns, as well as changing water quality. Therefore, restrictions on dredging and equipment will also avoid and minimize impacts to American eels.

**Essential Fish Habitat Conservation Recommendations**

Pursuant to Section 305 (b) (4) (A) of the MSA, we recommend the following EFH conservation recommendations be incorporated into the project:
• To avoid and minimize the impacts of turbidity and sedimentation, as well as the
impingement and entrainment of eggs, larvae and free swimming diadromous fish,
dredging should be avoided:
  ○ From March 16 to June 30 of any year at locations A.S. #1 and A.S. #2 Boathouse
Row from (46+343 to 47+563 on the plan sheets); and
  ○ From March 16 to August 31 of any year at locations A.S. #4 Peter’s Island
(55+430 to 57+049) and A.S. #5 Strawberry Mansion Bridge from (60+639 to
57+761 on the plan sheets).

• Staging of equipment, including barges, in the Schuylkill River (including all nearshore
and riparian areas) above and below the Fairmont Dam should be avoided from March 16
to June 30 of any year.

• Dredges and dredging-related equipment, including barges and pipelines, should maintain
a minimum 200-foot buffer between the upstream and downstream entrances of the
Fairmont Dam Fishway while it is in operation and being monitored (from March to
August).

• Barges should avoid spudding and anchoring in the area just below the Fairmont Dam,
which is important staging and refuge habitat for various migrating diadromous fish
species due to its position relative to the dam, complexity of bottom types, and flow
regimes.

Please note that Section 305 (b)(4)(B) of the MSA requires you to provide us with a detailed
written response to these EFH conservation recommendations, including the measures adopted
by you for avoiding, mitigating, or offsetting the impact of the project on EFH. In the case of a
response that is inconsistent with our recommendations, Section 305 (b) (4) (B) of the MSA also
indicates that you must explain your reasons for not following the recommendations. Included in
such reasoning would be the scientific justification for any disagreements with us over the
anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate
or offset such effect pursuant to 50 CFR 600.920 (k).

Please also note that a distinct and further EFH consultation must be reinitiated pursuant to 50
CRF 600.920 G) if new information becomes available, or if the project is revised in such a
manner that affects the basis for the above EFH conservation recommendations.

**Endangered Species Act**

Threatened or endangered species under our jurisdiction including Atlantic sturgeon (*Acipenser
oxyrhynchus*) and shortnose sturgeon (*Acipenser brevirostrum*) may be present in the project
area. As the lead federal action agency, you are responsible for determining the nature and
extent of effects and coordinating with our Protected Resources Division as appropriate. Please
be aware that we have recently provided on our website
([http://www.greateratlantic.fisheries.noaa.gov/section7](http://www.greateratlantic.fisheries.noaa.gov/section7))
guidance and tools to assist action agencies with their description of the action and analysis of effects to support their
determination.
Should you have any questions about the section 7 consultation process, please contact Peter Johnsen at (978) 282-8416 or by e-mail (peter.b.johnsen@noaa.gov). We look forward to continued coordination with your office on this project as it moves forward. If you have any questions or need additional information, please do not hesitate to contact Keith Hanson in our Annapolis, MD field office at keith.hanson@noaa.gov or (410) 573-4559.

Sincerely,

[Signature]

Louis A. Chiarella
Assistant Regional Administrator
for Habitat Conservation

cc: ACOE – J. Pasquale
    PRD – M. Murray-Brown, P. Johnsen
    FWS- P. Shellenberger
    EPA Region III – M. Mansolino
    MAFMC – C. Moore
    NEFMC – T. Nies
    ASMFC – L. Havel
Literature Cited


