New Jersey Turnpike Authority
Newark Bay–Hudson County Extension
Interchange 14 to Interchange 14A

New Jersey Executive Order No. 215 Environmental Impact Statement

Appendix F: Biological Resources

April 2023

Submitted by:

New Jersey Turnpike Authority

Appendix F-1

USFWS Information For Planning And Consultation (IPaC)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Jersey Ecological Services Field Office
4 E. Jimmie Leeds Road, Suite 4
Galloway, NJ 08205
Phone: (609) 646-9310

In Reply Refer To: April 12, 2023
Project Code: 2023-0067932
Project Name: New Jersey Turnpike NB-HCE Interchange 14 to Interchange 14A

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

If the enclosed list indicates that any listed species may be present in your action area, please visit the New Jersey Field Office consultation web page as the next step in evaluating potential project impacts: http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html

On the New Jersey Field Office consultation web page you will find:

- habitat descriptions, survey protocols, and recommended best management practices for listed species;
- recommended procedures for submitting information to this office; and
- links to other Federal and State agencies, the Section 7 Consultation Handbook, the Service's wind energy guidelines, communication tower recommendations, the National Bald Eagle Management Guidelines, and other resources and recommendations for protecting wildlife resources.

The enclosed list may change as new information about listed species becomes available. As per Federal regulations at 50 CFR 402.12(e), the enclosed list is only valid for 90 days. Please return to the ECOS-IPaC website at regular intervals during project planning and implementation to obtain an updated species list. When using ECOS-IPaC, be careful about drawing the boundary of your Project Location. Remember that your action area under the ESA is not limited to just the footprint of the project. The action area also includes all areas that may be indirectly affected through impacts such as noise, visual disturbance, erosion, sedimentation, hydrologic

change, chemical exposure, reduced availability or access to food resources, barriers to movement, increased human intrusions or access, and all areas affected by reasonably forseeable future that would not occur without ("but for") the project that is currently being proposed.

Additionally, please note that on March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat (NLEB) as endangered under the Endangered Species Act. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing determination for the NLEB by November 2022 (Case 1:15-cv-00477, March 1, 2021). The bat, currently listed as threatened, faces extinction due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across the continent. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species. Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective (anticipated to occur by December 30, 2022). If your project may result in incidental take of NLEB after the new listing goes into effect this will first need to addressed in an updated consultation that includes an Incidental Take Statement. If your project may require re-initiation of consultation, please contact our office for additional guidance.

We appreciate your concern for threatened and endangered species. The Service encourages Federal and non-Federal project proponents to consider listed, proposed, and candidate species early in the planning process. Feel free to contact this office if you would like more information or assistance evaluating potential project impacts to federally listed species or other wildlife resources. Please include the Consultation Tracking Number in the header of this letter with any correspondence about your project.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New Jersey Ecological Services Field Office
4 E. Jimmie Leeds Road, Suite 4
Galloway, NJ 08205
(609) 646-9310

PROJECT SUMMARY

Project Code: 2023-0067932
Project Name: New Jersey Turnpike NB-HCE Interchange 14 to Interchange 14A
Project Type: Road/Hwy - Maintenance/Modification
Project Description: The New Jersey Turnpike Authority proposes a modernization of the Newark Bay-Hudson County Extension between Interchange 14 in Newark, Essex County, and Interchange 14A in Bayonne and Jersey City, Hudson County, to meet current and future needs of patrons of the NB-HCE, current design standards, and the Authority's operational and maintenance needs. A major element of the Proposed Project is the replacement of the NBB, officially, the Vincent R. Casciano Memorial Bridge, which comprises nearly half of the total length of the NB-HCE between Interchanges 14 and 14A.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.69641245,-74.12072279438487,14z

Counties: Essex and Hudson counties, New Jersey

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: ▪ The monarch is a candidate species and not yet listed or proposed for listing. There are generally no section 7 requirements for candidate species (FAQ found here: https://www.fws.gov/savethemonarch/FAQ-Section7.html). Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10

NAME	BREEDING SEASON
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
King Rail *Rallus elegans* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee

was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

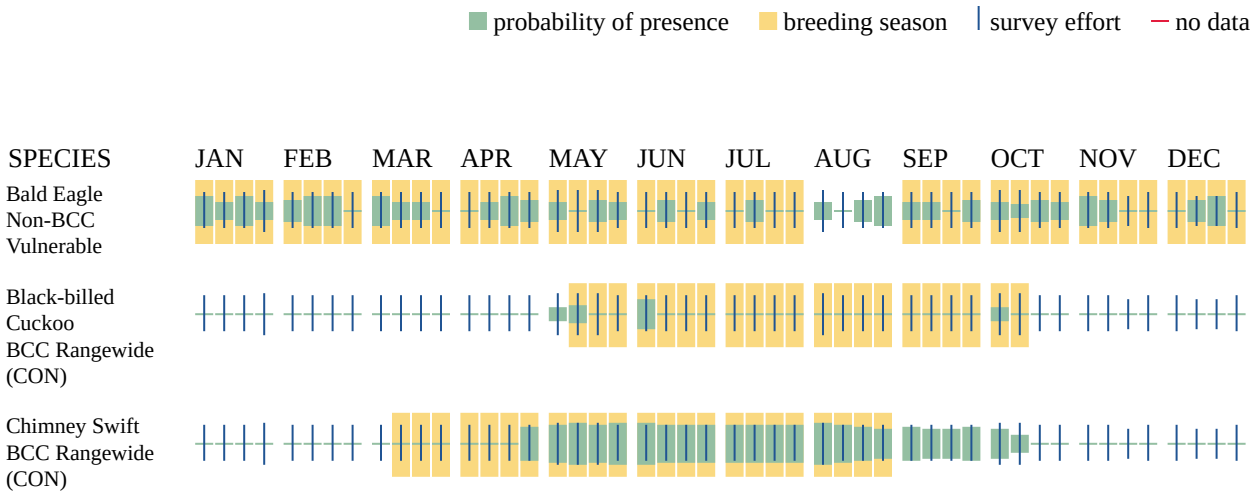
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

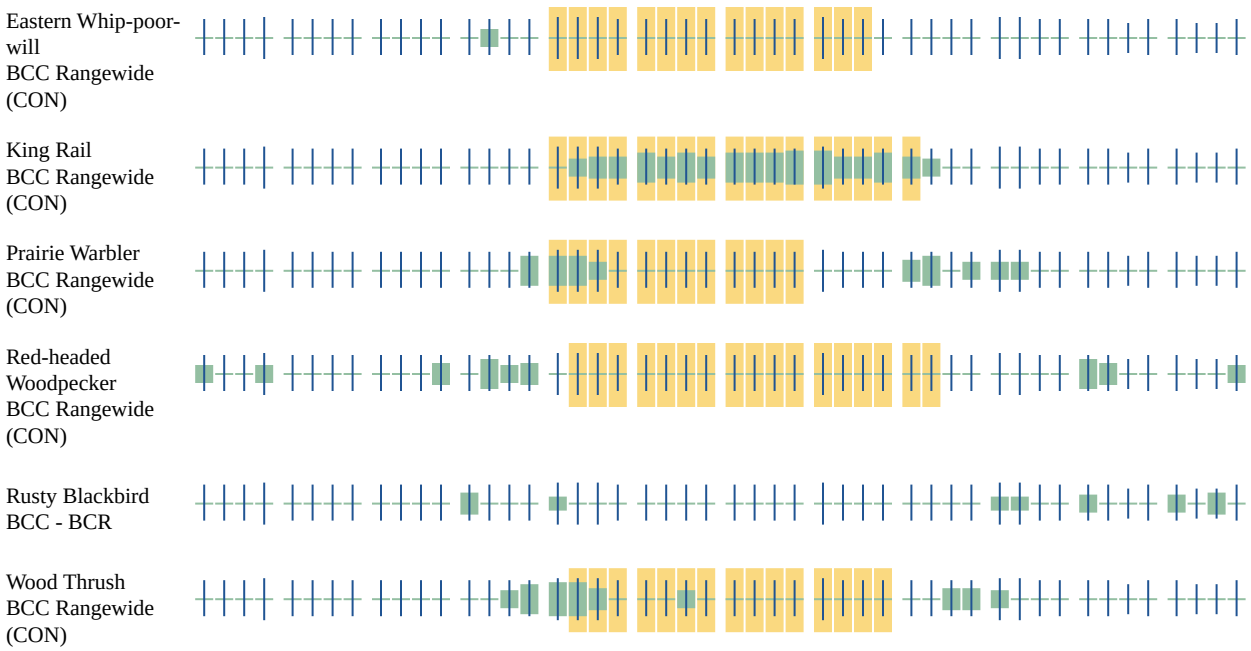
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

IPAC USER CONTACT INFORMATION

Agency: State of New Jersey
Name: Phil Baigas
Address: 412 Mount Kemble Avenue
City: Morristown
State: NJ
Zip: 07962-1946
Email phillip.baigas@wsp.com
Phone: 9704040172

Appendix F-2

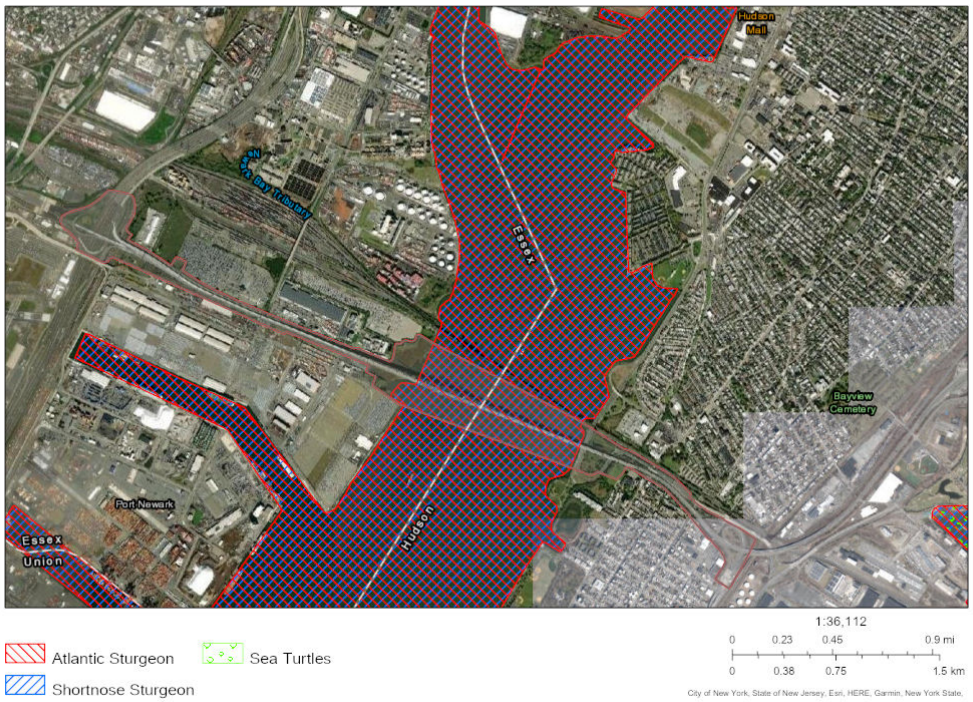
NMFS Section 7 Mapper Report and NMFS Correspondence

Drawn Action Area & Overlapping S7 Consultation Areas

Area of Interest (AOI) Information

Area : 320.16 acres

Jun 4 2021 14:54:30 Eastern Daylight Time



Summary

Name	Count	Area(acres)	Length(mi)
Atlantic Sturgeon	2	265.66	N/A
Shortnose Sturgeon	1	132.83	N/A
Atlantic Salmon	0	0	N/A
Sea Turtles	0	0	N/A
Atlantic Large Whales	0	0	N/A
In or Near Critical Habitat	0	0	N/A

Atlantic Sturgeon

#	Feature ID	Species	Life Stage	Behavior	Zone	From	Until	From (2)	Until (2)	Area(acres)
1	ANS_C50_ADU_MAF	Atlantic sturgeon	Adult	Migrating & Foraging	N/A	01/01	12/31	N/A	N/A	132.83
2	ANS_C50_SUB_MAF	Atlantic sturgeon	Subadult	Migrating & Foraging	N/A	01/01	12/31	N/A	N/A	132.83

Shortnose Sturgeon

#	Feature ID	Species	Life Stage	Behavior	Zone	From	Until	From (2)	Until (2)	Area(acres)
1	SNS_C50_ADU_MAF	Shortnose sturgeon	Adult	Migrating & Foraging	N/A	04/01	11/30	N/A	N/A	132.83

From:	Edith Carson-Supino - NOAA Federal
To:	Flynn, Dana
Cc:	Pesesky, Lawrence; mmorgan; Campagnino, Marjorie M.; Jessie Murray - NOAA Federal
Subject:	Re: NJTA Newark Bay-Hudson County Extension Program - ESA request for info
Date:	Friday, August 6, 2021 11:55:49 AM
Attachments:	image003.png Incoming - USGSTopo.pdf

Ms. Flynn,

We received your email on August 5, 2021, regarding the proposed geotechnical borings in Newark Bay and adjacent tidal wetlands (attached). In your email, you requested any available information regarding the presence of federally listed threatened or endangered species within the vicinity of the site. Please note that you can also look up species presence in your project area by using our Mapper: http://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27

We offer the following comments.

Endangered Species Act

Atlantic Sturgeon

Atlantic sturgeon could be present in the waters of Newark Bay and its adjacent bays and tributaries. The New York Bight, Chesapeake Bay, Carolina, and South Atlantic Distinct Population Segments (DPS) of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. Adult and subadult Atlantic sturgeon originating from any of these DPSs could occur in the proposed project area. As young remain in their natal river/estuary until approximately age 2, and early life stages are not tolerant of saline waters, no eggs, larvae, or juvenile Atlantic sturgeon will occur within Newark Bay and its adjacent bays and tributaries.

Shortnose Sturgeon

Shortnose sturgeon could be present in the Newark Bay and could occur in its adjacent bays and tributaries. Shortnose sturgeon are listed as endangered throughout their range. As early life stages are not tolerant of saline water, no eggs, larvae, or juvenile shortnose sturgeon will occur within the saline waters of Newark Bay and its adjacent bays and tributaries.

As project details develop, we recommend you consider the following effects of the project on Atlantic and shortnose sturgeon:

- For any impacts to habitat or conditions that temporarily render affected water bodies unsuitable for the above-mentioned species, consider the use of timing restrictions for in-water work.
- For activities that increase levels of suspended sediment, consider the use of silt management and/or soil erosion best practices (i.e., silt curtains and/or cofferdams).
- For activities that may affect underwater noise levels, consider the use of cushion blocks and other noise attenuating tools to avoid reaching noise levels that will cause injury or behavioral disturbance to sturgeon - see the table below for more information regarding noise criteria for injury/behavioral disturbance in sturgeon.

Organism	Injury	Behavioral Modification
Sturgeon	206 dB re 1 µPaPeak and 187 dB cSEL	150 dB re 1 µPaRMS

Depending on the amount and duration of work that takes place in the water, listed species of sturgeon may occur within the vicinity of your proposed project. The federal action agency will be responsible for determining whether the proposed action may affect listed species. If they determine that

the proposed action may affect a listed species, they should submit their determination of effects, along with justification and a request for concurrence to the attention of the Section 7 Coordinator, nmfs.gar.esa.section7@noaa.gov. Please be aware that we have recently provided on our website guidance and tools to assist action agencies with their description of the action and analysis of effects to support their determination. See - https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-consultations-greater-atlantic-region. After receiving a complete, accurate comprehensive request for consultation, in accordance to the guidance and instructions on our website, we would then be able to conduct a consultation under section 7 of the ESA. Should project plans change or new information become available that changes the basis for this determination, further coordination should be pursued. If you have any questions regarding these comments, please contact me (978-282-8490; Edith.Carson-Supino@noaa.gov).

Magnuson-Stevens Fishery Conservation and Management Act - Essential Fish Habitat

Recent changes to the Corps of Engineers' Nationwide Permits have removed the requirement that NOAA Fisheries be contacted for information on essential fish habitat and that applicants provide evidence of the contact and our resources. You now access the information on your own from our websites. The Habitat Conservation Division's website is: https://www.fisheries.noaa.gov/new-england-mid-atlantic/habitat-conservation/conserving-habitat-greater-atlantic-region. Information on essential fish habitat can be found there.

Thank you,

Edith

Edith Carson-Supino, M.Sc (she/her/hers)
Section 7 Fish Biologist, Greater Atlantic Regional Fisheries Office
NOAA Fisheries | U.S. Department of Commerce
Office: (978) 282-8490
For ESA Section 7 guidance please see:
https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-consultations-greater-atlantic-region

On Thu, Aug 5, 2021 at 11:54 AM Flynn, Dana <dana.flynn@wsp.com> wrote:

> Good Morning Ms. Carson-Supino,
>
> On behalf of the New Jersey Turnpike Authority (Authority), Gannett Fleming, Inc. Design Team member WSP USA, Inc. (WSP) is preparing geotechnical boring permit applications to obtain state and federal approvals for activities associated with Newark Bay-Hudson County Extension (NB-HCE) Program. The NB-HCE Program (Program) limits extend from a point just east of Interchange 14 in Newark, Essex County, across the Newark Bay

Bridge, and through Bayonne, Hudson County to the eastern terminus of the Authority's jurisdiction at Jersey Avenue in Jersey City, Hudson County, New Jersey. The project consists of the NB-HCE corridor, including the Newark Bay Bridge, and abutting areas. The project area is shown on the attached USGS topographic map.

As part of preliminary design, geotechnical borings are proposed in Newark Bay and adjacent tidal wetlands. This email is requesting information regarding the presence of Endangered Species Act (ESA) listed threatened or endangered species under the jurisdiction of NOAA's National Marine Fisheries Service (NMFS) within the subject project site. Should you require additional information, please do not hesitate to contact me at dana.flynn@wsp.com or 973-407-1475.

Thank you for your assistance,

Dana Flynn, CWB, CE

Senior Environmental Scientist

T+ 1 973.407.1475

M + 1 484.225.3650
WSP USA

412 Mount Kemble Avenue 5th Floor

Morristown, NJ 07960 USA

wsp.com

-LAEmHhHzdJzBlTWfa4Hgs7pbKl

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

Greater Atlantic Regional Office
Atlantic Highly Migratory Species Management Division

Query Results

Degrees, Minutes, Seconds: Latitude = 40º 41' 44" N, Longitude = 75º 52' 56" W
Decimal Degrees: Latitude = 40.695, Longitude = -74.118

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

*** W A R N I N G ***

Please note under "Life Stage(s) Found at Location" the category "ALL" indicates that all life stages of that species share the same map and are designated at the queried location.

EFH

Link	Data Caveats	Species/Management Unit	Lifestage(s) Found at Location	Management Council	FMP
		Winter Flounder	Eggs Juvenile Larvae/Adult	New England	Amendment 14 to the Northeast Multispecies FMP
		Little Skate	Juvenile Adult	New England	Amendment 2 to the Northeast Skate Complex FMP
		Atlantic Herring	Juvenile Adult Larvae	New England	Amendment 3 to the Atlantic Herring FMP
		Red Hake	Adult Eggs/Larvae/Juvenile	New England	Amendment 14 to the Northeast Multispecies FMP
		Windowpane Flounder	Adult Larvae Eggs Juvenile	New England	Amendment 14 to the Northeast Multispecies FMP
		Winter Skate	Adult Juvenile	New England	Amendment 2 to the Northeast Skate Complex FMP

Link	Data Caveats	Species/Management Unit	Lifestage(s) Found at Location	Management Council	FMP
		Clearnose Skate	Adult Juvenile	New England	Amendment 2 to the Northeast Skate Complex FMP
		Longfin Inshore Squid	Eggs	Mid-Atlantic	Atlantic Mackerel, Squid,& Butterfish Amendment 11
		Bluefish	Adult Juvenile	Mid-Atlantic	Bluefish
		Atlantic Butterfish	Larvae	Mid-Atlantic	Atlantic Mackerel, Squid,& Butterfish Amendment 11
		Summer Flounder	Larvae Juvenile Adult	Mid-Atlantic	Summer Flounder, Scup, Black Sea Bass

Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

HAPCs

Link	Data Caveats	HAPC Name	Management Council
		Summer Flounder	Mid-Atlantic

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data.
****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**

All spatial data is currently available for the Mid-Atlantic and New England councils,
Secretarial EFH,
Bigeye Sand Tiger Shark,
Bigeye Sixgill Shark,
Caribbean Sharpnose Shark,
Galapagos Shark,
Narrowtooth Shark,
Sevengill Shark,
Sixgill Shark,
Smooth Hammerhead Shark,
Smalltail Shark

Appendix F-3

NJDEP Correspondence

State of New Jersey
MAIL CODE 501-04
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF PARKS & FORESTRY
NEW JERSEY FOREST SERVICE
OFFICE OF NATURAL LANDS MANAGEMENT
P.O. BOX 420
TRENTON, NJ 08625-0420
Tel. (609) 984-1339 Fax (609) 984-0427

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

SHAWN M. LATOURETTE
Commissioner

July 2, 2021

Dana Flynn
WSP USA
412 Mount Kemble Avenue
Morristown, NJ 07962

Re: NJTA Newark Bay-Hudson County Extension Program
Bayonne and Jersey Cities, Hudson County
Newark City, Essex County

Dear Dana Flynn:

Thank you for your data request regarding rare species information for the above referenced project site.

Searches of the Natural Heritage Database and the Landscape Project (Version 3.3) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the map(s) submitted with the Natural Heritage Data Request Form into our GIS. We do not typically verify that your project bounds are accurate, or check them against other sources.

We have checked the Landscape Project habitat mapping and the Biotics Database for occurrences of any rare wildlife species or wildlife habitat on the referenced site. The Natural Heritage Database was searched for occurrences of rare plant species or ecological communities that may be on the project site. Please refer to Table 1 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented on site. A detailed report is provided for each category coded as 'Yes' in Table 1.

We have also checked the Landscape Project habitat mapping and Biotics Database for occurrences of rare wildlife species or wildlife habitat in the immediate vicinity (within ¼ mile) of the referenced site. Additionally, the Natural Heritage Database was checked for occurrences of rare plant species or ecological communities within ¼ mile of the site. Please refer to Table 2 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented within the immediate vicinity of the site. Detailed reports are provided for all categories coded as 'Yes' in Table 2. These reports may include species that have also been documented on the project site.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and ecological communities. Please refer to Tables 1 and 2 (attached) to determine if any priority sites are located on or in the immediate vicinity of the site.

A list of rare plant species and ecological communities that have been documented from the county (or counties), referenced above, can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.html. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes_2010.pdf.

Beginning May 9, 2017, the Natural Heritage Program reports for wildlife species will utilize data from Landscape Project Version 3.3. If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive web application at the following URL,

https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=0e6a44098c524ed99bf739953cb4d4c7, or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

For additional information regarding any Federally listed plant or animal species, please contact the U.S. Fish & Wildlife Service, New Jersey Field Office at http://www.fws.gov/northeast/njfieldoffice/endangered/consultation.html.

PLEASE SEE 'CAUTIONS AND RESTRICTIONS ON NHP DATA', which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/newcaution2008.pdf.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

Robert J. Cartica
Administrator

c: NHP File No. 21-4007461-22351

Table 1: On Site Data Request Search Results (6 Possible Reports)

Report Name	Included	Number of Pages
1. Possibly on Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites On Site	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	2 page(s) included
4. Vernal Pool Habitat on the Project Site Based on Search of Landscape Project 3.3	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species On the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Cattle Egret	Bubulcus ibis	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Least Tern	Sternula antillarum	Foraging	4	NA	State Endangered	G4	S1B,S1N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Northern Harrier	Circus cyaneus	Breeding Sighting	4	NA	State Endangered	G5	S1B,S3N
	Peregrine Falcon	Falco peregrinus	Urban Nest	4	NA	State Endangered	G4	S1B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	Egretta tricolor	Foraging	2	NA	Special Concern	G5	S3B,S3N
Insecta								
	Checkered White	Pontia protodice	Breeding/Courtship	3	NA	State Threatened	G5	S2
Osteichthyes								
	Atlantic Sturgeon	Acipenser oxyrinchus	Migration Corridor - Adult Sighting	5	Federally Listed Endangered	State Endangered	G3	S1

Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
	Atlantic Sturgeon	Acipenser oxyrinchus	Migration Corridor - Juvenile Sighting	5	Federally Listed Endangered	State Endangered	G3	S1
	Shortnose Sturgeon	Acipenser brevirostrum	Migration Corridor - Adult Sighting	5	Federally Listed Endangered	State Endangered	G3	S1

Table 2: Vicinity Data Request Search Results (6 possible reports)

Report Name	Included	Number of Pages
1. Immediate Vicinity of the Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within the Immediate Vicinity	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	2 page(s) included
4. Vernal Pool Habitat In the Immediate Vicinity of Project Site Based on Search of Landscape Project 3.3	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat In the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species In the Immediate Vicinity of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Bobolink	Dolichonyx oryzivorus	Non-breeding Sighting	2	NA	Special Concern	G5	S2B,S3N
	Cattle Egret	Bubulcus ibis	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Least Tern	Sternula antillarum	Foraging	4	NA	State Endangered	G4	S1B,S1N
	Least Tern	Sternula antillarum	Nesting Colony	4	NA	State Endangered	G4	S1B,S1N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Northern Harrier	Circus cyaneus	Breeding Sighting	4	NA	State Endangered	G5	S1B,S3N
	Peregrine Falcon	Falco peregrinus	Urban Nest	4	NA	State Endangered	G4	S1B,S3N
	Savannah Sparrow	Passerculus sandwichensis	Breeding Sighting	3	NA	State Threatened	G5	S2B,S4N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	Egretta tricolor	Foraging	2	NA	Special Concern	G5	S3B,S3N

Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
	Upland Sandpiper	Bartramia longicauda	Breeding Sighting	4	NA	State Endangered	G5	S1B,S1N
Insecta								
	Checkered White	Pontia protodice	Breeding/Courtship	3	NA	State Threatened	G5	S2
Osteichthyes								
	Atlantic Sturgeon	Acipenser oxyrinchus	Migration Corridor - Adult Sighting	5	Federally Listed Endangered	State Endangered	G3	S1
	Atlantic Sturgeon	Acipenser oxyrinchus	Migration Corridor - Juvenile Sighting	5	Federally Listed Endangered	State Endangered	G3	S1
	Shortnose Sturgeon	Acipenser brevirostrum	Migration Corridor - Adult Sighting	5	Federally Listed Endangered	State Endangered	G3	S1

State of New Jersey

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Office of Permitting & Project Navigation
Mail Code 401-07J
P.O. Box 420
Trenton, New Jersey 08625-0420
www.nj.gov/dep/pcer

CATHERINE R. McCABE
Commissioner

May 14, 2021

Gannett Fleming
c/o Michael A. Morgan, PE
1 Centennial Avenue
Building C-Suite 201
Piscataway, NJ 08854

RE: EO-215 Environmental Assessment
NJTA Newark Bay-Hudson County Extension
City of Newark, Essex County
Bayonne and Jersey City, Hudson County

Dear Mr. Fleming:

The New Jersey Department of Environmental Protection's (NJDEP) Office of Permitting & Project Navigation (OPPN) received a Preliminary Design and Environmental Study on April 16, 2021, which was prepared pursuant to the environmental review requirements of New Jersey Executive Order No. 215 of 1989 (EO #215) for the proposed 4-phased roadway widening and improvement project to improve mobility and address roadway structural needs on the Authority's Newark Bay-Hudson County Extension (NB-HCE).

In response to your request for a determination as to whether the proposal will have any adverse impacts to land resources, historical or cultural resources, threatened and endangered species and migratory birds, or whether there are any impacts to Green Acres-encumbered parkland held by the State, local government units and/or nonprofit organizations, the Department offers the following comments for your consideration:

Land Resource Protection

The Division concurs with the submitted assessment that identified the need for both Inland and Upland Waterfront Development Permits and a Flood Hazard Area Permit. The Division recommends the applicant also apply for a Freshwater Wetlands Letter of Interpretation. Any proposed impacts to freshwater wetlands will require either a Freshwater Wetlands Statewide General Permits or a Freshwater Wetlands Individual Permit depending on the scope of impacts to wetlands, transition areas, and/or State open waters.

The Division recommends an eventual pre-application meeting to discuss the permitting requirements

If you have any additional questions, please contact Chris Jones at Christopher.Jones@dep.nj.gov for WFD/FWW or Christian Zografos at Christian.Zografos@dep.nj.gov for FHA/Stormwater, or both can be reached at 609-777-0454.

Historic and Cultural Resources:

The project is located within a historic setting containing multiple historic and archaeological resources, including the New Jersey and National Register of Historic Places-listed or eligible properties adjacent to, crossed-by, or in the vicinity of the NB-HCE corridor. These resources are primarily related to the area's rich transportation history. The submitted information correctly identifies the following historic properties in the corridor, most of which are in Projects 2 and 4: Lehigh Valley Railroad Historic District (SHPO Opinion 3/15/2002), Morris Canal Historic District (NR 10/1/1974; SR 11/26/1973), Hudson & Manhattan Railroad Transit (PATH) System (SHPO Opinion 3/4/2002), and the US Routes 1 & 9 Historic District (SHPO Opinion 3/8/1996). However, the identified Pennsylvania Railroad (PRR) Newark and New York Railroad Historic District does not appear on the HPO's identified properties list; this may be a misnomer for the PRR New York Bay Branch Historic District (SHPO Opinion 12/18/2019). Additionally, based on the HPO's understanding of the project limits, the Terminal Distribution Warehouses of Hudson County Historic District (SR 10/26/2015) does not appear to be within the likely area of potential effects (APE) for the project. The applicant's list of historic properties also includes the Greenville Yard Historic District, which has been determined not eligible for the New Jersey and National Registers (SHPO Opinion 7/22/2015). According to the applicant, the NB-HCE is also visible from the Statue of Liberty National Monument. The corridor also intersects with eight archaeological site grids.

The HPO notes that, based on the project limits, the above-referenced list of historic properties omits numerous historic buildings and districts in the area identified as Project 4, including but not limited to: the US Routes 1 & 9 Extension [Pulaski Skyway] (NR 8/12/2005; SR 6/13/2005); New Jersey Railroad Bergen Cut Historic District (SHPO Opinion 5/21/1999); PRR New York to Philadelphia Historic District (SHPO Opinion 1/14/2015); Italian Village Historic District (SHPO Opinion 5/13/2019); PRR Harsimus Branch Right-of-Way Historic District (SHPO Opinion 7/14/2017); and Erie Railroad Main Line Historic District (SHPO Opinion 2/20/2003).

The HPO recommends an intensive-level historic architectural survey for properties within the area of potential effects (APE) for the project. The survey must include an assessment of the eligibility of the Newark Bay Bridge. The HPO strongly recommends consultation with our office in order to define an APE and survey methodology for the project. The APE should on areas of direct impacts and areas where the roadway widening will result in increased visual, auditory, and atmospheric impacts from existing conditions. The survey methodology should focus on resources that are directly affected by the proposed construction and on resources constructed prior to the existing roadway (i.e., before c.1955). The intensive-level historic architectural survey must be prepared by an Architectural Historian who meets the Secretary of the Interior's Professional Qualifications Standards [48 FR 44738-9] and shall follow the Guidelines for Architectural Survey, published by our office and available on our website (https://www.nj.gov/dep/hpo/1identify/survarcht.htm), with reporting conforming to the guidelines at N.J.A.C. 7:4-8.6.

Further, the HPO recommends, based on the potential for maritime and terrestrial archaeological resources, that an initial Phase IA archaeological reconnaissance survey is conducted for the entire project alignment (Project's 1-4) so that specific areas of sensitivity and areas requiring additional archaeological and geotechnical investigations can be identified forming a management tool for this extensive and multi-phased roadway project. Depending on design, future archaeological investigations could be extensive and time consuming and will require consideration as part of any regulated activity. For examples for other multi-year archaeological investigations, see the information on Boston's replacement of I-93 (https://www.sec.state.ma.us/mhc/mhcpdf/Big_Dig_book.pdf) or the on-going I-95 expansion work through Philadelphia (https://diggingi95.com/).

If you have any additional questions, please contact Jennifer Leynes at Jennifer.Leynes@dep.nj.gov and Vincent Maresca at Vincent.Maresca@dep.nj.gov.

Fish & Wildlife

Marine Fisheries Administration (MFA)

Coastal Zone Management Rules relevant to marine fisheries which apply to this project:

- 9.5 Finfish migratory pathways
  NY/NJ Harbor Agreement timing restriction – February 1 – May 31

- 9.36 Endangered or threatened wildlife or plant species habitats
  Atlantic sturgeon: NY/NJ Harbor Agreement timing restriction – February 1 – May 31

- 12.6 Maintenance Dredging
  Winter flounder timing restriction – January 1 – May 31

Be aware, the work conducted in Project 1 to rebuild the NB-HCE bridge can disturb important fish habitat and disrupt migration of fish during Spring spawning runs through the Newark Bay area. Newark Bay and significant associated river systems (Passaic and Hackensack Rivers) support spawning runs of shad and river herring species, as well as striped bass. Shad and river herring are currently experiencing low population abundances coastwide, while striped bass stocks have recently been assessed as overfished and experiencing overfishing. Avoidance of interference with these and other Spring spawning runs is critical to reduce further detrimental impacts to these fish stocks. Atlantic Sturgeon use Newark Bay as foraging grounds which coincides with the New York Bight distinct population segment and are considered endangered under the Endangered Species Act. Therefore, the following Time of Year Restrictions of in-water work activities will be recommended for this project: NY/NJ Harbor Agreement: February 1 – May 31. Additionally, MFA recommends the use of Best Management Practices (BMPs) to reduce impacts of construction on migrating fish by monitoring and controlling turbidity, noise, and overall habitat disturbance.

If dredging is required for Project 1: MFA recommends all dredging and dredge material operations utilize specific operational procedures designed to minimize water quality impacts, resuspension of sediment, and percussive sound generation. Operations are recommended to deploy silt curtains at sites when plausible based on-site conditions. If it is determined the use of a silt curtain is infeasible at specific locations, dredging using closed watertight buckets or lateral digging buckets, or for a hydraulic dredge the removal of the cutter head, flushing of pipeline sections prior to disconnection, or limitations on depth of successive cuts is recommended.

The Southern New England/Mid-Atlantic winter flounder stock is near historic lows and the proposed work plans are in regions which have been determined to be Essential Fish Habitat for all life history stages of winter flounder. The dredging and development timing restrictions for winter flounder, which have been established to protect the spawning and vulnerable life history stages, in areas of 20- feet or less MLLW bathymetric contour, and an additional 500-foot buffer seaward of the 20- foot bathymetric contour, is recommended from January 1- May 31.

Threatened & Endangered Species

Species Occurrence Area (v12) and Landscape mapping (v3.3) indicates habitats valued for, and possible occurrences of, **Threatened / Endangered** (T / E) and "**Species of Concern"** within the expected area of impact for the following species: Bald Eagle, Peregrine Falcon, Northern Harrier, Least Tern, Atlantic & Short-nose Sturgeon, Black-crowned Night-heron, Cattle Egret, Checkered White, Snowy Egret, Glossy

Ibis, Little Blue Heron, Tricolored Heron, Northern Diamondback Terrapin. These species must be addressed in the Environmental Impact Statement (EIS).

Peregrine Falcon (State – E) nests are mapped on the Newark Bay Bridge (from 2012) and the rail bridge to the north (from 2009). If these nests still exist, consultation with the Endangered & Non-game Species Program will be required.

Northern Long-eared Bat, Little Brown Bat, Eastern Small-footed Myotis, and Tri-colored Bat, all of which are found state-wide and after review by Endangered and Non-game Species Program Biologists and the NJ Endangered and Nongame Advisory Committee, have a "Consensus Status" of "Endangered" in NJ, must be considered if tree clearing is required for this proposal

If you have any additional questions, please contact Kelly Davis at 609-292-9451 or Kelly.Davis@dep.nj.gov

Tidelands

If tidally claimed areas are proposed to be impacted for the project, the applicant must confirm whether there is a Tidelands Grant for these areas and if the Grant is still valid. If there is no Grant or it is no longer valid, then the applicant shall apply for a new Tidelands Instrument for work proposed within the claimed areas. Additionally, the construction of new in-water structures will require an application to the Bureau of Tidelands for a new Instrument.

If you have any additional questions, please contact Marty Mosen at 609-633-7900 or Martin.Mosen@dep.nj.gov

Green Acres

The applicant states that several parks may be impacted by this project and that they recognize a diversion application and State House Commission approval may be required unless the project can be routed in such a way as to avoid parkland. The applicant is advised to consult with Green Acres about the project design for assistance in identifying local parks that may be impacted and assistance in the diversion process. The Green Acres Bureau only handles county, municipal and nonprofit GA encumbered lands.

If you have any additional questions, please contact Maude Snyder at 609-292-0903 or Maude.Snyder@dep.nj.gov

State-owned Lands

If the project will impact NJDEP property, the applicant shall submit the following form: https://www.nj.gov/dep/greenacres/pdf/request_to_use_njdep_property.pdf
An alternatives analysis will need to be submitted that shows why the use of NJDEP property cannot be avoided, and if it cannot be avoided, how the use is being minimized.

If you have any additional questions, please contact Adria Wentzel at 609-984-0532 or Adria.Wentzel@dep.nj.gov

Site Remediation

The applicant is advised to consult the SRP linear construction technical guidance at:
https://www.state.nj.us/dep/srp/guidance/srra/lc_guidance.pdf

If you have any questions, please contact Steve Maybury at 609-633-1455 or Steve.Maybury@dep.nj.gov

Stormwater Management

Construction projects that disturb 1 acre or more of land, or less than 1 acre but are part of a larger common plan of development that is greater than 1 acre, are required to obtain coverage under the Stormwater construction general permit (5G3). Applicants must first obtain certification of their soil erosion and sediment control plan (251 plan) form their local soil conservation district office. Upon certification, the district office will provide the applicant with two codes process (SCD certification code and 251 identification code) for use in the DEPonline portal system application. Applicants must then become a registered user for the DEPonline system and complete the application for the Stormwater Construction General Authorization. Upon completion of the application the applicant will receive a temporary authorization which can be used to start construction immediately, if necessary. Within 3-5 business days the permittee contact identified in the application will receive an email including the application summary and final authorization.

If you have any additional questions, please contact Eleanor Krukowski at (609) 633-7021 or Eleanor.Krukowski@dep.nj.gov

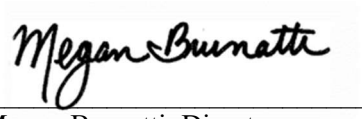
RECOMMENDATIONS

Pursuant to Section 4(c)ii of EO #215, the NJDEP recommends a conditional approval for the project, provided that any NJDEP permits and approvals that may be required for the project are obtained by the applicant prior to commencement of any activity regulated by those required permits and approvals.

Section 5 of EO #215 requires that within thirty days of receiving our recommendation, the proposing agency provide the NJDEP a written response either accepting our recommendations or setting forth those issues remaining in dispute. Acceptance of our conditional approval and recommendations would conclude the EO #215 environmental review process. If a written response is not received in this time frame, it will be assumed that the proposing agency has accepted the NJDEP's recommendations listed above.

Thank you for giving the NJDEP the opportunity to comment on the provided information for the proposed project. Please contact Becky Mazzei at Becky.Mazzei@dep.nj.gov or (609) 292-3600 if you have any additional questions or concerns.

Sincerely,



Megan Brunatti, Director
Office of Permitting & Project Navigation

Appendix F-4

Essential Fish Habitat Assessment

New Jersey Turnpike A
Newark Bay – Hudson County Extension
Interchange 14 to Interchange 14A

Essential Fish Habitat Assessment

January 2024

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1 Introduction

In compliance with Section 305(b) (2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), as amended by the Sustainable Fisheries Act (SFA) of 1996 (Public Law 104-267), this Essential Fish Habitat (EFH) assessment is provided to evaluate the potential effects of constructing a replacement bridge for the Newark Bay Bridge (NBB) on EFH. This bridge crosses over Newark Bay for a distance of approximately 4,200 feet, connecting the cities of Newark and Bayonne in New Jersey. This assessment includes an analysis of the potential effects of the proposed project on habitat for those species and life stages for which EFH has been designated.

Potential impacts of the proposed bridge construction and demolition of the existing bridge were evaluated using information collected during previous aquatic sampling programs and relevant literature to evaluate species occurrence and existing habitat. Potential temporary and permanent impacts of the proposed project on the EFH were assessed in terms of the seasonal distribution, relative abundance, and habitat requirements of the designated species and life stages. The assessment addresses the physical and biological effects of the proposed in-water construction and operation activities on the 11 EFH-designated species and Habitat Areas of Particular Concern (HAPC) that may occur in the project area.

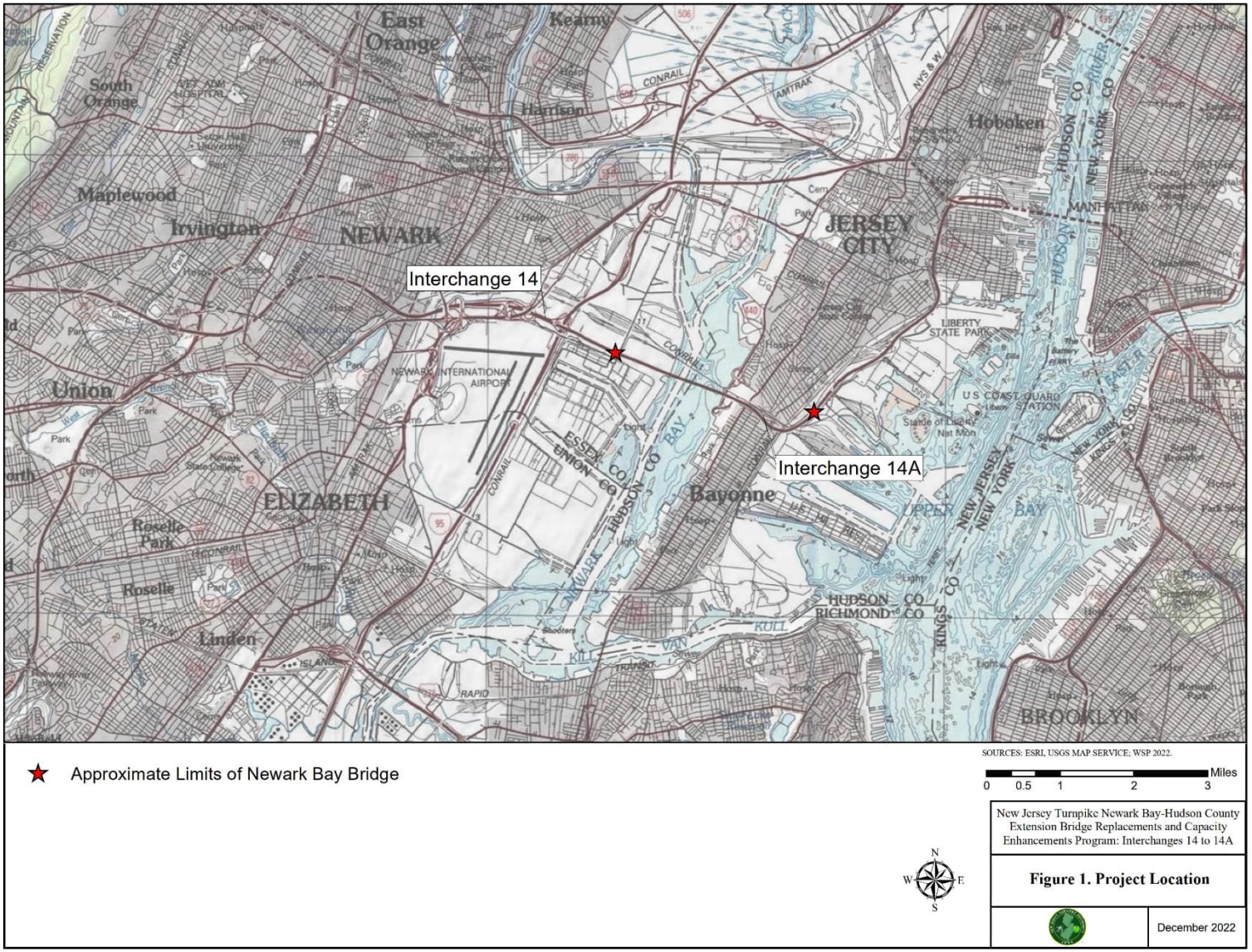
Also included in this EFH Assessment are four forage species, including bay anchovy (*Anchoa mitchelli*), Atlantic menhaden (*Brevoortia tyrannus*) and river herring (collectively blueback herring [*Alosa aestivalis*], and alewife [*Alosa pseudoharengus*]).

2 Project Site and Project Description

2.1 Site Description

Newark Bay is a shallow, 5.5 mile long tidal embayment located at the confluence of the Passaic and Hackensack Rivers (Figure 1). It is tidally connected to the Atlantic Ocean at its southern end via the Kill van Kull and Arthur Kill. Newark Bay has a width ranging from about 0.6 to 1.2 miles and is bordered to the east by the City of Bayonne and to the west by the City of Newark. In the project corridor, depths are generally less than eight feet, except for the Newark Bay Main Navigational Channel North Reach, which passes under the NBB, and has an authorized width of 500 feet and a depth of 35 feet. The shoreline along Newark Bay varies, consisting largely of riprap and bulkheads, with little natural shoreline remaining. Along the project corridor, the western shore of Newark Bay underneath the existing bridge is riprap with tidal wetlands immediately north and south. The eastern shore of Newark Bay in the project corridor is composed of riprap.

The project area has undergone intense development and urbanization. To the north of the NBB, the Lehigh Valley Railroad Bridge crosses Newark Bay and connects to a large railroad yard in Newark. The Port Newark shipping facility and manufacturing buildings comprise much of the land use to the west of the NBB, while the eastern side of Newark Bay is characterized by dense residential development and urban parks. A variety of urban, industrial inputs and development of the nearshore zone of Newark Bay has modified the area's hydrology, degraded water quality, and altered biotic communities. Over the years, most of the salt marsh wetlands that fringed Newark Bay have been degraded as a result of mosquito control measures and invasive vegetation, or lost through filling.


Interchange 14
Interchange 14A
East Orange
Kearny
South Orange
Harrison
Hoboken
Maplewood
Irvington
NEWARK
JERSEY CITY
Union
ELIZABETH
Bayonne
Roselle Park
Roselle
Linden
BROOKLYN
NEWARK INTERNATIONAL AIRPORT
LIBERTY STATE PARK
US COAST GUARD STATION
Approximate Limits of Newark Bay Bridge
SOURCES: ESRI, USGS MAP SERVICE; WSP 2022.
0 0.5 1 2 3 Miles
N
W E
S
New Jersey Turnpike Newark Bay-Hudson County Extension Bridge Replacements and Capacity Enhancements Program: Interchanges 14 to 14A
Figure 1. Project Location
December 2022

Aquatic habitats in Newark Bay include deep navigation channels, expansive subtidal shallows, intertidal mudflats, and salt marshes. Substrates in the project corridor in Newark Bay consist predominately of silty sand and sandy silt (USACE 2012). Recent fish community studies conducted from 1993 to 2013 have identified 62 fish species occurring within Newark Bay (Tierra Solutions Inc. 2013), including federally-managed species for which EFH has been designated. A recent mid-water study of migratory finfish in the bay detailed use of the water column by pelagic species infrequently caught in bottom-trawl studies (USACE 2015). Ichthyoplankton studies conducted in Newark Bay from 1999-2006 identified early life stages (eggs, larvae, or juveniles) of federally-managed species for which EFH has been designated. A number of benthic invertebrate surveys have been conducted in Newark Bay since the mid-1980s. USACE found moderate benthic abundance, with the assemblage dominated by polychaetes, with softshell clam (*Mya arenaria*) also abundant (USACE 1987). NOAA conducted a benthic macroinvertebrate survey of Newark Bay during 1993-1994, finding a similar polychaete-dominated community that exhibited discernible shifts in species composition among seasons (NOAA 1994). The Port Authority of New York/New Jersey's 1995-1996 Newark Bay benthic sampling program corroborated the dominance by polychaetes, with additional common invertebrates including softshell clam, dwarf surf clam (*Mulina lateralis)*, the isopod *Cyathura polita*, and the cumacean (*Oxyurostylis smithiiz*) (LMS 1996).

Newark Bay is designated as "SE3" (N.J.A.C. 7:9B), indicating saline waters of estuaries. In all SE3 waters the designated uses are: (1) Secondary contact recreation; (2) Maintenance and migration of fish populations; (3) Migration of diadromous fish; (4) Maintenance of wildlife; and (5) Any other reasonable uses. The Draft 2018/2020 New Jersey Integrated Water Quality Assessment Report indicates that only 5 of the 19 water monitoring stations in Newark Bay fully supported general aquatic life use criteria. High nutrients, total phosphorus, and impairments associated with nutrient over-enrichment are the common cause of aquatic life impairments.

Water quality parameters of temperature, salinity and dissolved oxygen vary considerably within Newark Bay across the seasons. These variations reflect typical meteorological and hydrological conditions in Newark Bay and the waters that flow into it (Arthur Kill, Kill van Kull, Hackensack and Passaic rivers).

Annual low water temperatures of around 2° C occur in late December/January, and seasonally high temperatures up to 24° C occur June through August (USACE 1997). Salinity ranges from around 3 parts per thousand (ppt) to 21 ppt over the year, with salinities greater than 12ppt spring through fall and lower salinities in winter. Dissolved oxygen values in the summer are relatively low at 4 to 7 mg/L, with highs of 10 to 14 mg/L in the winter months.

Newark Bay is an Operable Unit (OU3) of the Diamond Alkali Superfund site. The historic manufacture of herbicides at a facility along the Lower Passaic River, upstream from Newark Bay, resulted in considerable contamination of area sediments by a variety of toxic substances including DDT and dioxin. The Newark Bay Study Area of the Diamond Alkali Superfund site includes Newark Bay and portions of the Hackensack River, Arthur Kill and Kill van Kull. As a result of this contamination, the state of New Jersey prohibits consuming shellfish and recommends very limited consumption of fish from Newark Bay (NJDEP/NJDOH, 2021). Newark Bay has not undergone Superfund remediation as of 2022.

2.2 Project Description

The New Jersey Turnpike Authority (Authority) proposes a modernization of the Newark Bay-Hudson County Extension (NB-HCE) between Interchange 14 in Newark, Essex County, and Interchange 14A in Bayonne and Jersey City, Hudson County, to meet current and future needs of patrons of the NB-HCE, current design standards, and the Authority's operational and maintenance needs (the Proposed Project). A major element of the Proposed Project is the replacement of the NBB, officially, the Vincent R. Casciano Memorial Bridge, which comprises nearly half of the total length of the NB-HCE between Interchanges 14 and 14A.

The new bridge piers will be constructed by the drilled shaft method. These piers will be accessed via a temporary construction trestle extending out from each shore to the new main span pier locations just outside of the navigation channel. The temporary access trestle for the new westbound bridge would be supported by 36" diameter steel pipe piles and is expected to be in place for a period of two years. Once the westbound bridge is completed, the existing NBB would be demolished, with all of the piers within Newark Bay removed to two feet below the mudline in accordance with Authority practice, except for the two main span piers which would remain to support the fendering system for the new bridges. Following demolition of the NBB, another temporary trestle would be constructed out from each shore to the new main span pier locations to support construction of the eastbound span within the footprint of the existing NBB and would be in place for a period of two years. Based on historic boring data, trestle pipe piles would be driven down about 40 feet with a vibratory hammer and then driven an additional 20 to 40 feet with an impact hammer. For in-water installation of the trestle piles, a larger 60" diameter 60" diameter casing will be set to the mudline and equipped with air compressor lines at the bottom of the casing which will create air bubbles in the annular space between pipe pile and casing to reduce underwater noise transmission during pile driving.

The drilled shafts for the bridge piers would likely be advanced in-water with turbidity barriers used to minimize sediment resuspension and reduce impacts to the aquatic community. Turbidity barriers would minimize disturbances but would not contain 100 percent of suspended sediments and would be susceptible to changing water conditions, such as wave action, wind seiches, and turbulent tidal currents. Bridge pier construction would then take place within steel sheetpile cofferdams. Demolition of the existing NBB bridge piers would also occur within sheetpile cofferdams. Following completion of bridge construction and demolition, cofferdams and trestle piles would be removed by vibratory extraction. All of this in-water construction activity requires considerable use of spud barges, tugboats and other support vessel types over a period of four years. The installation and removal of steel pipe piles and steel sheetpiles and associated spud barge mooring and tugboat propeller wash in the relatively shallow waters of Newark Bay will disturb bottom sediments and cause temporary increases in suspended sediment in the construction area.

Except for the construction of the temporary construction trestles and the drilled shafts, all in-water construction, and demolition would take place within cofferdams in order to minimize impacts to the aquatic community. Since sediments in the project area are composed of sand and silt, pilings and sheetpile cofferdams would be installed using vibratory hammers instead of impact hammers, thereby reducing potentially harmful noise generation. Turbidity barriers and/or bubble curtains are assumed to be required to protect the aquatic community from sediment resuspension during sheetpile driving. Following completion of bridge construction and demolition, cofferdams and trestle piles would be removed by vibratory extraction.

3 EFH Designations

EFH is defined under the MSFCMA, as amended by the SFA of 1996, as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The SFA requires that EFH be identified for those species actively managed under Federal Fishery Management Plans (FMPs). This includes species managed by the eight regional Fishery Management Councils (FMCs), established under the MSFCMA, as well as those managed by the National Oceanographic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) under FMPs developed by the Secretary of Commerce.

EFH includes both the water column (including its physical, chemical, and biological growth properties) and the underlying substrate (including sediment, hard bottom, and other submerged structures). Under the EFH definition, necessary habitat is that which is required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. EFH is designated for a species' complete life cycle, including spawning, feeding, and growth to maturity, and may be specific for each life stage (e.g., eggs, larvae). EFH designations are based on various levels of information available for a species life stage distribution, abundance, and habitat-productivity relationships.

A summary of EFH-designated species in the project area is provided in Table 1. This information was obtained from the Essential Fish Habitat Mapper | NOAA Fisheries. This tool allows users to generate a report with supporting documentation describing where managed fish species spawn, grow, or live in a chosen location. The EFH Mapper Report generated for this project is attached as Appendix E-2.

EFH that is judged to be particularly important to the long-term productivity of populations of one or more managed species, or to be particularly vulnerable to degradation, may also be identified by Fisheries Management Councils (FMC) and NOAA Fisheries as habitat areas of particular concern (HAPC). Areas of EFH considered HAPC must be proven by NOAA Fisheries Service to be important to the ecological function provided by the habitat for managed species. The extent to which the habitat is sensitive to human-induced environmental degradation, including development activities that stress the habitat and the rarity of the habitat, are considered in designating HAPC (NMFS, 2003).

In the project area, the only managed species for which HAPC has been identified is summer flounder. NOAA Fisheries identifies HAPC for juvenile and adult summer flounder across its entire range as "all native species of macro-algae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH." Seagrasses are not present in Newark Bay, however, macroalgae occurs in shallow areas where hard substrate is present, and *Spartina alterniflora* marshes are present along the western shore in close proximity to the NBB. Therefore, HAPC for summer flounder is present in the vicinity of the proposed project.

Table 1. Summary of EFH-Designated Species in the Newark Bay Bridge Area.

Species	Eggs	Larvae	Juveniles	Adults
Winter flounder (*Pleuronectes americanus*)	X	X	X	X
Little skate (*Raja erinacea*)			X	X
Atlantic herring (*Clupea harengus*)		X	X	X
Red hake (*Urophycis tenuis*)	X	X	X	X
Windowpane flounder (*Scopthalmus aquosus*)	X	X	X	X
Winter skate (*Raja ocellata*)			X	X
Clearnose skate (*Raja eglanteria*)			X	X
Longfin inshore squid (*Doryteuthis pealeii*)	X			
Bluefish (*Pomatomus saltatrix*)			X	X
Atlantic butterfish (*Peprilus triacanthus*)		X		
Summer flounder (*Paralicthys dentatus*)		X	X	X

4 Potential Impacts to EFH-Designated Species

The EFH Assessment addresses the potential temporary and permanent impacts on individual species and their respective habitats. The species addressed include the 11 EFH-designated species which may occur in the project area (Table 1).

4.1 Potential Project Impacts

The EFH Assessment for the identified species is based on the potential impacts resulting from habitat alteration and/or loss due to bridge construction and demolition activities. The potential project impacts are evaluated on the basis of short-term and long-term effects on each of the EFH designated species, as they may occur temporarily during construction or permanently due to changes in turbidity, hydrodynamic patterns, loss of intertidal and subtidal habitats, noise and vibrations, loss of salt marsh wetlands, and a temporary loss of habitat from equipment and cofferdams.

Short-term effects on EFH resulting from the proposed action include: displacement of fish from available water column habitat in Newark Bay due to avoidance of areas of hydrological disturbance, noise and vibrations caused by construction; increased turbidity and levels of resuspended solids and contaminants, and temporary sediment disturbance and associated loss of the benthic community within cofferdams. Long-term effects on habitat include effects due with construction activities in Newark Bay and include: alteration of substrate types and benthic habitats; changes in water depth, hydrodynamics, and sedimentation rates; and permanent loss of water column and benthic habitats resulting from new bridge piers.

The National Marine Fisheries Service and Federal Highway Administration have developed Best Management Practices (BMPs) for in-water work (NMFS/FHWA 2018). These BMPs include time of year (TOY) restrictions for each state in the greater Atlantic region so that in-water work (i.e., turbidity producing activities) may be avoided during sensitive life stages of managed species (Table 2). These standard TOY restrictions consider the breeding, nursery, and migration stages of species which are especially vulnerable to in-water silt-producing activities, noise impacts, or activities which may encroach greater than 25% into a waterway interfering with migration.

Table 2. Time of Year Restrictions for New Jersey.

Species/Group	Time of Year Restriction
Winter Flounder	January 1 to May 31
Diadromous Fish	March 1 to June 30 and September 1 to November 30*
Submerged Aquatic Vegetation	April 15 to September 30
Overwintering Blue Crab and Striped Bass	November 15 to April 15

*Use the fall TOY restriction in cases where an action will substantially block the waterway in the fall.

4.2 Description of Data Sources

Previous biological investigations have characterized the seasonal distribution and composition of the fish community in various habitats and areas of NY/NJ Harbor, including Newark Bay. Several fish sampling studies have been conducted in the general vicinity of the proposed project area.

The U.S. Army Corps of Engineers, New York District (USACE-NYD) surveyed seasonal use patterns and distribution trends of finfish in NY/NJ Harbor from October 1998 through September 1999 (USACE 1999). Three stations were located within navigation channels within Newark Bay. Sampling was conducted bi-monthly using a 30 foot Wilcox flat bottom trawl and ichthyoplankton tows were made using a 0.5 meter net with 500 micron mesh netting mounted in a benthic sled. USACE (2002) provided supplemental data to the 1998-1999 surveys to obtain additional information on the distribution patterns of the egg and larval stages of demersal species with emphasis on winter flounder. Sampling was conducted from December 2000 through June 2001. During this program, three stations were located within navigational channels and three were located within shoal areas in Newark Bay. USACE (2003, 2004, 2005, 2006) documents the continuation of the USACE's monthly trawl and ichthyoplankton sampling program from December 2001 through July 2005.

During 1995-1996, The Port Authority of New York/New Jersey (PANY/NJ) conducted a fisheries sampling program in support of the Newark Bay Confined Disposal Facility Environmental Impact Statement. Monthly surveys, using a 30 foot Wilcox flat bottom trawl were conducted at four shallow water stations in Newark Bay, two channel stations in the Arthur Kill, and one in the Kill Van Kull (LMS, 1996).

USACE-NYD (2012) prepared a summary report focused on juvenile and adult spawning winter flounder occurrence and EFH utilization within the Harbor incorporating data collected as part of the Aquatic Biological Survey bottom trawl program (2002 – 2010) by the USACE-NYD during the Harbor Deepening Project. Six stations were located in channel and non-channel locations within Newark Bay.

The 2006 and 2011-2013 Migratory Finfish Surveys were conducted as part of the New York and New Jersey Harbor Deepening Project, a USACE-NYD and PANYNJ sponsored project to deepen navigation channels to 50 feet to accommodate larger commercial vessels. Six stations were located in channel and non-channel locations within Newark Bay.

The surveys described above were used to prepare a composite summary of the expected seasonal occurrence of EFH-designated species in the Newark Bay area (Tables 3 and 4). The data presented in this assessment were summarized and consolidated from the above mentioned sampling programs. The data are presented for the purpose of identifying general trends in species occurrence and relative abundance within the vicinity of the proposed project site.

Table 3. Ichthyoplankton Catch of EFH-Designated Species in Newark Bay 1999 to 2006.

EFH-Designated Species	Early Life Stage	1999	2000	2001	2002	2003	2004	2005	2006
Winter flounder	Egg	15			6	1	1	4	
	Larvae	34		230	537	626	721	198	97
	Juvenile					2		1	
Atlantic herring	Larvae	6		5		9	8		2
	Juvenile						1		
Windowpane flounder	Egg			396	551	77	256	13	
	Larvae	35		21	10	6	4	37	5
	Juvenile			1	1	3			
Atlantic butterfish	Larvae				1				
Summer flounder	Larvae		6	6	1				

Sources: USACE 2003, 2004, 2005, and 2006.

Table 4. EFH-Designated Species Monthly Finfish Catch Data from Newark Bay Fish Community Studies 1993-2013.

EFH-Designated Species	Average Percent Composition of Monthly Finfish Catch Data												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Overall
Winter flounder	3.2	2.6	5.8	5.4	0.8	3.5	4.2	1.7	0.9	2.1	7.1	7.4	3.72
Little skate	*0.0*	*0.0*	*0.0*	0.0	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0	*0.0*	0.01
Atlantic herring	0.0	*0.0*	0.0	6.7	39.4	10.4	*0.0*	*0.0*	*0.0*	0.0	0.3	0.1	4.75
Red hake	0.7	0.2	0.2	0.4	0.5	0.6	0.3	*0.0*	*0.0*	*0.0*	*0.0*	0.5	0.25
Windowpane flounder	0.4	0.4	0.1	0.5	0.1	0.2	0.0	0.8	0.0	0.3	0.4	0.3	0.25
Winter skate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Clearnose skate	*0.0*	0.0	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.00
Bluefish	*0.0*	*0.0*	*0.0*	*0.0*	0.1	0.5	0.1	0.2	1.7	1.0	*0.0*	*0.0*	0.29

EFH-Designated Species	Average Percent Composition of Monthly Finfish Catch Data												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Overall
Atlantic butterfish	0.0	*0.0*	*0.0*	*0.0*	0.1	0.1	0.3	0.6	0.8	1.0	0.1	0.0	0.26
Summer flounder	*0.0*	*0.0*	*0.0*	0.2	0.5	1.6	2.0	0.3	0.2	0.1	*0.0*	*0.0*	0.42

Italicized numbers indicate none of this species were caught in this month across the survey period.
Sources: LMS 1996; NOAA 1994; USACE 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2013.

4.3 EFH-Designated Species Assessment

Of the eleven species for which EFH has been designated in the Newark Bay area, early life stages (eggs, larvae and juveniles) of five species (winter flounder, Atlantic herring, windowpane flounder, Atlantic butterfish and summer flounder) have been collected there (LMS, 1996; USACE 1999, 2002, 2003, 2003b, 2004, 2005, 2006) (Table 3). The presence of winter flounder and windowpane flounder eggs suggests possible spawning near the project area. Juveniles and/or adults of ten EFH-designated species (winter flounder, little skate, Atlantic herring, red hake, windowpane flounder, clearnose skate, bluefish, Atlantic butterfish, and summer flounder) have been caught in the project area during the various fish community studies performed in Newark Bay and the USACE's winter flounder and migratory finfish surveys conducted for the New York/New Jersey Harbor Deepening Program (USACE 1999, 2002, 2003, 2003b, 2004, 2005, 2006, 2012, 2015)(Table 4).

4.3.1 Winter Flounder

Newark Bay is designated as EFH for all life stages of winter flounder. Winter flounder is a commercially and recreationally important species that resides in NY/NJ Harbor waters. Spawning occurs between February and April in estuaries and bays of the Mid-Atlantic Bight, including NY/NJ Harbor. Adults spawn in late winter through spring, at water temperatures below 15°C, at salinity between 10 - 32 ppt over sand, mud and gravel substrate (< 6 meters deep) (Pereira et al. 1999). Winter flounder eggs are demersal, adhesive, and stick together in clusters. Eggs are typically found in water with temperatures less than 10°C and depths less than 5 meters over sand, muddy sand, mud, and gravel substrates. These substrates may provide EFH for winter flounder spawning adults, eggs, and larvae throughout the estuarine and marine portions of the NY/NJ Harbor. Larvae are non-buoyant and have a strong benthic orientation, often resting on the bottom between swimming efforts (Pearcy 1962). Winter flounder larvae prefer water temperatures less than 15°C, depths less than 6 meters, and a salinity range of 4 to 40 ppt. Juvenile winter flounder use habitats from 1 to 50 meters, at water temperatures below 25°C and at salinity between 10-33 ppt. During summer months, winter flounder adults reside in nearshore coastal waters, with the distance offshore dependent upon water temperature, i.e., the warmer the water temperature the further offshore adults move. Winter flounder adults are typically found on mud, sand, and gravel substrates, at water temperatures below 25°C, salinity between 15-33 ppt, and water depths between 1-100 meters.

Prey items for larval winter flounder include copepod nauplii, small polychaetes and invertebrate eggs (Pereira et al. 1999). Juvenile and adult winter flounder are opportunistic feeders, consuming mostly invertebrates (e.g., amphipods, bivalve siphons, polychaetes, anthozoans), and on rare occasions, small fishes.

Winter flounder adults and juveniles were collected during the PANY/NJ's 1995-1996 Newark Bay trawl survey from April through November, accounting for 2.5% of the total number of fish collected (LMS, 1996). Winter flounder eggs, larvae and juveniles were caught during ichthyoplankton studies performed in Newark Bay from 1999-2006, with larvae being the most abundant life stage caught (USACE 2003, 2004, 2005, 2006). Winter flounder larvae dominated ichthyoplankton connections from the Arthur Kill/Newark Bay area during February-March USACE (2003). Bottom trawl sampling from 2002 to 2010 in the NY/NJ harbor from the winter to early summer revealed winter flounder habitat use varied by size/age class (USACE 2012). Year-1

juvenile densities were significantly higher in the Arthur Kill/Newark Bay area and adult densities were significantly lower in this area compared to the Lower Bay and Upper Bay areas. Year-1 juveniles were most commonly collected in the early months of sampling (January to March) in the Arthur Kill/Newark Bay area. Ripe individuals were collected in February and March and spent individuals were collected thereafter.

Juvenile and adult winter flounder were caught during every month of the year during the various Newark Bay fish community studies from 1993 to 2013, accounting for 3.7% of the overall catch. Adult collections were highest in March and April.

Potential Project Effects on Winter Flounder EFH

All winter flounder life stages are expected to occur within the NBB area. Potential impacts to winter flounder EFH include temporary loss of approximately 15.823 acres of the intertidal and subtidal water column and bay bottom, which includes 1.532 acres from cofferdams around new bridge piers and fenders, 1.141 acres from cofferdams for existing bridge pier and fender removal, 12.529 acres from the construction trestle, and 0.621 acres from construction access and staging. During construction, these temporary impacts would displace all life stages of winter flounder from habitat required for spawning, foraging and growth to maturity. Increases in turbidity caused by spud barges, vessel propeller wash and scouring around cofferdams and trestle piles would disturb additional habitat and may cause burial of winter flounder eggs and newly- metamorphosed larvae through sediment deposition. Impacts also include disturbance and loss of the benthic and pelagic habitats of winter flounder prey organisms. Temporary loss or relocation of benthic prey species will cause winter flounder to move to other feeding habitats within the harbor. These impacts will be limited to the duration of the construction operations except for the area of permanent fill. Juveniles and adults that frequent the project area will actively avoid in-water construction, opting for other suitable habitat within the general vicinity of the project area.

The new bridge piers footings and fenders, and permanent access underneath the bridge structure for maintenance, inspections and security would result in the permanent fill of tidal waters in Newark Bay totaling approximately 5.853 acres (including 3.808 acres of tidal wetland fill). The removal of the existing NBB piers, except for the main span piers that would remain, would result in the gain of 0.817 acres of tidal open waters, and 0.034 acres of tidal wetlands, for a net permanent loss of 5.002 acres of intertidal and subtidal bay bottom. Adopting the NMFS/FHWA time of year restrictions for winter flounder and diadromous species (i.e., placement and removal of cofferdams and trestle piers between July 1 and December 31) would allow construction and demolition work to proceed year-round and would be protective of the sensitive early life stages of winter flounder. Potential long-term impacts may include minor alterations to local bathymetry and hydrodynamics in the area of the new bridge, but this area would still provide suitable depth and habitat substrate types for winter flounder.

Benthic invertebrate communities are expected to recolonize impacted areas following cessation of construction activities (Newell et al. 1998). Areas of temporary and permanent impacts resulting from bridge demolition and construction is a small fraction of the total benthic habitat available in Newark Bay. Impacts to winter flounder EFH from the project are expected to be primarily short-term and largely avoidable through the use of time of year restrictions and cofferdams for in-water work.

4.3.2 Little Skate

Newark Bay is designated as EFH for juvenile and adult stages of little skate (Attachment E-2). This species is typically found on sand or gravel bottoms but has also been reported from mud (Packer et al. 2003b). Little skates generally remain buried in depressions during the day and are more active at night. Juvenile and adult little skates can be found from shallow waters to 110 m in the Mid-Atlantic Bight. The temperature range of little skate is generally 1-21°C, although most are found between 2-15°C. Little skate can tolerate salinity ranges as low as 15-20 ppt but their preferred range is usually 29-33 ppt.

Little skate do not appear to migrate extensively, but they do move to shallow water during the summer and to deep water in fall or early winter. Little skate prey includes small fish, decapod crustaceans, amphipods and polychaetes (Packer et al. 2003b). Only two little skates were caught during the various Newark Bay fish community studies from 1993 to 2013, accounting for 0.01% of the overall catch.

Potential Project Effects on Little Skate EFH

Little skates prefer waters of relatively high salinity and relatively coarse substrates, so it is unlikely that this species will occur in the NBB project area. Potential impacts to little skate EFH could result from disturbance of benthic habitat and prey species. Little skates, if present, may avoid the area to forage in undisturbed habitat. These impacts would be temporary and limited to the area of bottom disturbance. Given the limited extent of the impact area and the relatively low likelihood of this species to be present in Newark Bay, impacts to little skate EFH from the proposed project are expected to be negligible.

4.3.3 Atlantic Herring

EFH for larval, juvenile, and adult stages of Atlantic herring has been designated in Newark Bay (Attachment E-2). Atlantic herring eggs are demersal, stick to the seabed or algae on the ocean floor, and hatch in 10 to 15 days (Reid et al. 1998). Atlantic herring larvae are pelagic and occur throughout the mid-Atlantic Bight at water temperatures below 16 °C, depths from 50 - 90 meters and salinities around 32 ppt. Juveniles and adults occur in schools in temperatures below 10°C at depths from 15 - 135 meters and at salinities from 26 - 32 ppt and above 28 ppt, respectively. Atlantic herring are primarily pelagic but may also be found in shallow, nearshore areas. Atlantic herring juveniles and adults of the George's Bank stock use the New York Bight as a wintering area between December and April, when they may occur in the Newark Bay area (Anthony 1982).

Small numbers of Atlantic herring larvae and one juvenile were caught during ichthyoplankton studies performed in Newark Bay from 1999-2006 and were most commonly collected during February and March (USACE 2003, 2004, 2005, 2006). Juvenile Atlantic herring was the third most caught fish in mid-water trawls in Newark Bay in the spring months but was uncommon or absent in summer or fall (USACE 2015). Overall, Atlantic herring comprised nearly five percent of the catch of the various Newark Bay fish community studies from 1993 to 2013.

Potential Project Effects on Atlantic Herring EFH

Atlantic herring is a schooling pelagic species, not generally associated with bottom habitats or nearshore areas. Atlantic herring larvae and juveniles may be seasonally present in the project area, although larvae prefer deeper water and higher salinities than occur in Newark Bay. Juveniles and adults also prefer deep, cool waters of high salinity. If present in the project area, short-term increases in turbidity caused by construction and demolition activities are not likely to affect this pelagic species. Potential impacts on Atlantic herring EFH from the proposed project are expected to be negligible.

4.3.4 Red Hake

Newark Bay is designated as EFH for egg, larval, juvenile and adult stages of red hake (Attachment E-2). Red hake make seasonal migrations in response to changing water temperatures, inhabiting shallow water in the spring and summer but moving to deep offshore water to over-winter. Eggs and larvae are pelagic and tend to be restricted to deeper marine areas over the inner continental shelf (Able and Fahay, 1998). Red hake eggs are typically found in surface waters with temperature less than 10°C and salinity less than 25 ppt while larvae are typically found in surface waters with temperatures below 19°C, depths less than 200 meters, and salinities greater than 0.5 ppt. Eggs and larvae are most often found throughout the mid-Atlantic Bight from May through December, and peak abundance is during June and October (Wilk et al. 1990). Larval red hake typically feed on copepods (Steimle et al. 1999).

Juveniles are pelagic until they reach approximately 25 mm total length (TL) or greater, at which time they become demersal, seeking shelter along the continental shelf bottom within depressions in the sediment or among live sea scallop beds (Steimle et al. 1999). Juveniles also may associate with other forms of shelter, including debris and artificial reefs (Steimle et al. 1999). Juveniles are typically found on shell substrates with water temperatures below 16°C, depths of less than 100 meters, and a salinity range of 31 to 33 ppt. Juveniles remain associated with sea scallop beds through their first fall and winter (until approximately 90-116 mm in length), and then occupy either estuarine or inshore marine waters over sand or mud substrate, prior to joining adults in the offshore migration during their second winter. Juvenile red hake typically feed on benthic and pelagic crustaceans such as decapod shrimp, mysids, euphausiids and amphipods (Steimle et al. 1999). Adult red hake are common on soft sediments and are usually found in depressions in soft sediments or shell beds. Adults occur in the Hudson-Raritan estuary during cooler seasons but are not abundant. Adult red hake are usually found at a salinity range of 20-33 ppt and DO concentrations greater than 6 mg/L in the Hudson-Raritan estuary (Steimle et al. 1999).

No red hake eggs or larvae were collected in Newark Bay during the USACE's ichthyoplankton sampling programs. Small numbers of juvenile red hake were caught from the months of December through July during the various Newark Bay fish community studies from 1993 to 2013, accounting for 0.25% of the overall catch. Two juvenile red hake were caught in mid-water trawls targeting pelagic species in Newark Bay (USACE 2015).

Potential Project Effects on Red Hake EFH

Red hake may be present within Newark Bay however, the frequency of their occurrence would be limited by water quality and habitat preferences. Because red hake eggs and larvae are pelagic and tend to be primarily occur in areas east and north of the Hudson River (Able and Fahay, 1998), impacts to EFH of these life stages from the project are not anticipated. The shelly substrate preferred by juveniles for shelter is lacking in the project area. Juveniles and adults are only likely to occur in the project area in low abundance and only during the colder months. Potential impacts to juvenile and adult EFH would be limited to disturbance of bottom habitat during construction and demolition activities. These activities would cause sediment resuspension, indirectly affecting red hake through a temporary loss of foraging habitat and benthic prey species. Any potential impact would be limited to winter and spring, when juveniles and adults are more likely to occur in the inshore waters of the Hudson-Raritan estuary. Because few red hake have been collected near the project area and no eggs or larval red hake have been reported, the proposed bridge construction and demolition is expected to have a negligible impact on EFH of this species.

4.3.5 Windowpane Flounder

Newark Bay is designated as EFH for all life stages of windowpane flounder (Attachment E-2). Windowpane flounder occur at all depths in estuaries of the Mid-Atlantic Bight, including the NY/NJ Harbor, with juveniles and adults seasonally most abundant in deeper channels occurring over mud or fine-grained sand (Chang et al. 1999). Spawning adults, eggs, and larvae are often observed from February to December, with a spring spawning event (peak in May) in the polyhaline portion of estuaries and a fall-spawning event (peak in October) in offshore waters of the continental shelf. Eggs and larvae are concentrated in the mid to upper water column, and juveniles and adults prefer bottom habitats of mud or fine-grained sand. Larvae are pelagic, settling to the bottom at approximately 10-20 mm TL, and occur in the brackish portion of the estuary, primarily in spring (Able and Fahay, 1998). Juveniles, adults and spawning adults are typically found on bottom habitats with water temperatures below 21°C, salinity between 5-36 ppt and water depths between 1-75 meters. Eggs and larvae are respectively found in surface and pelagic waters with temperatures below 20°C.

Windowpane flounder eggs, larvae and juveniles were caught during ichthyoplankton studies performed in Newark Bay from 1999-2006, with eggs being the most abundant life stage caught (USACE 2003, 2004, 2005, 2006). Small numbers of juvenile and adult windowpane flounder were caught in every month of the year during the various Newark Bay fish community studies from 1993 to 2013, accounting for 0.25% of the overall

catch. Five juvenile windowpane flounder were caught in mid-water trawls targeting pelagic species in Newark Bay (USACE 2015).

Potential Project Effects on Windowpane Flounder EFH

All windowpane flounder life stages are expected to occur within Newark Bay. Potential impacts to windowpane flounder EFH include the temporary loss of spawning and nursery habitat during the spring-spawning season from increased turbidity and displacement from cofferdam areas. As windowpane eggs and larvae are pelagic, they would not be expected to remain in the project area for very long. No significant impact to spawning habitat is expected because this species typically spawns in deeper areas of the Hudson-Raritan estuary such as the Lower Bay. Impacts to windowpane flounder juvenile and adult EFH include temporary foraging habitat loss and impaired sight-feeding resulting from turbidity and sedimentation increases due to cofferdam and trestle pile installation and removal, barge spuds and vessel propeller wash, though a significant portion of windowpane flounder's prey is pelagic and would be less affected. Windowpane flounder are highly mobile and would likely move to undisturbed areas during construction activities. Natural sedimentation and subsequent recolonization by benthic invertebrates and other prey are expected to occur within a year following bridge construction. Juveniles and adults would also permanently lose access to around 5.002 acres of intertidal and subtidal bay bottom. However, the area of impact is relatively small compared to the available intertidal and subtidal habitat in Newark Bay. Adopting the NMFS/FHWA time of year restrictions for winter flounder and diadromous species (i.e., placement and removal of cofferdams and trestle piers between July 1 and December 31) would allow construction and demolition work to proceed year-round and would be protective of the windowpane flounder spring spawning period. Impacts to windowpane flounder EFH from the proposed project are expected to be primarily temporary and minor.

4.3.6 Winter Skate

Newark Bay is designated as EFH for juvenile and adult winter skate (Attachment E-2). This species is typically found on sand or gravel bottoms, but has also been reported on mud bottoms (Packer et al. 2003a). Winter skates remain buried in depressions during the day and are more active at night. Winter skates can be found from shallow waters to 371 m in the Mid-Atlantic Bight, but are more abundant at depths less than 110 m. The temperature range of winter skate is generally -1 to 19°C. Winter skate can tolerate salinity ranges between 20-35 ppt but their preferred range is usually 23-32 ppt. Winter skates do not migrate extensively; however, they tend to be less abundant in the NY/NJ Harbor during summer months. Winter skate typically prey upon polychaetes, amphipods, decapods, isopods, bivalves and smaller fish such as alewives, blueback herring and butterfish (Packer et al. 2003a). Winter skate was not caught during the various Newark Bay fish community studies from 1993 to 2013.

Potential Project Effects on Winter Skate EFH

Winter skate prefer waters of relatively high salinity, so it is unlikely that this species will occur in the project area. Potential indirect impacts to winter skate EFH could result from disturbance of benthic habitat and prey species. Winter skates, if present, may avoid the area to forage in undisturbed habitat. These indirect impacts would be temporary and limited to the area of bottom disturbance. Given the limited extent of the impact area and the relatively low likelihood of winter skates to be present in Newark Bay, impacts to winter skate EFH from the proposed project are expected to be negligible.

4.3.7 Clearnose Skate

Newark Bay has been designated as EFH for juvenile and adult clearnose skate (Attachment E-2). Clearnose skates prefer soft bottom habitats, but can also be found on rocky or gravelly bottoms. Juveniles and adults are most abundant inshore in the summer months and less abundant in the cooler months of autumn, winter and spring. Bigelow and Schroeder (1953) reported clearnose skate occurring off New Jersey and New York from late April to November. In the Hudson Raritan Estuary, juveniles mostly occur at depths of 5 to 7 meters,

temperatures between 13 and 24°C, and salinities ranging from 21 to 31 ppt (Packer et al. 2003). Adults in the estuary mostly occur at depths of 5 to 8 meters, temperatures between 9 and 24°C, and salinities ranging from 25 to 30 ppt. Common prey items include polychaetes, amphipods, mysid shrimp, crab and fish including butterfish, scup (*Stenotomus chrysops*) and weakfish (*Cynoscion regalis*) (Bowman et al. 2000). Only one clearnose skate was caught during the various Newark Bay fish community studies from 1993 to 2013.

Potential Project Effects on Clearnose Skate EFH

Since clearnose skate prefer waters of relatively high salinity, it is unlikely that this species will occur in the project area. The average salinity of the project area is well below the preferred salinity range of this species in the Hudson Raritan Estuary. Clearnose skates, if present, may avoid the area to forage in undisturbed habitat during construction and demolition activities. Given the limited extent of the impact area and the relatively low likelihood of this species to be present in Newark Bay, impacts to clearnose skate EFH from the proposed project are expected to be negligible.

4.3.8 Longfin Inshore Squid

EFH has been designated for eggs of the longfin inshore squid in Newark Bay (Attachment E-2). The longfin inshore squid is a schooling molluscan species distributed in continental shelf and slope waters from Newfoundland to the Gulf of Venezuela and occurs in commercial abundance from southern Georges Bank to Cape Hatteras (Jacobson, 2005). Longfin inshore squid migrate offshore during late autumn and overwinter in warmer waters along the edge of the continental shelf, returning inshore during the spring and early summer. Spawning has been reported from late spring to early summer in the Middle Atlantic. Egg masses are commonly found attached to rocks and small boulders on sandy/muddy bottom and on aquatic vegetation, such as Fucus spp., *Ulva lactuca*, *Laminaria* spp. and *Porphyra* spp. The eggs are demersal, are generally laid in waters < 50 m and are found at temperatures of 10-23° C and salinities of 30-32 ppt Development time varies from 10 to 27 days, depending on water temperature. The larvae are pelagic near the surface and occur at temperatures of 10-26° C and salinities of 31.5-34.0 ppt.

One longfin inshore squid was caught in Newark Bay in a navigational channel in July 1993 during a USACE trawl survey (USACE 1997). Ichthyoplankton studies within Newark Bay have not caught the planktonic larval stage of this species.

Potential Project Effects on Longfin Inshore Squid EFH

The seaweeds *Fucus* spp., and *Ulva lactuca* occur in areas of hard substrate (riprap, bulkheads, debris) within Newark Bay and may provide habitat for egg mass attachment, however substrates in the NBB area are silt-sand dominant. The bridge piers themselves may support the appropriate aquatic vegetation for eggs, so bridge construction and demolition may potentially result in a temporary loss of egg habitat. However, the typical salinity ranges in Newark Bay are below 30 ppt, whereas the salinity ranges described in the EFH Source Document (Jacobson, 2005) for longfin inshore squid eggs and larvae are above 30ppt. Any impacts to longfin inshore squid from the project are expected to be negligible.

4.3.9 Bluefish

Newark Bay is designated as EFH for juvenile and adult stages of bluefish (Attachment E-2). Juveniles are pelagic, using estuaries as nursery areas, and can be found over sand, mud, silt, or clay substrates (Fahay et al. 1999). Juveniles typically inhabit estuaries from May to October, preferring temperatures between 19-24°C, and salinities between 23-36 ppt. Juveniles have been reported to intrude into waters with salinities as low as 3 ppt. Juvenile bluefish prey upon polychates, shrimp, and forage fish including bay anchovy, menhaden, and river herring.

Adults travel in pelagic schools and are generally not associated with bottom habitats. They prefer temperatures between 18-22 °C, and salinity above 25 ppt. Adults are highly migratory and seasonally occur in NY/NJ Harbor from April to October. Bluefish adults generally migrate in warm waters, moving north to the New York Bight and southern New England during the spring and summer and to the South Atlantic Bight and/or offshore during the fall and winter (Shepherd and Packer 2006). Adults feed on a wide variety of available forage fish, such as bay anchovy, menhaden and river herring (alewife and blueback herring).

Small numbers of bluefish were caught from May through October during the various Newark Bay fish community studies from 1993 to 2013, accounting for 0.29% of the overall catch, however as bluefish are pelagic, bottom trawling is not an effective means of sampling for this species. Bluefish was the sixteenth most common fish caught in USACE mid-water trawls in Newark Bay in the spring months, moving up to sixth most common fish caught in the summer and fall months (USACE 2015).

Potential Project Effects on Bluefish EFH

Relatively low abundance of bluefish in Newark Bay bottom trawl surveys is indicative of the pelagic lifestyle of this species. The seasonal occurrence and pelagic behavior of bluefish and their prey greatly limits bridge construction and demolition impacts on EFH. Adopting the NMFS/FHWA time of year restrictions for winter flounder and diadromous species (i.e., placement and removal of cofferdams and trestle piers between July 1 and December 31) would allow construction and demolition work to proceed year-round and would be protective of migrating river herring which are important forage species for juvenile and adult bluefish. Impacts on bluefish EFH from the proposed project are expected to be negligible.

4.3.10 Atlantic Butterfish

Newark Bay is designated as EFH for larval Atlantic butterfish (Attachment E-2). Butterfish range from Nova Scotia to Florida along the Atlantic coast and are euryhaline (5-32 ppt) and eurythermal (4-21°C) (Cross et al. 1999). Butterfish migrate seasonally between offshore waters in the southern part of their range during winter and coastal waters in the northern part of their range during the summer. Spawning occurs primarily over continental shelf waters in the Mid Atlantic Bight between May and October, although some eggs and larvae have been collected in coastal and estuarine waters (Able and Fahay, 1998).

Larvae are typically found at temperatures between 9-19 °C, depths greater than 10 meters, and salinity ranging between 6-37 ppt. Juveniles and adults are typically found over sandy and muddy substrates at temperatures between 3-28 °C, depths greater than 10 meters, and salinity ranging between 4-26 ppt.

Larval, juvenile, and adult butterfish are pelagic, occurring in the Hudson-Raritan estuary during warmer summer months in both shallow and deeper bay waters. Juveniles form loose schools often near the surface, and are found over a range of sand, mud and mixed fine grain substrates. During the summer, butterfish have been reported over shallow flats, in sheltered bays, estuaries, and the surf zone. Larger juveniles and adults may congregate near the bottom during the day and move upward at night. Prey species include small fishes and crustaceans such as copepods, amphipods, decapods and polychaetes (Cross et al. 1999).

Only one butterfish larva was caught during ichthyoplankton studies performed in Newark Bay from 1999-2006 (USACE 2003, 2004, 2005, 2006). Small numbers of butterfish were caught from May through December during the various Newark Bay fish community studies from 1993 to 2013, accounting for 0.26% of the overall catch, however as butterfish are pelagic, bottom trawling is not an effective means of sampling for this species. Juvenile and adult Atlantic butterfish was the ninth most common fish caught in mid-water trawls in Newark Bay in the spring months, moving up to the second most common fish caught in the summer months and moving down to tenth most common fish caught in the fall (USACE 2015).

Potential Project Effects on Atlantic Butterfish EFH

Water temperature and salinity ranges in Newark Bay are within the ranges preferred by larval Atlantic butterfish, however most of the bay is shallower than the 10+ meter depth preference of this life stage. Larvae have been virtually absent from ichthyoplankton collections in Newark Bay. Bridge construction and demolition will likely cause periods of increased turbidity and sedimentation as sheetpile cofferdams and trestle piles are installed and removed, but as larvae are pelagic and benthic organisms comprise only a portion of butterfish diets, potential impacts would be temporary and limited to areas of active construction. Therefore, any potential impacts to Atlantic butterfish EFH from the proposed project would be negligible.

4.3.11 Summer Flounder

Newark Bay is designated as EFH for larval, juvenile, and adult stages of summer flounder (Attachment E-2). The study area does contain some summer flounder HAPC, in the form of *Spartina alterniflora* marshes and the NBB bridge piers and other hard substrate likely support macroalgae. In the New York Bight, summer flounder usually occupy inshore regions during the warmer months and move offshore for the winter season. Summer flounder can camouflage themselves to match the surrounding substrate, to avoid predation and conceal themselves from prey. They feed by sight and are most active during daylight hours. Summer flounder larvae and juveniles are opportunistic feeders but primarily feed on microcrustaceans and small polychaetes (Packer et al. 1999). Adult prey includes shrimp, mysids, anchovies (Anchoa spp.) and Atlantic silversides.

The pelagic larvae are found over the inner and outer continental shelf, and are transported to estuarine nursery areas by currents. Larvae occur across a wide range of salinities, but are most often captured in the higher salinity portions of estuaries. Larvae are most abundant between 9 and 18°C and at depths from 10 to 70 meters in the Mid Atlantic Bight.

Juveniles move into shallow bays and estuaries for the spring, summer and autumn months, and are usually found in depths of 0.5 to 5.0 meters, using these areas as nursery habitat. Juveniles can be found on mud and sand substrates in flats, channels, salt marsh creeks, and eelgrass beds. Juvenile summer flounder are tolerant of the wide ranges of temperature and salinity of estuarine habitats, and can withstand temperatures from 3 to 27°C and salinities from 10 to 30 ppt (Packer et al. 1999).

Adult summer flounder are found offshore during colder months on the outer continental shelf. Adults usually return inshore to coastal waters of the New York Bight in April, and reach their peak abundance during the warm summer months of July and August (Packer et al. 1999). They are often found in the high salinity portions of estuaries, and have been reported as preferring sandy habitats, but can be found in a variety of habitats with both mud and sand substrates, including marsh creeks, seagrass beds, and sand flats. Similar to juveniles, adults can tolerate a wide range of temperatures.

Small numbers of summer flounder larvae were caught during ichthyoplankton studies performed in Newark Bay from 1999-2006 (USACE 2003, 2004, 2005, 2006). Small numbers of summer flounder were caught from May through December during the various Newark Bay fish community studies from 1993 to 2013, accounting for 0.42% of the overall catch.

Potential Project Effects on Summer Flounder EFH

As summer flounder larvae are pelagic, short-term increases in turbidity and sedimentation from bridge construction and demolition are not expected to significantly impact EFH of this life stage. Impacts to summer flounder juvenile and adult EFH include temporary foraging habitat loss and impaired sight-feeding resulting from turbidity and sedimentation increases due to cofferdam and trestle pile installation and removal, barge spuds and vessel propeller wash. However, summer flounder are highly mobile and would likely move to undisturbed areas during construction activities. Natural sedimentation and subsequent recolonization by benthic invertebrates and other prey are expected to occur within a year following bridge construction. Juveniles and adults would also permanently lose access to approximately 5.002 acres of intertidal and subtidal

bay bottom. The area of impact is relatively small compared to the available intertidal and subtidal habitat in Newark Bay. HAPC for summer flounder that is present in the NBB area includes macroalage in shallow areas of hard substrate and *Spartina alterniflora* marshes along the western shore that would be temporarily and permanently impacted by bridge construction and demolition. Temporary wetland losses in this area would be 0.185 acres due to cofferdam and trestle pile installation, and permanent losses would be 1.055 acres due two new pier footings and one fender, and permanent access underneath the bridge structure for maintenance, inspections and security. Wetland mitigation plans are only developed conceptually at this time via the purchase of credits from a wetland mitigation bank, but would mitigate for permanent impacts to wetlands as required under state and federal regulations. Taking into consideration the wetland mitigation, impacts to summer flounder EFH are expected to be primarily temporary and minor.

4.4 Forage Species

A number of forage species occur in Newark Bay and its tributaries. While EFH has not been designated for many forage species, impacts to these species can affect habitat for EFH-designated species which rely on them as a food source. In order to assess impacts to EFH through adverse effects on forage species, potential project impacts to four representative forage species commonly found in Newark Bay (i.e., bay anchovy, Atlantic menhaden, blueback herring and alewife) are discussed below. Figure 2 portrays the relative abundance of these migratory species from spring to fall in the Newark Bay area.

4.4.1 Bay Anchovy

The bay anchovy is a schooling species and is one of the most abundant species in Atlantic coast estuaries. As such, it is an extremely important prey resource for larger, predatory fishes. Bay anchovy are widely distributed throughout the lower Hudson River estuary and its tidal tributaries. Dovel (1981) collected bay anchovies within the Hudson River Estuary in water temperatures from 2 to 27 ºC and salinities ranging from 25-30 ppt. Bay anchovy was the second most common fish caught in mid-water trawls in Newark Bay in the spring, and the most commonly caught in the summer and fall months (USACE 2015). Bay anchovy accounted for 98% of all fish collected during the USACE migratory finfish survey and were collected during every season and from all New York/New Jersey harbor regions.

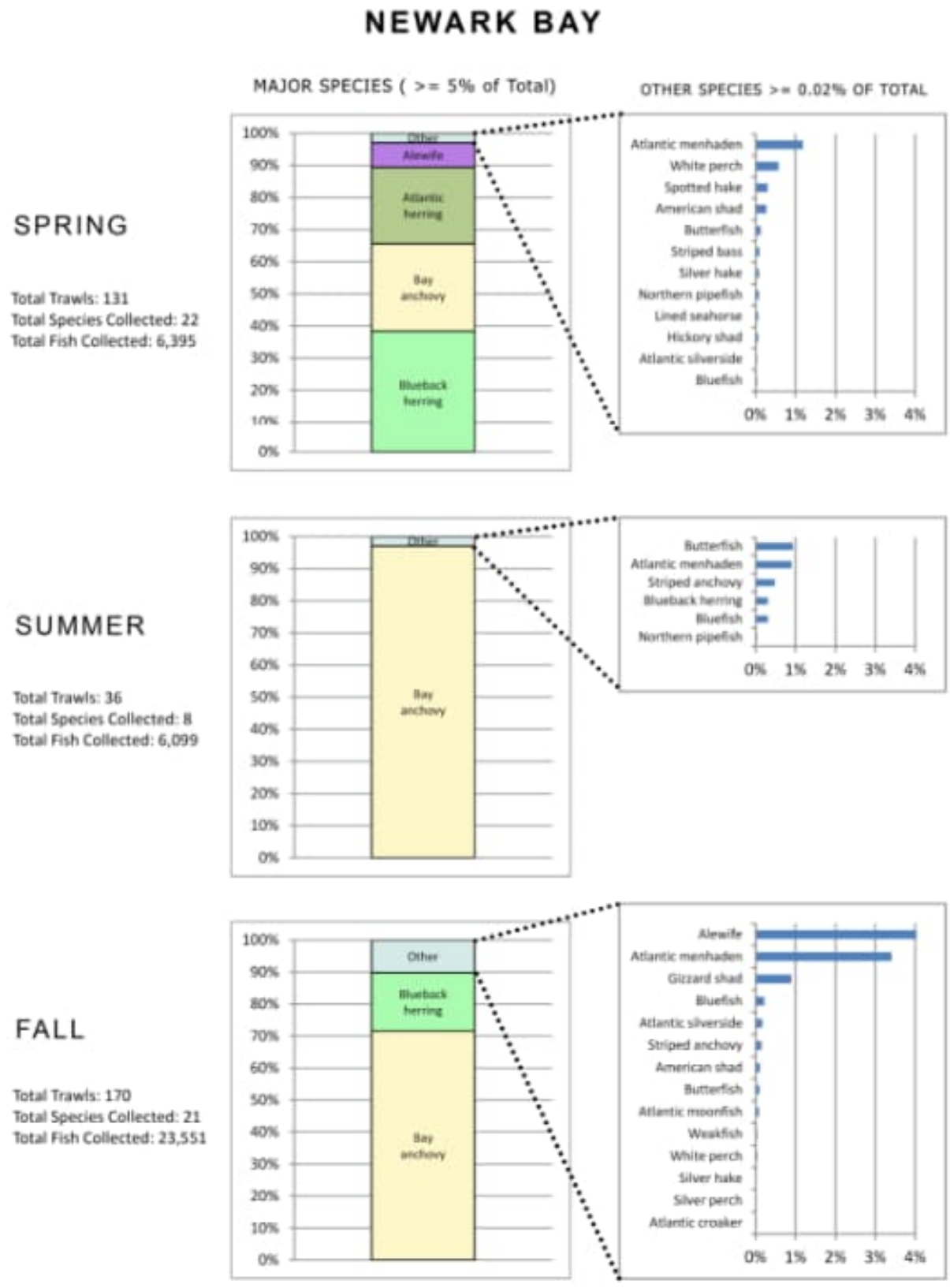


Figure 2. Mid-water finfish collections from the Newark Bay Harbor region 2006-2013 (USACE 2015)

Potential impacts to bay anchovy may result from increases in turbidity from cofferdam and trestle pile installation and removal. Bay anchovy are planktivorous and increased turbidity in the vicinity of construction could impair feeding efficiency. However, bay anchovy are highly mobile fish that occur in often turbid estuary habitats. Because of their pelagic nature, potential impacts to this forage species from the proposed project are expected to be short-term and minimal.

4.4.1 Atlantic Menhaden

The Atlantic menhaden, locally referred to as "bunker" is a seasonally abundant herring, occurring in large schools in coastal bays and estuaries. Atlantic menhaden migrate seasonally along the Atlantic coast, moving north through the mid-Atlantic Bight during Spring and south during Fall to overwinter in waters south of Cape Hatteras (Able and Fahay, 1998). Atlantic menhaden spawn in continental shelf waters and the lower reaches of estuaries and coastal bays along the U.S. Atlantic coast (Dovel, 1971). Large schools of juvenile menhaden use estuaries as nurseries during the summer before migrating offshore in the fall. Adult menhaden have a broad temperature range of 0 to 25°C, and a wide salinity range of <1 to 36 ppt (Ahrenholz et al. 1989). Adults are strictly filter feeders, grazing on phytoplankton and small zooplankton (Ahrenholz et al. 1987). Juvenile and adult Atlantic menhaden are seasonally abundant throughout NY/NJ Harbor and were the fifth most caught fish in Newark Bay in the spring, increasing to third most caught fish in summer, and fourth most caught species in fall in USACE's mid-water migratory fish surveys (USACE 2015).

Potential impacts to Atlantic menhaden may result from increases in turbidity from cofferdam and trestle pile installation and removal. This species is largely planktivorous and increased turbidity caused by construction could impair feeding efficiency. However, this highly mobile species regularly experiences the often turbid conditions of estuaries and can avoid areas of increased turbidity. Because of their pelagic nature, potential impacts to Atlantic menhaden from the proposed project are expected to be short-term and minimal.

4.4.2 River Herring

River herring (alewife and closely related blueback herring) are anadromous species with similar distributions, ecological roles and environmental requirements. The alewife, an anadromous species, inhabits waters from the Gulf of Saint Lawrence to South Carolina, occurring primarily between the Gulf of Maine and the Chesapeake Bay. Adult alewives enter the NY/NJ Harbor between late-February and mid-March moving upstream to spawn in freshwater tributaries in relatively shallow water with slow currents (Schmidt et al. 1988; Everly and Boreman 1999). Alewives typically spawn three to four weeks before blueback herring (Loesch 1987 in ASMFC 2009), when water temperatures rise to approximately 10°C. Alewife larvae and juveniles remain in their freshwater nurseries until late May or June before moving downstream as young-of-the-year into the lower estuary where they remain until moving into the ocean in November (Stone et al. 1994, Everly and Boreman 1999). It is generally accepted that juveniles join the adult population at sea within the first year of their lives and follow a north-south seasonal migration along the Atlantic coast, similar to that of American shad (Neves 1981). Alewife was the fourth most common fish caught in mid-water trawls in Newark Bay in the spring but was infrequently caught in summer after the spawning run had passed through the bay, and then were the third most caught fish in the fall in USACE's mid-water migratory fish surveys (USACE 2015).

Blueback herring inhabit coastal and estuarine waters from Nova Scotia to Florida, with concentrations in the Middle and South Atlantic Bight. In general, blueback herring have a more southern distribution than alewife (Mullen et al. 1986). Similar to alewife, blueback herring are present in coastal ocean waters prior to entering estuaries on their annual spawning runs during the spring (Schmidt et al. 1988). Prior to the spawning run, adult blueback herring stage in estuaries at the mouth of natal rivers in March and early April when water temperatures are approximately 4-9 °C (Loesch and Lund 1977, Able and Fahay 2010). Adult blueback herring enter the Hudson-Raritan Estuary in early March prior to their migration to spawning areas from May to July (Stone et al. 1994). Adult blueback herring swim at mid-water depths and have been documented to feed during their freshwater migration (Monroe 2000). The blueback herring spawning period usually begins about a month later than that of alewife (Loesch 1987) and they prefer deep freshwater habitats with swift currents over hard

gravel or sand substrates (Loesch and Lund 1977, Everly and Boreman 1999). After spawning, blueback herring move into the lower estuary and coastal ocean waters, although a few adults may remain in the estuary through winter (Stone et al. 1994). Juvenile blueback herring begin migrating downstream to the estuary at the end of summer, approximately a month after American shad and alewife (Marcy 1976, Monroe 2000 and references therein). By the end of November, juveniles have typically returned to the ocean, though some evidence of juvenile overwintering in estuaries has been reported in New Jersey and the lower Connecticut River (Monroe 2000 and references therein). Aside from a few juveniles overwintering within estuaries during their first year, researchers assume that most juveniles join the adult population at sea within the first year of their lives and follow a north-south seasonal migration along the Atlantic coast, where changes in temperature likely drive oceanic migration (Neves 1981). Blueback herring was the most common fish caught in mid-water trawls in Newark Bay in the spring, decreasing to fifth most common fish in summer and increasing to second most common fish caught in the fall months (USACE 2015).

Potential impacts to river herring may result from increases in turbidity from cofferdam and trestle pile installation and removal. River herring are planktivorous and do feed on their springtime upstream migration, so turbidity increases could impair feeding efficiency. Adopting the NMFS/FHWA time of year restrictions for winter flounder and diadromous species (i.e., placement and removal of cofferdams and trestle piers between July 1 and December 31) would allow construction and demolition work to proceed year-round and would be protective of springtime upstream migration of river herring. As cofferdams and trestle piles would not substantially block the waterway, the fall time of year restriction would not be warranted. Impacts to river herring from the proposed project are expected to be short-lived and negligible.

5 Assessment Conclusion

Review of the life histories of the EFH-designated species for the NBB project area and indicates that the habitat, water quality and other environmental conditions support most of these species and life stages. This is supported by fisheries surveys documenting most of the species and life stages that NOAA Fisheries designates Newark Bay as EFH for. Adults of the EFH-designated species winter flounder and windowpane flounder were caught in every month of the year in Newark Bay and eggs, larvae and juveniles of both species have been caught there. Summer flounder larvae, juveniles and adults have been caught on a seasonal basis. Little skate, Atlantic herring, red hake, clearnose skate, bluefish, and Atlantic butterfish are seasonally present in the Newark Bay area. Longfin inshore squid may be seasonally present in Newark Bay, but early life stages have not been caught.

Recent mid-water trawl surveys (USACE 2015) identified considerable presence of pelagic species that some EFH-designated species (i.e., bluefish) prey on. These pelagic forage species are poorly represented in bottom trawls more historically used to sample the Newark Bay fish community. Bay anchovy and Atlantic menhaden are seasonally abundant in Newark Bay and alewife and blueback herring annually pass through Newark Bay on their spring spawning runs.

5.1 Temporary Impacts

Temporary impacts to EFH would total approximately 15.823 acres of tidal waters and wetlands, split between 10.374 acres of subtidal shallows and open waters and 5.449 acres of tidal wetlands. This includes a tidal wetland connected via culvert to the east bank Newark Bay, which would experience temporary impacts of 0.224 acres for construction access, and 0.010 acres for the placement of cofferdams around new bridge piers; however, Wetland DFG is connected to the Newark Bay via culvert and does not likely provide suitable habitat for most species found in tidal water column and benthic habitats. Within Newark Bay, temporary impacts to surface waters include 2.02 acres for the placement of cofferdams around the new and existing bridge pier footings and fenders and 8.354 acres for the construction trestle. Within tidal wetlands of Newark Bay, temporary impacts would include 0.653 acres for the placement of cofferdams around the new and existing bridge pier footings and fenders 4.175 acres for the construction trestle, and 0.621 acres for construction access

and staging areas. These impacts to Newark Bay and its tidal wetlands would last for the for the duration of construction, or around seven years, but would not be simultaneous because of construction sequencing.

Additional temporary impacts would result from the installation and removal of cofferdam sheetpiles, construction trestle pipe piles, spud barge movements and associated vessel propeller wash in the shallow waters of Newark Bay. Small turbidity increases are expected to occur during construction from these activities which in turn may impact some EFH-designated species that are sensitive to water quality fluctuations. Flounder species are particularly susceptible to bay bottom disturbance because of their demersal habitat preference and dependence on benthic forage species. Winter flounder eggs, which are demersal, adhesive, and stick together in cluster are particularly susceptible to burial from sediment resuspension and deposition. However, turbidity in Newark Bay is naturally highly variable, depending on freshwater inflow, strong tidal currents, storms, and other factors.

Other EFH-designated species (little skate, Atlantic herring, red hake, clearnose skate, bluefish, and Atlantic butterfish) are less demersal or fully pelagic and are only seasonally present in the Newark Bay area. Pelagic species, including forage species of EFH-designated species are expected to resume use of temporarily lost portions of the water column following bridge construction and demolition. Any temporary impacts to pelagic species from the proposed project are expected to be negligible.

Upon completion of bridge construction, areas of water column and benthic habitat occupied by cofferdams and trestle piles will be available to all fish species. A total of 2.02 acres of benthic habitat temporarily lost due to cofferdam placement would be devoid of benthic forage species after cofferdam removal. Substrates around the new bridge piers and in areas where the existing NBB piers were removed would be recolonized by mobile organisms from adjacent unaffected areas and by natural recruitment. Recovery of the natural benthic assemblage to baseline conditions of abundance, biomass, and community composition should occur within 1-5 years in most cofferdam areas where sediment type and hydrodynamics are remains unchanged (Newell et al. 1998). The presence of the new bridge piers will alter hydrodynamics in the immediate area around each bridge pier, so sediments may be coarser adjacent to piers due to lack of settlement of silt particles and a different benthic community composition may result in these areas. Areas of pier removal would be backfilled to adjacent grades with sand and would become naturally recolonized over time. Areas of salt marsh temporarily impacted by construction trestles and cofferdams would be regraded to original elevations and replanted with native salt marsh species. Permit-mandated monitoring would ensure that restored salt marsh areas meet performance standards.

5.2 Permanent Impacts

Permanent impacts to EFH would total approximately 5.853 acres of tidal waters and wetlands, split between of 2.045 acres of subtidal shallows and open waters and 3.808 acres of tidal wetlands, and resulting from bridge piers footings and fenders, and permanent access underneath the bridge structure for maintenance, inspections and security. The removal of the existing NBB bridge footings will result in the gain of 0.817 acres of tidal waters, and 0.034 acres of tidal wetlands, for a net permanent habitat loss of 5.002 acres of intertidal and subtidal bay bottom. Flounder species would likely be the EFH-designated species most affected by the loss of bay bottom, as flounders are largely demersal and require this habitat for shelter and foraging. Winter flounder also require fine-grained bottom habitat for spawning. However, the area of loss is relatively small compared to the overall area of intertidal and subtidal shallows available in Newark Bay. The loss of bay bottom would be somewhat offset by the habitat functions provided by the new bridge piers. The intertidal and subtidal surfaces of the new bridge piers will provide hard substrate for the epibenthic fouling estuarine community, such as mussels, barnacles, and tunicates etc., and will likely support algae, and will function as fish habitat for pelagic and structure-oriented fish species.

5.3 Impact Avoidance, Minimization and Mitigation

Fisheries data for Newark Bay indicate considerable usage by all life stages of winter flounder and diadromous runs of blueback herring, alewife and other species. Observance of the NMFS/FHWA in-water Time of Year restrictions from January 1 to June 30 for New Jersey (Table 2) would minimize turbidity-related impacts to winter flounder spawning in the project area and river herring migration through Newark Bay to upstream freshwater spawning habitat. Work could proceed within cofferdams installed outside of this restriction period. Project construction would not substantially block Newark Bay in the fall, so the diadromous fish restriction from September to November 30 may not be warranted. Submerged aquatic vegetation is not present in Newark Bay. The overwintering blue crab and striped bass restriction period from November 15 to April 15 would be substantially protected by observing the winter flounder and diadromous fish restriction periods from January 1 to June 30.

BMPs will be used to avoid and minimize impacts to EFH as specified in the project permit requirements. These practices are expected to include the following: constructing and demolishing bridge piers within cofferdams to reduce sediment and contaminant resuspension; vibratory pile-driving of sheetpile cofferdams and use of turbidity booms and/or air bubble curtains to minimize noise generation and sediment resuspension and escapement; and installation of trestle piers within casings using compressed air to reduce noise transmission to surrounding waters. Potential soil stockpile erosion into Newark Bay will be minimized through the use of standard BMPs, including fabric lined silt fences or hay bales of hay.

Salt marsh adjacent to the NBB are designated as HAPC for summer flounder. Impacts to larvae could include loss of individuals during construction (direct impact), and increased turbidity and reduced water quality (indirect impacts) that would affect habitat condition and feeding. These impacts would be located along the western shoreline of Newark Bay where approximately 1.055 acres of permanent impacts would occur due two new pier footings and one fender, and permanent access underneath the bridge structure for maintenance, inspections and security, and 0.185 acres of temporary impacts would occur to tidal marsh habitat due to cofferdam and trestle pile installation to staging areas, cofferdam sheeting around pier footings, stormwater basin access buffers, and trestle piles.

However, there is no region-wide mapping of summer flounder EFH and GARFO indicates that local sources and on-site surveys may be needed to identify submerged aquatic vegetation beds (GARFO 2021). The tidal wetland connected to the eastern shore of Newark Bay via culvert the within the infield areas of Route 440 would not likely provide this habitat. However, due to its, Direct impacts within Newark Bay are expected to be minor because juvenile and adults are mobile and would likely move from the study area due to disruptions from construction. Thus, future surveys would be performed to delineate the extent of vegetated shallows within the limits of the Proposed Action identified on preliminary design plans. Following construction, temporarily impacted tidal wetlands would be graded to appropriate elevations, replanted with native salt marsh species and would be subjected to permit-mandated monitoring to ensure restoration success. Permanent losses of salt marsh would be mitigated at a 3:1 ratio through the restoration of these habitat types within the watershed.

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