THIS PAGE PURPOSEFULLY BLANK

Annex A

PUBLIC AND AGENCY COORDINATION

Table of Contents

Public Notice Announcing EA Preparation

Mailing List

Table: Summary Record of Coordination During EA Preparation

Records of Notable Coordination During EA Preparation

Cultural and Historic Resources Coordination

EA PREPARATION NOTICE

US Army Corps
of Engineers
Baltimore District

APR 10 2018

Public Notice

Atlantic Coast of Maryland Shoreline Protection Project

Preparation of Supplementary Environmental Assessment Offshore Shoals in Federal Waters as Sand Sources

All Interested Parties: The U.S. Army Corps of Engineers, Baltimore District (USACE), in partnership with the Maryland Department of Natural Resources (MD DNR), is proposing to dredge offshore shoals in federal waters to obtain sand for the Atlantic Coast of Maryland Shoreline Protection Project (project) by the year 2022. The project is located in the Town of Ocean City, Worcester County, Maryland. The project places sand on the beach of Ocean City, generally every four years, to reduce risk of coastal storm damage. The most recent beach replenishment contract, completed in December 2017, exhausted the sand from nearby offshore shoals in state waters. USACE and MD DNR have sometimes placed sand on Ocean City beach more frequently than every four years following severe storms, and sand from federal waters may be needed sooner than 2022.

Offshore shoals contain large quantities of suitable sand that can be cost-effectively obtained. USACE prepared an Environmental Impact Statement (EIS) in 2008 evaluating four shoals in federal waters beyond the 3-mile limit as sources of sand for the project: Weaver Shoal, Isle of Wight Shoal, Shoal "A," and Bass Grounds (also known as First Lump and Shoal "B") (Enclosure). Shoal "B" was determined to be unsuitable at that time because of its high value as a fishing ground. The project has not utilized any of these offshore shoals in federal waters as borrow sources yet, because sufficient sand has been available from sources in nearby state waters. USACE is re-evaluating the four offshore shoals in federal waters as sand sources. Bass Grounds would not be utilized unless re-evaluation finds that its relative value as a fishing ground has declined substantially. Future dredging in federal waters would be conducted following guidelines to minimize long-term impacts to the offshore shoals. Because 10 years have elapsed since the 2008 EIS, USACE is preparing a supplemental environmental assessment (EA) documenting findings of the re-evaluation to ensure compliance with the National Environmental Policy Act. The draft EA is expected to be publicly released in Fall 2018.

USACE and MD DNR are seeking input on offshore shoal concerns which may assist in the re-evaluation. Study efforts are being coordinated with other federal and state agencies, local governments and the public. For federal and state agencies receiving a copy of this notice, we request that you provide information concerning interests within your organization's area of responsibility or expertise. All comments are requested within 30 days of the date of this notice to the address below.

If you have any questions regarding this assessment, please contact Christopher Spaur by email at Christopher.c.spaur@usace.army.mil, telephone at 410-962-6134, or mail at USACE, Planning Division, 2 Hopkins Plaza, Baltimore, MD 21201. Information about the assessment will be posted on the Worldwide Web at http://www.nab.usace.army.mil/.

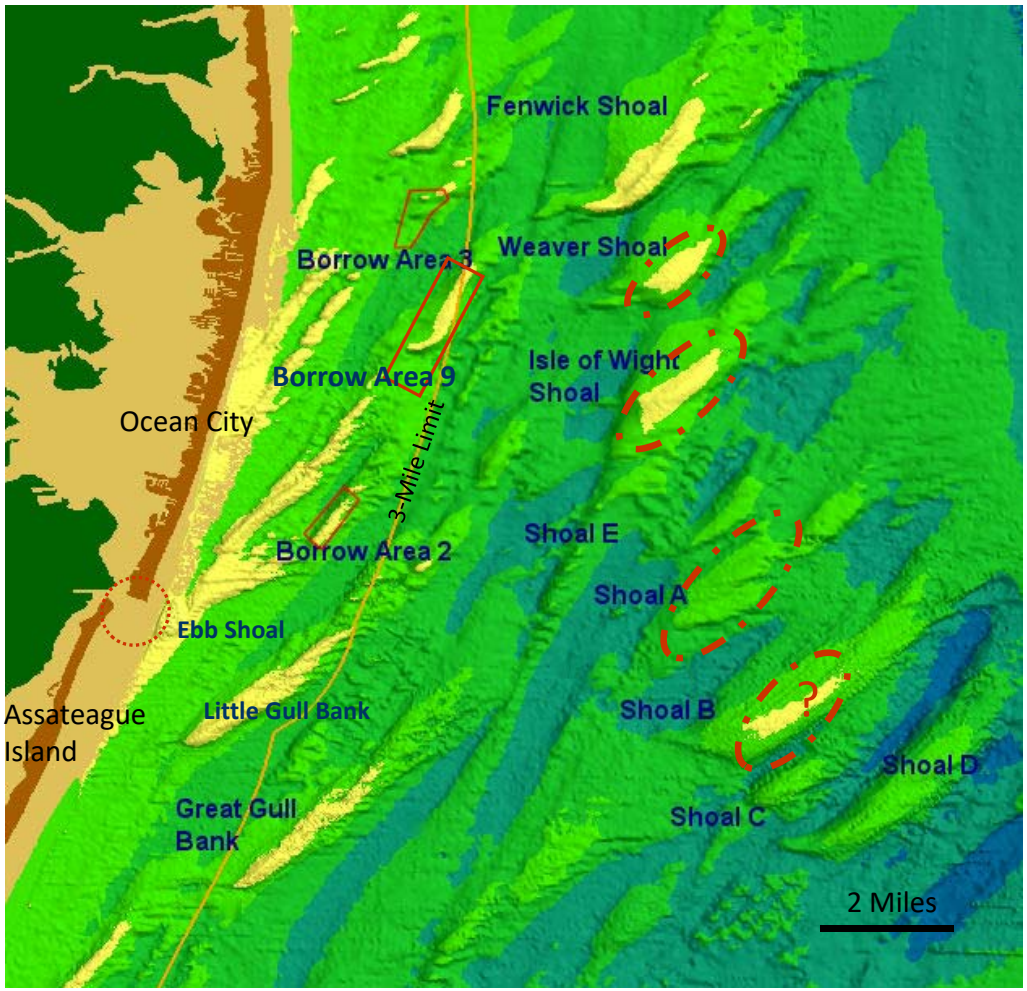
Daniel M. Bierly, P.E.
Chief, Civil Project Development Branch
Planning Division

DEPARTMENT OF THE ARMY
U.S. Army Engineer District, Baltimore
Planning Division
2 Hopkins Plaza
Baltimore, Maryland 21201

Official Business

Enclosure

Continental Shelf off MD: Offshore Shoals in Ocean City Vicinity



USACE/MD DNR Atlantic Coast of MD Project

Weaver Shoal, Isle of Wight Shoal, and or Shoal A proposed for future borrow. Future use of Shoal B also possible.
Borrow Areas 2, 3, and 9, Ebb Shoal, and Great Gull Bank currently or previously used for borrow for Ocean City or Assateague Island.

Honorable Andy Harris
United States Congress
Salisbury Office
212 West Maint Street, Suite 204B
Salisbury, MD 21801

Honorable Benjamin Cardin
United States Senate, Baltimore Office
100 South Charles Street
Tower 1, Suite 1710
Baltimore, MD 21201

Honorable Chris Van Hollen
United States Senate
111 Rockville Pike
Rockville, MD 20850

Governor Larry Hogan
State of Maryland
Office of the Governor
100 State Circle
Annapolis, MD 21401

Senator James Mathias Jr.
Maryland State Senate, 38th District
James Senate Office Building, Room 216
11 Bladen St.
Annapolis, MD 21401

Delegate Mary Carozza
Maryland House of Delegates, 38C
House Office Building, Room 203
6 Bladen Street
Annapolis, MD 21401

Worcester County Commissioners
Worcester County Government Center
1 W. Market Street, Room 1103
Snow Hill, MD 21863

Mayor Rick Meehan
Town of Ocean City
301 N. Baltimore Avenue
Ocean City, MD 21842

Ocean City Council
Town of Ocean City
301 N. Baltimore Avenue
Ocean City, MD 21842

American Sportfishing Association
1001 North Fairfax Street, Suite 501
Alexandria, VA 22314

Assateague Mobile Sportsfishermen Association
8801 Bald Eagle Rd
Berlin, Maryland 21811

Atlantic Coast Sport Fishing Association
[email only]

Chincoteague Island Charter Boat Association
[email only]

Garden State Seafood Association
212 West State Street
Trenton, New Jersey 08608

Bonnie Brady
Long Island Commercial Fishing Association
P.O. Box 191
Montauk, N.Y 11954

Martin Fish Company
12929 Harbor Road
Ocean City, Maryland 21842

Maryland Charter Boat Association
4874 Patience Place
Huntingtown, MD 20639

Maryland Watermen’s Association
[email only]

Robert Brown Sr
Maryland Watermen's Association
1805A Virginia Street
Annapolis, MD 21401

National Association of Charterboat Operators
PO Box 1070
Hurley, MS 39555

Ocean Pines Angler's Club
[email only]

Ocean City Marlin Club
[email only]

Ocean City Reef Foundation
[email only]

Southern Connection Ocean City
[email only]

The Recreational Fishing Alliance
P.O. Box 3080
New Gretna, NJ 08224

Coastal Conservation Association Maryland
PO Box 309
Annapolis, MD 21401

Cristina Carollo
TNC
[email only]

Joe Fehrer
TNC
[email only]

Kelly Leo
TNC
[email only]

Kate Wilke
TNC
[email only]

U.S. Coast Guard Fifth District
Commander (de)
431 Crawford St., Suite 603
Portsmouth, VA 23704

U.S. Coast Guard
610 South Philadelphia Avenue
Ocean City, MD 21842

Postmaster
Ocean City Post Office
7101 Coastal Highway
Ocean City, MD 21842-9998

Ms. Kimberly Damon-Randall
National Marine Fisheries Service
US Department of Commerce
55 Great Republic Drive
Gloucester, MA 01930

Karen Greene
National Marine Fisheries Service
James J. Howard Marine Sciences Laboratory
74 Magruder Rd.
Highlands, NJ 07732

Keith Hanson
National Marine Fisheries Service
Annapolis, MD) Field Office: 177 Admiral Cochrane Drive,
Annapolis, MD 21401

Mike Luisi
Mid-Atlantic Fisheries Management Council
800 North State Street, Suite 201
Dover, DE 19901

Ms. Deborah Darden
Assateague Island National Seashore
7206 National Seashore Lane
Berlin, MD 21811

Mary Foley
U.S. Geological Survey
5522 Research Park Drive
Baltimore, Maryland 21228

Ms. Genevieve LaRouche
Chesapeake Bay Field Office
US Fish and Wildlife Service
177 Admiral Cochrane Drive
Annapolis, MD 21401

Michaela Noble
Office of Environmental Policy and Compliance
Department of the Interior
1849 C Street, NW (Mail Stop 5538)
Washington, DC 20240

Doug Piatkowski
Bureau of Ocean Energy Management
Division of Environmental Assessment
45600 Woodland Road, VAM-OEP
Sterling, VA 20166

Gary Vietzke
National Park Service
Northeast Regional Office
200 Chestnut Street, 5th Floor
Philadelphia, PA 19106

Odessa Armstrong
Natural Resource Conservation Service, USDA
339 Busch's Frontage Road, Suite 301
Baltimore, MD 21401-5534

John Forren
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Shawn Garvin
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, Pennsylvania 19106

Barbara Rudnick
U.S. Environmental Protection Agency
1650 Arch Street
Philadelpia, PA 19103-2029

Alana Duerr Ph. D
U.S. Department of Energy
[email only]

Jeffrey Gebert
US Army Corps of Engineers, Philadelphia District
[email only]

Robert Baldwin
Department of Natural Resources & Environmental Control
89 Kings Highway
Dover, DE 19901

Laura Herr
Department of Natural Resources & Environmental Control
89 Kings Highway
Dover, DE 19901

Indian River Marina, DE Seashore State Park
Indian River Marina
Delaware Seashore State Park
39415 Inlet Road, Rehoboth Beach, DE 19971

Frank Piorko
Maryland Coastal Bays Program
8219 Stephen Decatur Highway
Barlin, MD 21811

Kate Charbonneau
Chesapeake Bay Critical Area Commission
Maryland Department of Natural Resources
1804 West Street
Annapolis, MD 21401

Mr. Elder Ghigiarelli
Wetlands and Waterway Construction Program
Maryland Department of the Environment
1800 Washington Blvd
Baltimore, MD 21230

Andrew May
Maryland Department of the Environment
1800 Washington BLVD
Baltimore, MD 21230-1708

Elizabeh Hughes
Division of Historical and Cultural Programs
MD Historic Trust
100 Community Place
Crownsville, MD 21303-2023

David Blazer
Maryland Department of Natural Resources
580 Taylor Avenue
Annapolis, MD 21401

Ms. Lori Byrne
Maryland Department of Natural Resources
Tawes State Office Building, E-1
580 Taylor Ave
Annapolis, MD 21401

Thomas O'Connell
Maryland Department of Natural Resources
580 Taylor Avenue
Annapolis, MD 21401

Mark O'Malley
Maryland Department of Natural Resources
Tawes Office Building
580 Taylor Ave
Annapolis, MD 21401

Richard Ortt
Maryland Geological Survey
Maryland Department of Natural Resources
2300 St. Paul Street
Baltimore, MD 21218-5210

Tony Redman
Maryland Department of Natural Resources
Tawes State Office Bldg., B-3
580 Taylor Ave.
Annapolis, MD 21401

David Craig
Maryland Department of Planning
301 West Preston Street
Baltimore, MD 21201-2365

Ms. Linda Janey
Maryland Department of Planning
301 West Preston Street, Suite 1101
Baltimore, MD 21201-2305

Development Review and Permitting
Worcester County Government Center
Environmental Programs
1 W. Market Street, Room 1306
Snow Hill, MD 21863

Worcester County Environmental Programs
Worcester County Government Center
1 W. Market Street, Room 1306
Snow Hill, MD 21863

Worcester County Emergency Services
Worcester County Government Center
1 W. Market Street, Room 1002
Snow Hill, MD 21863

Berlin Branch
Worcester County Library
220 North Main Street
Berlin, Maryland 21811

Ocean City Branch
Worcester County Library
10003 Coastal Highway
Ocean City, Maryland 21842

Ocean Pines Branch
Worcester County Library
11107 Cathell Road
Ocean Pines, Maryland 21811

Engineering Department
Town of Ocean City
301 Baltimore Avenue
Ocean City, MD 21842

Planning and Community Development
Town of Ocean City
301 Baltimore Avenue
Ocean City, MD 21842

SUMMARY OF COORDINATION EFFORTS

Coordination with government agencies and interested organizations for the proposed action was undertaken in 2018 by USACE during preparation of the draft EA. The table below presents a summary of these efforts (other than for the public notice of EA preparation, provided previously in this annex). Because BOEM was a cooperating agency, substantial interagency coordination occurred following establishment of this relationship. The table includes only notable USACE/BOEM coordination efforts following cooperating agency establishment. The table also excludes emails between USACE and other agencies concerned with minor details of scheduling meetings and comparable non-policy activities.

Table A: Summary Record of Coordination Undertaken During Preparation of Draft EA. Asterisk indicates copy of document provided in this EA.

Date	Person/Agency External to USACE	Mode of Contact	Summary
Jan 30, 2018	Chris Guy, USFWS	Email and phone conversation	Discussed potential level of USFWS involvement in study with Michele Gomez and Chris Spaur. USFWS would not be best agency to undertake coordination with commercial and recreational fishermen. Seabird information has increased for the area via investigations conducted for potential offshore wind projects. That could be something USFWS could assist with.
Mar 16, 2018	Doug Piatkowski, BOEM	email	Doug answered email from CS regarding appropriate BOEM contact and NEPA procedures.
Mar 27, 2018	Alana Duerr, DOE Offshore Wind Lead	email	Requested notification when draft EA is posted.

Date	Person/Agency External to USACE	Mode of Contact	Summary
Apr 3 & 6, 2018	Dave Blazer, DNR Fisheries Service	Email and phone conversation	CS inquired whether DNR Fisheries Service could coordinate with commercial and recreational fishermen regarding offshore shoal importance as fishing grounds. Dave informed CS that DNR has upcoming meeting on 4/30 with commercial and recreational fishing groups and could introduce project to those groups and then share feedback with USACE. Would figure out best path forward accordingly.
April 19, 2018*	Ocean City Dispatch	Newspaper	Article on the supplemental EA associated with the Atlantic Coast (Ocean City) Project
Apr 23, 2018*	Geoffrey Wikel, Chief, Branch of Environmental Coordination, Division of Environmental Assessment, BOEM	Letter	Letter to Dan Bierly, USACE. BOEM accepts invitation to be cooperating agency with USACE in preparation of EA and other environmental compliance documents. BOEM would like to be included on all correspondence to other federal and state agencies concerning this project. Doug Piatkowski will be BOEM contact.
Apr 23, 2018*	Myra Barnes, MD Dept of Planning	Letter	Response to USACE EA preparation initiation letter. MD DOP is forwarding notice to other agencies for review
April 27, 2018	Dave Blazer, MD DNR and Commercial and Recreational Fishermen's Groups	Meetings (MD DNR "Coastal Commercial Fisheries Forum")	Introduced Atlantic Coast of MD beach replenishment project at April MD DNR meetings with commercial (about 10 waterman) and recreational fisherman's groups (about 35 fishermen). All in attendance concerned about the potential impacts of the project, but also appreciative of being asked their thoughts early in the process. Both groups said Bass Grounds was a good fishing area and shouldn't be considered. Members had many additional questions and will contact USACE.

Date	Person/Agency External to USACE	Mode of Contact	Summary
May 1, 2018	Richard Orrt, Director and State Geologist Maryland Geological Survey Department of Natural Resources	email	To Justin Callahan. MGS has been working with BOEM for the last 4 years reevaluating all of the offshore shoals in the Ocean City vicinity. Can work with USACE to determine if this data of use for project.
May 2, 2018*	Tony Redman, MD DNR	Letter	Response to USACE EA preparation initiation letter. Expressed concerns and recommendations regarding fishing use of offshore shoals. Fall dredging can impact striped bass fishing. Spiny dogfish are in area waters from November through May and are of commercial interest. Evaluate whether or not shoal removal could impact wave energy reaching shoreline. Inlet has a shoaling problem. Could beach nourishment work be done in manner that would also provide solution for inlet shoaling?
May 2, 2018*	Karen Greene, NMFS, Habitat Conservation Division	email	Provided information to CS on EFH impacts assessment process. EFH designations have changed for a number of species since 2008 and there has been some additional research done on the value of offshore sand ridges. As a result, conservation recommendations provided in 2008 may not be the same ones NMFS might recommend now. Keith Hanson in Annapolis MD office will be NMFS representative for this project.
May 3, 2018*	Karen Greene, NMFS, Habitat Conservation Division	Letter	Response to USACE EA preparation notice covering Magnuson Stevens Act (EFH impacts), FWCA, and ESA. Provided information on which species are in area and for which species the area constitutes designated EFH. USACE should consult with NMFS regarding impacts to EFH and prepare an EFH impacts assessment. Provided list of ET spp which may be present, and information on Section 7 consultation process.

Date	Person/Agency External to USACE	Mode of Contact	Summary
May 7, 2018	David Sikorski, Director CCA MD	email	Would like more information on beach nourishment activities. Impacts on sport fishing access and existing fish habitat is a concern.
May 7, 2018	Monty Hawkins, Ocean City Reef Foundation	email	To CS stating that Bass Grounds is still important fishing area. Would like additional materials to physically expand artificial reef work.
May 7, 2018*	Dave Blazer, MD DNR	email	To CS. Provided summary of April 27th fishermen's meetings topics discussed and questions.
May 8, 2018	Keith Hanson, NMFS / Doug Piatkowski, BOEM	Conference Call	Preliminary discussion on how to proceed with EFH impacts assessment. USACE to provide NMFS with 2008 EIS and older coordination records. NMFS will review previous documents. Will schedule additional conference calls to figure out details of effort required to meet Magnuson Stevens Act.
May 8, 2018	Keith Hanson, NMFS	email	USACE should review MAFMC policies and recommendations on non-fishing activities (essentially broad conservation recommendations).
May 10, 2018*	Aaron Blair, USEPA	email	Responded to USACE EA preparation notice. Provided list of topics EA should cover. USACE should utilize MARCO online tool.
May 19, 2018	Jeff Browning, BOEM	email	Provided status information on MD and DE WEAs.
May 19, 2018	Rick Kubiak, Angler's Club and Ocean City Reef Foundations	email	Requested CS for public meeting with fishermen.
May 21, 2018	Colin Candle, Ocean City Marlin Club President	Phone Call	Requested CS for public meeting with fishermen.
May 23, 2018	Keith Hanson, NMFS	email	CS sent copy of draft report providing information on bathymetric change at Great Gull Bank from 1999-2008.

Date	Person/Agency External to USACE	Mode of Contact	Summary
May 30, 2018	Keith Hanson, NMFS*	email	Provided summary of recent discussions he's had internal to NMFS. Still waiting to discuss project with Northeast Fisheries Science Center. Stated that new studies as outlined in the May 3, 2018 letter will be necessary. Will need to have further conversations on details.
June 1, 2018	Angle Willey, MD DNR to Coastal Commercial Fishermen	email	Sent out email following up on Coastal Commercial Fisheries Forum with additional information on proposed USACE borrow action. Requested input from fishermen on relative value of candidate shoals and assistance contacting other fishermen who fish those waters.
June 12, 2018	Brandi Carrier, BOEM	email	Provided BOEM guidelines to EB and CS regarding cultural/historic resource surveys
June 12, 2018*	Keith Hanson, Karen Greene NMFS/ Doug Piatkowski, BOEM	Conference Call	CS, MG, Tarrie Ostrofsky discussed EFH impacts assessment and possible studies suggested by NMFS in May letter and email. Species list for EFH document ultimately determined by EFH text description, but use online and document maps to aid identification of species to include. USACE will re-forward prospective list to NMFS for review. New document should reference 2008 assessment, but needs to reflect changes and stressors project would cause. Regarding studies, discussed using BOEM MD WEA as representative. Need to compare and contrast WEA with candidate shoals to determine/demonstrate whether adequate. NY District does surf clam surveys pre-dredging. Need to consider surf clam population and fishery. NMFS will look into information they have.
June 15, 2018*	Keith Hanson, NMFS	Email.	To CS. Discussed how to approach NMFS "Other Trust Resources" impacts evaluation.
June 26, 2018*	Catherine McCall, MD DNR	email	From CS. Provided information on coordination efforts for EA.

Date	Person/Agency External to USACE	Mode of Contact	Summary
June 28, 2018	Keith Hanson, NMFS	email	CS sent list of proposed species to be covered in EFH impacts assessment and identified proposed changes (additions and deletions). New assessment would effectively be addendum to EFH impacts assessment previously provided in 2008 EIS. List included 19 bony fish spp, 13 cartilaginous fish spp, and 2 molluscs.
July 10, 2018*		Public Meeting	USACE and MDDNR had public meeting in west Ocean City at request of fishermen concerned over potential impacts of future dredging of offshore shoals in federal waters. Had 17 attendees. Reviewed proposed borrow plan, discussed whether shoals proposed for borrow (Isle of Wight, Weaver, A) have notable value as fishing grounds such that we should not use any of shoals in near future. Two fishermen expressed that they'd rather not have Isle of Wight Shoal dredged as seems to an area with rockfish concentrations. Additionally, discussed turbidity produced by dredging that fishermen observed muddies the water, and how dredging turns borrow area into a biological desert. Fishermen requested use of sand in inlet area for Ocean City as that is navigation problem anyway. General opinion was that they'd rather we don't dredge offshore shoals, but that proposed plan seemed to be carefully thought out. Also discussed navigation concerns in harbor and inlet and ongoing USACE projects and studies in vicinity.
July 12, 2018*	Keith Hanson, NMFS	email	Reviewed USACE proposed list of species to be covered in EFH impacts assessment as per June 28th email. KH suggested several modifications to cartilaginous spp list. Atlantic angel shark should include all life history stages. Don't add shortfin mako shark as new species. Add little skate as new species.
July 12, 2018	Stephen VanRyswick, MD DNR	email	SVR provided MGS report of study area completed in 2015 and clarified data sources used in making bottom map. Additionally, SVR noted that areas proposed for dredging are outside of areas containing fine fractions.

Date	Person/Agency External to USACE	Mode of Contact	Summary
July 23, 2018*	Steve Doctor, MD DNR	Email	To CS. Will look into relative value of offshore shoals from fishing perspective.
July 23, 2018*	Chris Vaccaro, NMFS	email	To TO. Provided example analysis from NAP to use as potential guide in evaluating ET spp impacts.
August 7, 2018*	Steve Doctor, MD DNR	email	To CS. No official DNR position on which offshore shoals to dredge/not dredge. However, feedback to him has been consistent that Isle of Wight and B are of high value and would be better not to dredge.
Aug 13, 2018*	Stephen VanRyswick, MD DNR*	email to CS	Reviewed bathymetric change maps from USACE desktop analysis for Great Gull Bank for 1999 to 2008 and considered implications for dredging guidelines. Minor erosional change in central area of crest. Apparent scour along SE side of the shoal field may reflect lack of severe storms over that time period that would have promoted southerly roll of shoal. Absent severe storms then growth could be to SW as indicated by figures. Short term migration patterns may not always be indicative of long-term trends. Dredging guidelines still likely suitable.
Aug 14, 2018	Sara Calcinore, USEPA	email to MG	Provided guidance on how to address air quality impacts of offshore dredging project. A general conformity determination required for OCS federal waters if adjacent land area is maintenance or non-attainment.
Aug 27, 2018	Sara Calcinore, USEPA	email to CS	Because Sussex County DE is designated as marginal nonattainment for the 2008 ozone NAAQS, both the onshore and offshore activity for sand placement in Sussex County should be evaluated to see if the emissions resulting from this activity exceed the general conformity thresholds in 40 CFR 93.153
Aug 29, 2018	Doug Piatkowski, BOEM	emails w CS	Reviewed project construction information. Because dredge transit and pump-out points are located off MD not DE, determined estimating emissions from in-water work not needed. Instead, focus emissions estimate only on on-beach work.

Date	Person/Agency External to USACE	Mode of Contact	Summary
Aug 30, 2018*	Brian Hooker, BOEM	Email to DP	Not aware of good data for federal waters covering horseshoe crab harvest locations or abundance. Contact ASMFC plan coordinator for possible further scientific information.
Sept 5, 2018	Valerie Gray, DNREC	Email from AM	Provided update on air pollutant emissions estimate from beach work in DE.
Sept 6, 2018	Jennifer Holmes / DNREC	Email to AM	Inquired about Atlantic Coast Project and possible need for CZM consistency determination review.
Sept 7, 2018	Jennifer Holmes / DNREC	Email to JH	CS provided general information on Atlantic Coast Project.
Sept 11, 2018	Sara Calcinore, USEPA	Email to AM	USEPA recommends using MOVES for air pollutant emissions, but CARB spreadsheet can be used as well. Include equipment list and CARB assessment in EA to support that project below NOx and VOC thresholds for general conformity.
Sept 14, 2018	Valerie Gray, DNREC	Email to AM	Can't provide an official concurrence statement regarding air quality without copy of EA. Based on calculations AM provided, DNREC agrees that emissions appear not to trigger conformity as the amounts are well below the thresholds.
Sept 14, 2018	Jennifer Holmes, DNREC	Email to CS	Can't find DNREC CZM consistency determination for the Atlantic Coast of MD Project. Baltimore District should conduct a federal consistency determination. Provided submission requirements for a determination review.

Date	Person/Agency External to USACE	Mode of Contact	Summary
Sept 20, 2018	Keith Hanson, NMFS	Conference Call	Keith provided information to CS and AM on status GIS data for offshore shoals with regard to highly migratory species, commercial fishing, and discussed demersal fish of potential concern. Data available show tunas, sandbar shark, dusky shark, sand tiger shark, Atlantic angel shark in area, but no strong association with offshore shoals. Commercial fishing activity has moved further offshore and north away from the shoals in recent years. 2009 is most recent year for which large surf clam fishing activity occurred in offshore shoal area. Since that time, activity has moved further north to NJ and Massachusetts, and offshore. Substantial adverse impacts to surf clam fishery unlikely. Areas between shoals seem to be more important for horseshoe crabs than shoals themselves. Check on time of year that MD WEA data for longfin squid egg masses is presented. Longfin squid do lay eggs on sand, KH will forward information. NMFS prefers that Fall dredging be avoided as discussed previously.
Sept 25, 2018*	Kimberly Damon-Randall, NMFS	Letter	From DB of USACE. Determination that formal consultation re-initiation not warranted.
Oct 1, 2018	Jennifer Holmes / DNREC	email	Jennifer emailed AM and confirmed receipt of CZM USACE consistency determination. Submission is complete and 60-day review period has begun.
Oct 2, 2018	Jennifer Holmes / DNREC	email	Jennifer emailed AM and said that DCMP is seeking to have CZM notice run in Sunday's Delaware State News, The News Journal, and DNREC Public Notice website.
Oct 22, 2018	Craig Koppie / USFWS	email to CS	Final PAR will be sent to USACE pending signature which may take a few days.
Oct 24, 2018*	Jennifer Anderson, NMFS	Letter to Dan Bierly	Concur with Sept 25, 2018 letter stating re-initiation not required regarding ET spp.

Date	Person/Agency External to USACE	Mode of Contact	Summary
Nov 2, 2018*	Jennifer Holmes / DNREC	email	Jennifer emailed AM. Revised estimate of air pollutant emissions based on 95,000 yd3 beach placement is now completed, and 60 day review period for CZMA consistency determination concurrence begins today.
Nov 14, 2018	Troy Nowak / MHT	Phone Call	Ethan Bean (USACE) spoke with Troy Nowak (MHT) regarding technical specifications of the pipe to be used for pumping sand onto the beach at Ocean City. Also discussed was possible survey methodology and specifications to be used to ensure that no cultural resources are affected due to pipe placement.
Nov 15, 2018	Stephen VanRyswick, MD DNR	email	SVR provided information on mud substrates in state waters. MGS studies found that muds near shore were very soft/unconsolidated and likely highly mobile during high energy events and due to high wave energies nearshore. Nearshore mud bodies contain active benthic communities but do not contain the cold water corals often correlated with "live bottom" coral habitats.
Nov 21, 2018*	Genevieve Pullis, USFWS	Letter	Provided Planning aid Report. USFWS concludes that sand dredging at the proposed shoals would have a no impact to endangered species under USFWS jurisdiction, and negligible impacts to migratory bird foraging areas and anadromous fish that reside in waters of the project area.
Dec 4, 2018*	Troy Nowak, MHT	Letter to Ethan Bean	Provided MHT recommendations to USACE to conduct work to identify historic properties in MD (multiple temporary pipeline routes) where adverse effects possible. Target pre-installation side scan sonar surveys to identify objects and areas for avoidance.

Date	Person/Agency External to USACE	Mode of Contact	Summary
Jan 3, 2019*	Kimberly Cole, Administrator / DE Coastal Management Program	Letter to Andrew May	DE CMP conditionally concurs that USACE Atlantic Coast Project is consistent to the maximum extent practicable with the DE program. Project reviewed by multiple divisions of DNREC (including Division of Air Quality). Conditional concurrence subject to verification of whether piping plover are nesting in project site. In that event, further coordination with DNREC required.
June 21, 2019*	Matthew Grunewald, District Archeologist / USACE Mobile District	Letter	SEARCH, Inc. completed cultural resources investigation of Isle of Wight and Weaver Shoals. Remote sensing data and archaeological analyses do not reveal the presence of potential submerged cultural resources.

The Dispatch
Serving Greater Ocean City Since 1984
(https://mdcoastdispatch.com)

New Sand Reserves Sought For Beach Replenishment Work

Apr 19,2018 (https://mdcoastdispatch.com/2018/04/19/new-sand-reserves-sought-beach-replenishment-work/) by Shawn Soper (https://mdcoastdispatch.com/author/shawn_j_soper/)

OCEAN CITY — Federal officials have started the process of exploring new sand reserves for Ocean City's ongoing beach replenishment project in U.S. waters with the traditional reserves in state waters becoming exhausted.

The federal Army Corps of Engineers (ACE) last week posted a public notice it is now preparing a supplementary environmental assessment of potential sand borrow areas in federal waters to supply dredged material for Ocean City's beach replenishment program in the future. Last fall and early winter, ACE completed the latest round of beach replenishment in Ocean City and the

Featured Stories

Jenkins Foundation Donates To Stansell Hospice House (https://mdcoastdispatch.com/2018/foundation-donates-to-stansell-hospice-house/)

BERLIN — Ocean City business owners and local philanthropists Charles "Buddy" and Laura Jenkins provided a $25,000 donation to Coastal Hospice on behalf of the Joan W. Jenkins

next replenishment in the four-year cycle, barring storms or other events that might expedite the process, is not scheduled until 2022.

However, it was learned at the finish of the last beach replenishment has exhausted the sand from nearby shoals in state waters. As a result, ACE is now embarking on supplementary environmental assessment of possible sand sources for beach replenishment in federal waters just outside the state waters boundary.

Beach replenishment began in Ocean City in 1994 through a 50-year agreement with the town, Worcester County and the state of Maryland partnering with the federal Army Corps of Engineers, which provides 50 percent of the funding for the project. Now, 24 years later, or roughly half way through the 50-year agreement, it has been determined the traditional borrow areas in shoals in state waters are becoming exhausted and new sites in federal waters are being explored.

"Long story short, the Ocean City project, which has a planning life cycle of 50 years, requires a great deal of sand for 50 years' worth of periodic renourishments like the one we just completed last fall and winter," said Chris Gardner of the Army Corps of Engineers (ACE) Communications Office. "Ocean City is quite lucky in having vast quantities of economically-available sand for beach renourishment, but we are required, as part of environmental compliance, to ensure those areas remain suitable from time to time."

As a result, ACE conducted an environmental impact statement in 2008 during which it evaluated four shoals in federal waters. Since it has now been 10 years since that report was prepared, ACE must now conduct the supplementary environmental assessment to ensure nothing has significantly changed.

"We've also finished off our third borrow area, so we should moving on to another whenever the next renourishment work takes place," he said.

The ACE environmental impact statement prepared in 2008 forecasted the eventual depletion of sand borrow sources in state waters and identified four shoals in federal waters just outside the three-mile line as potential future sources. Among those sites identified include the Weaver Shoal, the Isle of Wight Shoal, or Shoal A, and the Bass Grounds, also known as Shoal B or the First Lump.

According to the ACE public notice authored by Civil Project Development Branch Chief Daniel Bierly, those shoals in federal waters would only be utilized if the supplementary environmental assessment determines there would be no impact on habitat or fishing activity.

"Shoal B (Bass Grounds) was determined to be unsuitable at the time because of its high value as a fishing ground," the public notice reads. "The project has not utilized any of these offshore shoals in federal waters as borrow sources yet because sufficient sand has available from sources in nearby state waters. ACE is re-evaluating the four offshore shoals in federal waters as sand sources. Bass Grounds would not be utilized unless re-evaluation finds that its relative value as a fishing ground has declined substantially."

← PREVIOUS (https://mdcoastdispatch.com/2018/04/19/committee-endorses-fenwick-funds-sidewalk-study/) NEXT → (https://mdcoastdispatch.com/2018/04/19/county-formally-ask-oc-inlet-funding-help/)

About The Author: Shawn Soper

CORRESPONDENCE AND COORDINATION RECORDS

MARYLAND DEPARTMENT OF
PLANNING

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

Robert S. McCord, Acting Secretary

April 23, 2018

Mr. Christopher Spaur
U.S. Army Corps of Engineers, Baltimore District
P.O. Box 1715
Baltimore, MD 21203-1715

STATE CLEARINGHOUSE REVIEW PROCESS

State Application Identifier: **MD20180413-0244**
Reply Due Date: 05/17/2018
Project Description: U.S. Army Corps of Engineers, Baltimore District (USACE), in Partnership with Maryland Dept. of Natural Resources (MD DNR), is Proposing to Dredge Offshore Shoals in Federal Waters to obtain Sand for the Atlantic Coast of MD Shoreline Protection Project by 2022
Project Location: Municipality(ies) of Worcester-Town of Ocean City
Clearinghouse Contact: Rita Pritchett

Dear Mr. Spaur:

Thank you for submitting your project for intergovernmental review. Your participation in the Maryland Intergovernmental Review and Coordination (MIRC) process helps to ensure that your project will be consistent with the plans, programs, and objectives of State agencies and local governments.

We have forwarded your project to the following agencies and/or jurisdictions for their review and comments: the Maryland Department(s) of the Environment, Transportation; Worcester County; and the Maryland Department of Planning including the Maryland Historical Trust. A composite review and recommendation letter will be sent to you by the reply due date. Your project has been assigned a unique State Application Identifier that you should use on all documents and correspondence.

Please be assured that we will expeditiously process your project. The issues resolved through the MIRC process enhance the opportunities for project funding and minimize delays during project implementation.

If you need assistance or have questions, contact the State Clearinghouse staff noted above at 410-767-4490 or through e-mail at rita.pritchett@maryland.gov. Thank you for your cooperation with the MIRC process.

Sincerely,

Myra Barnes, Lead Clearinghouse Coordinator

MB:RP
Enclosure(s)
cc: Town of Ocean City
18-0244_NRR.NEW.docx

United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT
WASHINGTON, DC 20240-0001

Mr. Daniel M. Bierly, P.E.
Chief, Civil Project Development Branch
Planning Division
Baltimore District
U.S. Army Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203-1715

APR 23 2018

Dear Mr. Bierly:

Thank you for your April 11, 2018, letter requesting that the Bureau of Ocean Energy Management (BOEM) become a cooperating agency during the National Environmental Policy Act (NEPA) process for the proposed Atlantic Coast of Maryland Shoreline Protection Project. The proposed action may include the implementation of a beach nourishment project along the beach of Ocean City, Maryland by 2022. Sand resources may be obtained from offshore shoals located in the Outer Continental Shelf (OCS).

The U.S. Army Corps of Engineers, Baltimore District (USACE) prepared an Environmental Impact Statement (EIS) in 2008 evaluating four shoals in federal waters including Weaver shoal, Isle of Wight Shoal, Shoal "A," and Shoal "B" (Bass Grounds). BOEM (previously Minerals Management Service (MMS)) served as a cooperating agency in the development of this EIS. To date, the project has not utilized any of these offshore shoals because sufficient sand has been available from sources in nearby state waters. These state resources have since been exhausted and USACE is now re-evaluating the four offshore shoals in federal waters since 10 years have elapsed since the 2008 EIS. USACE will assume the role of Lead Federal Agency in preparing a supplemental environmental Assessment (EA) to ensure compliance with NEPA.

The BOEM welcomes the opportunity to participate in the proposed NEPA effort and agrees to serve as a cooperating agency since the BOEM has jurisdiction over mineral leasing on the OCS. As a cooperating agency, the BOEM expects to: participate and provide input in the NEPA process at the earliest possible time; assume, on the request of USACE responsibility for developing information and preparing environmental analyses for which BOEM has special expertise; make available staff support, at the lead agency's request, to enhance the interdisciplinary capability of USACE; provide comment on the EA; and use our own funds to accomplish these responsibilities.

BOEM also recognizes the importance of initiating and participating in the required Endangered Species Act (ESA) Section 7 consultations; the Magnuson-Stevens Fishery and Conservation Management Act Essential Fish Habitat (EFH) consultation (Section 305); the National Historic Preservation Act Section (NHPA) 106 process; and the Coastal Zone Management Act (CZMA) Section 307 consistency process. As the lead federal agency for ESA Section 7 and the EFH consultations, USACE must notify the U.S. Fish and Wildlife Service (FWS) and National

Marine Fisheries Service (NMFS) of its lead role and BOEM's cooperating role. BOEM would expect USACE, as lead agency, to work with BOEM to ensure existing or new biological opinions from FWS and NMFS are applicable to BOEM's part of the Federal action and/or expect to jointly submit the ESA Section 7 and EFH assessments to FWS and NMFS. BOEM expects USACE be the lead federal agency for NHPA Section 106 and CZMA Section 307 compliance with the BOEM acting in a consulting role. BOEM requests that USACE notify the State Historic Preservation and the Maryland Department of the Environment of BOEM's involvement in the undertaking / proposed action. BOEM would welcome the opportunity to review and provide comments on any draft correspondence in regards to these consultations.

BOEM looks forward to working with USACE during this process. We would greatly appreciate to be included on all correspondence to other federal and state agencies concerning this project. If you would like to discuss any of these items further, please contact Doug Piatkowski at (703) 787-1833 or by e-mail at Douglas.Piatkowski@boem.gov.

Sincerely,

Geoffrey Wikel
Chief, Branch of Environmental Coordination, Division of Environmental Assessment

cc:

Mr. Christopher Spaur, USACE
Mr. Jeffrey Reidenauer, BOEM, Marine Minerals Branch
Ms. Leighann Brandt, BOEM, Marine Minerals Branch

From: Rita Pritchett -MDP-
To: Spaur, Christopher C CIV USARMY (US)
Subject: [Non-DoD Source] Re: Clearinghouse Letter
Date: Friday, April 27, 2018 6:56:10 PM
Attachments: planning-logo-plus-changemd-smaller.png
Acknowledgement letter 0244.pdf

On Fri, Apr 27, 2018 at 2:56 PM, Rita Pritchett -MDP- <rita.pritchett@maryland.gov <mailto:rita.pritchett@maryland.gov> > wrote:

> Hello,
>
> Please see the attached; hard copies are in the mail. Have a great weekend!
>
> Rita
>
> --

Rita Pritchett

State Clearinghouse

Maryland Department of Planning
(410) 767-
0024
/ (877) 767-6272 <tel:%28877%29%20767-6272>

Planning.Maryland.gov <Blockedhttp://planning.maryland.gov/>

> "The Earth has Music for Those Who Listen!"
> ~William Shakespeare

From:	Karen Greene - NOAA Federal
To:	Spaur, Christopher C CIV USARMY (US)
Cc:	douglas.piatkowski@boem.gov; Callahan, Justin B CIV USARMY CENAB (US); Keith Hanson; Kristy Beard - NOAA Federal
Subject:	[Non-DoD Source] Re: USACE/MD DNR "Atlantic Coast of MD Project" (Ocean City, MD)
Date:	Wednesday, May 02, 2018 10:50:52 AM

Hi Chris.

We are working on a letter in response to the PN and should have it out this week. EFH designations have changed for a number of species since 2008 and there has been some additional research done on the value of offshore sand ridges. As a result, I would not assume that the recommendations provided in 2008 will be the same ones that we might recommend now. We have also seen changes in species distribution due to climate change. For example, areas of surf clam abundance have moved farther offshore. So, you will need to reconsider/consider all federally manages species this round. However, there are ways to groups species to make the assessment less cumbersome.

I was not involved in the review in 2008, and our biologist at the time, John Nichols is no longer with us. Our records from the time are also a spotty at best. Keith Hanson in our Annapolis MD office will handling this project for our office. Please contact him to discuss this project. He will be able to provide you with guidance on the best way to move forward on the EFH assessment for this project. Keith's phone number is 410 573 4559. He is copied on this email, but his email address is: keith.hanson@noaa.gov <mailto:keith.hanson@noaa.gov> .

Thanks.

Karen

Karen Greene
Mid-Atlantic Field Offices Supervisor
NOAA/National Marine Fisheries Service
Greater Atlantic Regional Fisheries Office
Habitat Conservation Division
James J. Howard Marine Sciences Laboratory
74 Magruder Rd.
Highlands, NJ 07732
732 872-3023 (office)

On Wed, May 2, 2018 at 10:04 AM, Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> > wrote:

Karen

I would like to discuss how to proceed on EFH impacts assessment for above project with you. I'll try to call you to discuss this in near future. Until that point in time, information below is what I'd like to cover. We recently sent you a public notice regarding this project (hopefully it made it to you).

0) Brief background. USACE is proposing to dredge up to several offshore shoals in federal waters of the Continental Shelf off Ocean City, MD, to obtain sand for the USACE/MD DNR "Atlantic Coast of MD Project" (Ocean City beach nourishment) by 2022. USACE and MMS (BOEM predecessor) prepared an EIS covering this proposed work back in 2008, but USACE didn't actually yet begin dredging in federal waters (obtained sand from state waters instead). The 2008 EIS contained an EFH impacts assessment that among other considerations

provided incentive for us to develop dredging guidelines/constraints that should maintain the geomorphic integrity of the offshore shoals that are dredged (and thus maintain their long-term habitat value) while at the same time meeting the sand needs of the project. Because of new information now available and passage of time since the 2008 EIS, USACE and BOEM are currently preparing a supplemental environmental assessment (EA) with updates to ensure compliance with NEPA. I would like to determine level of EFH effort needed for new EA to ensure compliance with Magnuson-Stevens Act. Several topics/questions.

1) Determining species for which EFH is now designated on Continental Shelf off MD. (Quite a challenge to figure out for 2008 EIS!) I recently visited the EFH mapper (Blockedhttp://www.habitat.noaa.gov/protection/efh/habitatmapper.html <Blockedhttp://www.habitat.noaa.gov/protection/efh/habitatmapper.html>) and South Atlantic Fishery Management Council website (Blockedhttp://ocean.floridamarine.org/safmc_atlas/ <Blockedhttp://ocean.floridamarine.org/safmc_atlas/>) as starting points. I know that species are managed by multiple fishery management councils under multiple geographic groupings. The EFH mapper website has three geographic groups that contain species that could potentially be considered: Atlantic Highly Migratory, Greater Atlantic, and South Atlantic. EFH mapper "Greater Atlantic" lists two geographic subregions: New England and Mid-Atlantic. (The 2008 EIS EFH impacts assessment contained species from New England, Mid-Atlantic, South Atlantic, and Highly Migratory geographic species groups.)

a) New England Fishery Management Council species. The EFH mapper website states that information on species managed by the NEFMC is being updated and references the document "FINAL Omnibus Essential Fish Habitat Amendment 2, Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts (Updated October 25 2017)." Basic question - should I use maps from that document as starting point to identify which New England subregion fish species potentially have EFH on the Continental Shelf off MD? (The maps contained in this New England document depict EFH for some species/life history stages extending southward to the Continental Shelf off MD.)

b) South Atlantic Fishery Management Council. The EFH Mapper website (Blockedhttp://www.habitat.noaa.gov/protection/efh/habitatmapper.html <Blockedhttp://www.habitat.noaa.gov/protection/efh/habitatmapper.html>) contains few maps for species managed by the SAFMC. The SAFMC website "Blockedhttp://ocean.floridamarine.org/safmc_atlas/ <Blockedhttp://ocean.floridamarine.org/safmc_atlas/> " appears to depict no EFH nor HAPC north of the mouth of Chesapeake Bay (no EFH occurring off MD coast). The 2008 EIS EFH impacts assessment included consideration of several "coastal migratory pelagic" species managed by the SAFMC (cobia, king mackerel, Spanish mackerel - although information supporting that EFH designation at that time was broad and uncertain). Is it now the case that no species managed by the SAFMC have EFH designated off the Atlantic coast of MD? In that event, EFH impacts assessment being prepared for current EA wouldn't include these "coastal migratory pelagic" species nor any other SAFMC managed species.

c) Atlantic highly Migratory group. The EFH mapper depicts multiple additional "Atlantic highly Migratory" species having EFH off the MD Atlantic Coast than what the 2008 EIS EFH covered. Attached file contains review identifying these species.

d) Mid-Atlantic group. The EFH mapper depicts no additional species in area of concern, but does identify additional life history stages of concern for Atlantic mackerel. Again, covered in attached file.

e) Red drum. I have been confused over the years regarding how this species is covered. I don't think it's a concern geographically in this case, but would like to clarify this.

2) Previous NMFS EFH Coordination. The EFH Impacts Assessment included in the 2008 SEIS included consideration of impacts to EFH for 17 species of bony finfish, 7 cartilaginous fish species, and 2 species of molluscs. Designated EFH to consider in this assessment was identified from NMFS online maps and documents, and confirmed in coordination with NMFS staff (John Nichols). NFMS staff participated in plan formulation for proposed borrow from offshore shoals in federal waters, including selection/rejection of offshore shoals and drawing up guidelines/constraints to minimize impacts to offshore shoal habitat from borrow. NMFS commented on a draft version of the EFH impacts assessment on August 28, 2007 noting that NMFS was most concerned about impacts to surf clam (Spisula solidissima) and provided a conservation recommendation that if surf clam stocks recover to

commercial levels that EFH consultation with NMFS be re-initiated. NMFS also provided the conservation recommendation that Shoal B be avoided to protect existing commercial and recreational fishing activities associated with the shoal and that the ebb shoal be re-appraised if impacts to Assateague Island would be minimal.

3) For all geographic regions/groups, should I verify whether the EFH map is applicable to our borrow sites by scrutinizing text of the EFH descriptions? For example, back in 2008, EFH maps depicted the offshore shoal region as being EFH for several highly migratory fish species but water depths of the EFH descriptions would exclude the areas, so we eliminated those species from consideration in the 2008 EFH impacts assessment

4) Implications of above. In this new EFH impacts assessment, can we just consider species and or life history stages not previously assessed in the 2008 EIS? Presumably that would be fair if conservation recommendations from 2008 are still applicable. Tooting Baltimore District's horn a bit, the shoal selection and dredging guidelines/constraints when we developed them represented quite an environmental improvement over previous practices. While I'm not fully up to speed on developments nationwide since then, I think that would still be fair to state.

Thanks for your help,

Chris

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor
Mark Belton, Secretary
Joanne Throwe, Deputy Secretary

18-MIS-180

2 May 2018

Mr. Daniel M. Bierly, Chief
Civil Project Development Branch
Planning Division
U.S. Army Corps of Engineers, Baltimore District
P.O. Box 1715
Baltimore, MD 21203-1715

Attn: Christopher Spaur

Subject: Supplementary Environmental Assessment Offshore Shoals in Federal Waters as Sand Sources; Atlantic Ocean; Worcester County

Dear Mr. Bierly:

The US Army Corps of Engineers' request for information to aid in scoping for the preparation of the above referenced Environmental Assessment has been reviewed by the Department of Natural Resources. The propose study will re-evaluate the findings of a 2008 Environmental Impact Statement that evaluated four shoals in federal waters beyond the 3-mile limit as sources of sand for the Atlantic Coast of Maryland Shoreline Protection Project (project) at Ocean City, Worcester County. The four shoals studied in the 2008 EIS were: Weaver Shoal, Isle of Wight Shoal, Shoal "A" and Bass Grounds (aka First Lump and Shoal "B"). The project has not utilized any of these offshore shoals in federal waters as a sand source since sufficient sand was available from borrow sites in state waters. However, the completion of the most recent beach replenishment dredging exhausted the sand from the shoals in state waters. It is anticipated that sand from the shoals in federal waters will be need for the project by 2022. However, storm events before that date may require sand from those shoals before that date.

The Department of Natural Resources can provide the following information, concerns and recommendations for incorporation into the development and planning of the proposed re-evaluation study:

1. The Department is concerned that since the preparation of the 2008 EIS the commercial and recreational fishing activity at the four offshore shoals in federal waters has increased. The 2008 EIS concluded that the Bass Grounds/Shoal "B" was unsuitable as a borrow site because of its high value as a fishing ground. The Isle of Wight Shoal was included in an article in the October 2010 issue of Game and Fish Magazine (http://www.gameandfishmag.com/fishing/fishing_saltwater-fishing_at_0808_01/) on summer flounder fishing entitled "Mid-Atlantic Summer Flounder Hotspots". The shoal was characterized in the article as "A small but productive spot…". These shoals may also include or be near places where people go to shark fish. Typically sharks are in this area from May into the fall. The re-evaluation study should reexamine fishing activity at all four shoals to determine if fishing activity has changed since the 2008 EIS.

2. The Department has received concerns that the beach replenishment happens in the fall when striped bass are moving through the area. Commercial and recreational fishermen can only harvest striped bass from

state waters and their opportunity to catch their quota is negatively impacted because fish avoid the area of the sand dredging. Spiny dogfish are also in the area from November to April/May and are of commercial interest in both state and federal waters. The Supplemental EA should also evaluate the dredging of the four offshore shoals and associated beach replenishment activities on the nearshore fishing activity.

3. The Department has received comments in the past from the fishing public that the removal of sand from the shoals for beach replenishment has diminished the shoals ability to break waves. The Corps should include an evaluation of the removal of the shoals currently used for beach replenish on wave action and energy and determine potential changes in wave action and energy that could result from sand removal from the four offshore shoals in federal waters.

4. In 2017, there was an open scalloping area nearby the area of the four offshore shoals in federal waters. In the past there were surf clam and scallop boats coming into the Ocean City harbor but now we have few if any of those large vessels partly because of the inlet shoaling problem. Scallops can be a valuable contribution to the economy. Is it possible for the beach replenishment project process to work cooperatively with a solution for inlet dredging?

Should you require additional information regarding these comments, please feel free to contact Roland Limpert of my staff at 410-260-8333.

Sincerely,

Tony Redman, Director
Environmental Review Program

enclosure

cc: Andy Hanas, DNR-E&C
Jim Thompson, DNR-F&BS
Tay Harris, DNR-CAC
Bruce Michael, DNR-RAS
Elder Ghigiarelli, MDE-Wetland and Waterways

From:	Karen Greene - NOAA Federal
To:	Bierly, Daniel M CIV USARMY CENAB (US); Spaur, Christopher C CIV USARMY (US)
Cc:	Mark Murray-Brown; Brian D Hopper - NOAA Federal; Christine Vaccaro; Michael Mansolino (mansolino.michael@epa.gov); Chris Guy (USFWS); cmoore@mafmc.org; tnies@nefmc.org; Lisa Havel
Subject:	[Non-DoD Source] NMFS GARFO comments on the Atlantic Coast of Maryland Shoreline Protection Project (Ocean City)
Date:	Thursday, May 03, 2018 9:18:19 AM
Attachments:	NAB_MDDNR_OffshoreSandShoals.docx.pdf

Dear Mr. Bierly:

Attached please find our comments in response to your request for information on fish species and habitats within the offshore shoals near Ocean City, MD to assist in the development of a supplemental EA for the Atlantic Coast of Maryland Shoreline Protection Project. If you have any questions or need additional information, please contact Keith Hanson in our Annapolis, MD field office at keith.hanson@noaa.gov <mailto:keith.hanson@noaa.gov> or (410) 573-4559 regarding EFH/MSA issues and Brian Hopper at brian.d.hopper@noaa.gov <mailto:brian.d.hopper@noaa.gov> regarding ESA issues.

We look forward to continued coordination on this project as it moves forward, While not included in our comment letter, we also recommend that you review the policies developed by the Mid-Atlantic Fisheries Management Council on a variety of coastal development activities including beach renourishment and dredging. These policies were developed by the council in coordination with a panel of advisors and habitat experts after the 2008 EIS was completed for this project. Current actions proposed by the Corps should be consistent with these policies. They can be found on the council's webiste at Blockedhttp://www.mafmc.org/habitat/

Thank you.

Karen

Karen Greene
Mid-Atlantic Field Offices Supervisor
NOAA/National Marine Fisheries Service
Greater Atlantic Regional Fisheries Office
Habitat Conservation Division
James J. Howard Marine Sciences Laboratory
74 Magruder Rd.
Highlands, NJ 07732
732 872-3023 (office)

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

MAY 3 2018

Daniel M. Bierly, P.E.,
Chief, Civil Project Development Branch
Baltimore District
U.S. Army Corps of Engineers
2 Hopkins Plaza
Baltimore, MD 21201

RE: Atlantic Coast of Maryland Shoreline Protection Project (Ocean City) – Preparation of Supplementary Environmental Assessment – Offshore Shoals in Federal Waters as Sand Sources

Dear Mr. Bierly:

We have reviewed the information provided in the April 10, 2018, public notice, and in your April 5, 2018, letter on the proposed Atlantic Coast of Maryland Shoreline Protection Project in the Town of Ocean City, Worcester County, Maryland. The U.S. Army Corps of Engineers, Baltimore District (District), in partnership with the Maryland Department of Natural Resources (MD DNR), is proposing to dredge offshore shoals in federal waters to obtain sand for the shoreline project by the year 2022. The project would consist of mining sand from offshore shoals and placing it on the beach of Ocean City, generally every four years, to reduce risk of coastal storm damage. The most recent beach replenishment contract, completed in December 2017, exhausted sand from nearby offshore shoals in state waters. The District and MD DNR have placed sand on Ocean City beach more frequently than every four years following severe storms, and sand from federal waters may be needed sooner than 2022.

The District prepared an Environmental Impact Statement (EIS) in 2008 evaluating four shoals in federal waters (beyond the 3-mile limit) as sources of sand for the project: Weaver Shoal, Isle of Wight Shoal, Shoal "A," and Bass Grounds (also known as Shoal "B"). In 2008, Shoal "B" was determined to be unsuitable as a sand source because of its high value as a fishing ground. These offshore shoals have not yet been used for the project because sufficient sand has been available in state waters. Since ten years have elapsed since the 2008 EIS, the District is preparing a supplemental Environmental Assessment (EA) to document findings of its re-evaluation of the four offshore shoals in federal waters as sand sources.

You have requested our input on the re-evaluation of the project. To assist you in the development of a draft supplemental EA to assess the impacts of the proposed project, we offer the following comments pursuant to our authorities under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), Fish and Wildlife Coordination Act, and Endangered Species Act.

Magnuson Stevens Fishery Conservation and Management Act (MSA)

The Atlantic Ocean and sandy shoals offshore of the Delmarva Peninsula have been designated essential fish habitat (EFH) for a variety of life stages of fish managed by the New England Fishery Management Council (NEFMC), Mid-Atlantic Fishery Management Council (MAFMC), South Atlantic Fishery Management Council (SAFMC), and NMFS because these areas provide

feeding, resting, nursery, and staging habitat for a variety of commercially, recreationally, and ecologically important species. Species for which EFH has been designated in the area of the proposed project include, but are not limited to, Atlantic butterfish (*Peprilus triacanthus*), bluefish (*Pomatomus saltatrix*), black sea bass (*Centropristis striata*), red hake (*Urophycis chuss*), scup (*Stenotomus chrysops*), summer flounder (*Paralichthys dentatus*), windowpane flounder (*Scophthalmus aquosus*), clearnose skate (*Raja eglanteria*), little skate (*Leucoraja erinacea*), winter skate (*Leucoraja ocellata*), and surf clam (*Spisula solidissima*).

The area is also designated EFH for several Atlantic highly migratory species (tuna, swordfish, billfish, small and large coastal sharks, and pelagic sharks) including, but not limited to, sandbar shark (*Carcharhinus plumbeus*), spiny dogfish (*Squalus acanthias*), smoothhound shark complex (Atlantic stock), albacore tuna (*Thunnus alalunga*) and sand tiger shark (*Carcharias taurus*). The sand tiger shark has been listed as a Species of Concern by NOAA. The goal of listing a species as a Species of Concern is to promote proactive conservation efforts for these species in order to preclude the need to list them in the future. Furthermore, sandy shoals are designated as an EFH-Habitat Area of Particular Concern (HAPC) for Spanish mackerel (*Scomberomorus maculatus*), king mackerel (*Scomberomorus cavalla*), and cobia (*Rachycentron canadum*).

Shoal habitat is defined by such factors as exposure, sediment texture, depth, and rugosity, which constantly shift under normal current regimes and storm events. Shoals are also generally characterized by high fish production, high benthic faunal density, and species diversity; dense aggregations of fish are supported by local primary production. The shoals are also critically important for fisheries as they demarcate the boundary where the Labrador Current flowing south collides with the Gulf Stream Current flowing north, providing nutrient rich waters and generating localized areas of high productivity. Benthic invertebrate communities are diverse and productive despite the high-energy disturbance regimes affecting shoal complexes. Infaunal species provide important trophic linkages coupling benthic-pelagic ecosystems. Many of the organisms utilizing these habitats also provide trophic linkages between inshore and offshore systems. Additionally, a number of species migrate across the shoals at various temporal scales.

Understanding how shoals and the associated tidal inlets function to provide habitat is the product of a complex mix of connections between biological processes and physical factors. There is potential for significant short-term and long-term physical and biological impacts from dredging shoal habitat. Potential impacts caused by dredging include physical removal of benthic faunal communities and disturbance of foraging habitat for fish and invertebrates. Dredging can also affect benthic communities by altering sediment transport characteristics, sediment texture, depth and vertical relief, and overall community structure. Systematic dredging may result in cumulative, synergistic, and unanticipated changes in habitat quality. Furthermore, it is unknown how barrier islands and longshore coastal currents will respond to dredging and removal of large volumes of sand from the proposed shoals.

The MSA requires federal agencies, such as the Army Corps of Engineers to consult with us on any action or proposed action authorized, funded, or undertaken, by such agency that may adversely affect EFH identified under the MSA. This process is guided by the requirements of our EFH regulation at 50 CFR 600.905, which mandates the preparation of EFH assessments and generally outlines each agency's obligations in the consultation process. Our EFH regulations also allow federal agencies to incorporate an EFH assessment into documents prepared for other purposes including National Environmental Policy Act (NEPA) documents such as your supplemental EA provided certain conditions are met. If an EFH assessment is contained in

another document, it must be clearly identified as an EFH assessment and include all of the following mandatory elements including: (i) a description of the action, (ii) and analysis of the potential adverse effects of the action on EFH and the managed species, (iii) the federal agency's conclusions regarding the effects of the action on EFH, and (iv) proposed mitigation, if applicable.

The EFH final rule published in the Federal Register on January 17, 2002 defines an adverse effect as: "any impact which reduces the quality and/or quantity of EFH." The rule further states that:

> An adverse effect may include direct or indirect physical, chemical or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat and other ecosystems components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from action occurring within EFH or outside EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

The EFH final rule also states that the loss of prey may be an adverse effect on EFH and managed species. As a result, actions that reduce the availability of prey species, either through direct harm or capture, or through adverse impacts to the prey species' habitat may also be considered adverse effects on EFH.

As part of the supplemental EA, you should prepare an EFH assessment to address the direct, indirect, individual, and cumulative effects of mining sandy shoals on EFH, federally managed species and their prey. To fully evaluate the proposed project, information regarding the depths, locations, frequencies, and orientations of cuts for all borrow areas and rates at which borrow areas are expected to fill will be necessary. Biological information characterizing the distribution, abundance, biomass, production and diversity of fish and invertebrates on the shoal complex is also necessary to undertake this evaluation. Fishery-independent surveys that include a combination of active sampling (e.g., trawling) and passive sampling (e.g., acoustic technologies) should be used and sampling should occur throughout the year to evaluate temporal differences in shoal communities. Fishery-dependent surveys may also be useful for evaluating project effects.

For a listing of EFH and further information, please see our website at: http://www.greateratlantic.fisheries.noaa.gov/habitat. The website also contains information on descriptions of EFH for each species, guidance on the EFH consultation process including EFH assessments, and information relevant to our other mandates. Furthermore, a number of Fisheries Management Plans and amendments to those plans (e.g., June 2009 Amendment 1 to the Consolidated Highly Migratory Species (HMS) Fisheries Management Plan) address non-fishing activities such as sand mining, and provide a number of general EFH conservation recommendations, which can be included into the supplemental EA as avoidance and minimization measures.

Fish and Wildlife Coordination Act (FWCA)

The Atlantic Ocean and sandy shoals offshore of the Delmarva Peninsula serve as valuable habitat for many aquatic species including both state and federally managed species and their forage including Atlantic butterfish, Atlantic sea herring (*Clupea harengus*), bluefish, black sea bass, red hake, scup, summer flounder, windowpane flounder, clearnose skate, little skate, winter

skate, striped bass (*Morone saxatilis*), blue crab (*Callinectes sapidus*), Atlantic menhaden (*Brevoortia tyrannus*), bay anchovies and other assorted baitfishes and shrimps (e.g., *Neomysis Americana, Mysidopsis bigelow*). The area of the proposed project also supports strong recreational and commercial fisheries.

The shoal complex offshore of the Delmarva Peninsula is also important habitat for horseshoe crabs (*Limulus polyphemus*). Horseshoe crabs play valuable ecological roles in the food web within the nearshore and offshore communities. Horseshoe crab eggs and larvae are also a food source for a number of other species including striped bass, white perch (*Morone americana*), weakfish (*Cynoscion regalis*), American eel (*Anguilla rostrata*), silver perch (*Bairdiella chrysoura*), and federally managed summer flounder. Horseshoe crab eggs and larvae provide critical linkages between nearshore and offshore environments.

These areas are also important habitat for anadromous species such as alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), American shad (*Alosa sapidissima*), and striped bass, species that move along and across shoal habitat multiple times throughout their life cycle. Sexually mature adults move across shoals to aggregate and stage near river mouths and inlets prior to spawning migrations in rivers. Similarly, young-of-year emerge from estuaries and migrate across the shoals to the waters of the north Atlantic for growing. Alterations to shoal habitat could affect spatiotemporal longshore movements by disrupting feeding behavior and modifying and disrupting a significant orientation cue for migration. Anadromous species are the most common and well known fish to exhibit longshore migratory behavior. These species have complex lifecycles where individuals migrate great distances along the continental shelf and then return to their natal rivers to spawn.

Because landing statistics and the number of fish observed on annual spawning runs indicate a drastic decline in alewife and blueback herring populations throughout much of their range since the mid-1960s, river herring have been designated as Species of Concern by NOAA. We wish to draw proactive attention and conservation action to these species. The 2012 river herring benchmark stock assessment found that of the 52 stocks of alewife and blueback herring assessed, 23 were depleted relative to historic levels, one was increasing, and the status of 28 stocks could not be determined because the time-series of available data was too short. The "depleted" determination was used instead of "overfished" and "overfishing" to indicate factors besides fishing have contributed to the decline, including habitat loss, habitat degradation and modification, and climate change. Increases in turbidity due to the resuspension of sediments into the water column during dredging and construction activities can degrade water quality, lower dissolved oxygen levels, and potentially release chemical contaminants bound to the fine-grained estuarine/marine sediments.

Endangered Species Act (ESA)

The following endangered or threatened species under our jurisdiction may be present in the project area:

Atlantic Sturgeon

Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) are present in coastal waters along the coast of Maryland as well as in Chesapeake Bay and its tributaries. The New York Bight, Chesapeake Bay, South Atlantic, and Carolina distinct population segments (DPS) of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. Adult and subadult Atlantic sturgeon 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; therefore, no egg, larvae, or juvenile Atlantic sturgeon will occur in the area.

Sea Turtles

Four species of federally threatened or endangered sea turtles under our jurisdiction can be found seasonally in the coastal waters of Maryland from late April – mid November of each year. The threatened Northwest Atlantic Ocean DPS of loggerhead (*Caretta caretta*), the endangered Kemp's ridley (*Lepidochelys kempii*), and the endangered leatherback (*Dermochelys coriacea*) sea turtles may be present along the Maryland coast. NMFS published the final listing of eleven Green sea turtle (*Chelonia mydas*) DPS on April 6, 2016. Eight DPSs were listed as threatened and three as endangered. The DPS found in U.S. Atlantic waters, the North Atlantic DPS, is listed as threatened. Due to the inability to distinguish between these populations away from the nesting beach, green sea turtles are considered endangered wherever they occur in U.S. waters.

Juvenile and adult turtles of all species of sea turtles may occur seasonally along Maryland shores though leatherback turtles would normally be found offshore in deeper waters. There are no established nesting beaches in Maryland and eggs and hatchlings will not be present within the proposed project area.

Cetaceans (Whales)

Five species of endangered large whales occur seasonally off the Mid-Atlantic coast of the U.S.: North Atlantic right whale (*Eubalaena glacialis*), fin whale (*Balaenoptera physalus*), sei whale (*Balaenoptera borealis*), sperm whale (*Physeter macrocephalus*), and blue whale (*Balaenoptera musculus*).

However, of these five species, only two, the right and fin whales, are likely to occur closer to the Maryland shore in shallower waters. Sperm, blue, and sei whales are typically found in waters further offshore. Right whales are most likely to occur along the Maryland coast during seasonal migrations between November and April and fin whales are most likely to occur during seasonal migrations between October and January.

As project plans develop, we recommend you consider the following project best management practices and avoidance/minimization measures for all of the proposed project's activities that might affect sea turtles, sturgeon, and whales

• 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 work that will increase vessel traffic within the project area, consider restricting the number of trips taken by each vessel and selecting shallow draft vessels.

• 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 additional guidance on the section 7 consultation process, technical resources and species information, please visit our website at:
https://www.greateratlantic.fisheries.noaa.gov/protected/section7/index.html

You will be responsible for determining whether the proposed action may affect listed species. If you determine that the proposed action may affect a listed species, you should submit your determination of effects, along with justification and a request for concurrence to the attention of the Section 7 Coordinator, NMFS, Greater Atlantic Regional Fisheries Office, Protected Resources Division, 55 Great Republic Drive, Gloucester, MA 01930. We also have a specialized e-mail account to expedite the process of submitting a request for consultation to us at nmfs.gar.esa.section7@noaa.gov. We encourage you to electronically submit any consultation requests directly to this e-mail account. After reviewing this information, 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 Brian D. Hopper (410-573-4592; brian.d.hopper@noaa.gov)

We look forward to continued coordination with your office on this project as it moves forward. If you have any questions or need additional information, please do not hesitate to contact Keith Hanson in our Annapolis, MD field office at keith.hanson@noaa.gov or (410) 573-4559 regarding EFH/MSA issues and Brian Hopper at brian.d.hopper@noaa.gov regarding ESA issues.

Sincerely,

Karen M. Greene
Mid-Atlantic Field Offices Supervisor
Habitat Conservation Division

cc: ACOE – C. Spaur
PRD – M. Murray-Brown, B. Hopper, C. Vaccaro
FWS- C. Guy
EPA Region III – Mike Mansolino
MAFMC – C. Moore
NEFMC – T. Nies
ASMFC –L. Havel

From:	David Blazer -DNR-
To:	Spaur, Christopher C CIV USARMY (US)
Cc:	Piatkowski, Douglas; Callahan, Justin B CIV USARMY CENAB (US); Michael Luisi -DNR-; Angel Willey; Lynn Waller Fegley; George ODonnell -DNR-
Subject:	[Non-DoD Source] Re: Handouts for Fishermen"s Meeting on 4/27/2018
Date:	Monday, May 07, 2018 6:35:15 PM
Attachments:	AC_DNRfishermenMtngText04202018.docx

Chris,

We had our meetings with the commercial (about 10 waterman) and recreational fisherman's groups (about 35 fishermen) on April 27 and introduced the idea of the Beach replenishment project that we discussed. Obviously all of the folks in attendance are very concerned about the potential impacts of the project while also appreciative of being asked their thoughts early in the process.

Both groups wanted to take some time to think about the proposal and organize their thoughts as a group. They are interested in learning more about the project and they asked many questions that I didn't have the background information to answer. These are a few of the questions they had:

1. What data exists on each of the sites?

2. Is there any data on the impact from the previous borrow areas?

3. Both groups said the southern most site (I believe Bass Grounds) was a good area where they fish and shouldn't be considered.

4. Are there artificial reefs near these sites?

5. Are there other sources other than these and why did these get picked as the four to consider?

I will be sending the public notice and your contact information to the representatives of the groups (I will cc you) so they can follow up with you regarding more details of the project. Can I email and share these attachments you sent me previously with them (i used them for notes but did not handout at the meeting) ?

If there is anything else I can help with, please let me know.

Dave

On Fri, Apr 20, 2018 at 1:28 PM, Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> > wrote:

Dave

Above attached.

Big picture. We need input from fishermen on relative value of the 4 shoals as fishing grounds. Basically, is Bass Grounds (Shoal B) still too valuable to borrow from? Are Weaver, Isle of Wight, and A still acceptable? (Dredging would be conducted with guidelines and constraints to maintain shoals). Could they help us identify commercial/recreational vessels that fish these waters and how we can coordinate with them to get input?

Handouts contain background information on project and offshore shoals just in case it's needed. You could skip or minimize coverage of that as best suits.

Let me know if you have any suggestions or questions about these. If it'd be useful, I could attend meeting or participate by phone.

Thanks for your help,

Chris

--

<Blockedhttp://www.maryland.gov/>

<Blockedhttps://www.facebook.com/MarylandDNR/> <Blockedhttps://twitter.com/MarylandDNR>

dnr.maryland.gov <Blockedhttp://dnr.maryland.gov/>

Dave Blazer

Director, Fishing and Boating Service

Department of Natural Resources

580 Taylor Ave., B-2

Annapolis, Maryland 21401

410-260-8281 (office)

443-676-7208 (cell)

david.blazer@maryland.gov <mailto:david.blazer@maryland.gov>

Click here <Blockedhttp://www.doit.state.md.us/selectsurvey/TakeSurvey.aspx?agencycode=DNR&SurveyID=86M2956#> to complete a three question customer experience survey.

From:	Blair, AaronM
To:	Spaur, Christopher C CIV USARMY (US)
Subject:	[Non-DoD Source] Atlantic Coast MD Shoreline Protection EA
Date:	Thursday, May 10, 2018 6:23:12 PM

Dear Mr. Spaur,

The U.S. Environmental Protection Agency (EPA) received the public notice from the U.S. Army Corps of Engineers, Baltimore District (USACE) regarding the proposal to dredge offshore shoals in federal waters to obtain sand for the Atlantic Coast of Maryland Shoreline Protection Project (project). USACE prepared an Environmental Impact Statement (EIS) in 2008 evaluating four shoals in federal waters and is preparing a supplemental Environmental Assessment (EA) documenting findings of the re-evaluation to ensure compliance with the National Environmental Policy Act. EPA greatly appreciates USACE alerting us to the re-evaluation and considering scoping recommendations.

* The EA should provide context for the study area, other efforts being performed in the area, communication planning, etc.
* Alternatives analysis should include the suite of activities or solutions that were considered and the rationale for not carrying these alternatives forward for detailed study. Please feel free to reach out EPA to discuss Alternatives moved forward to detailed study.
* Please indicate in the EA what permits will be sought and required from the State and Federal governments.
* We recommend the EA include discussion of preferred and alternative dredging equipment for the project and the benefits and limitations of each. Rationale for selection should be provided. Hydraulic methods may reduce vessel support, reduce emissions, and minimize wildlife strikes, however may be associated with increased sedimentation and therefore impacts to benthic communities. EPA suggests consideration to methods and best practices to limit sediment/sand dispersion during the activities.
* Please consider including an analysis of shoal movement, growth, reduction with current shoreline processes, whether shoals can sustain additional dredging as a source of material for beach nourishment.
* It is recommended that an updated evaluation of current habitat for birds, fish and invertebrates (such as annelids, mollusks, and crustaceans) be included along with anticipated impacts and avoidance, minimization, mitigation and monitoring measures. Please include any impacts the proposed actions may have on herpetofauna including any avoidance and minimization measures.
* As stated in our August 27, 2007 letter on the Draft EIS, maintaining shoal profile is important to allow current functions of the features in the offshore system and effectively maintain long term functions for marine life.
* Please indicate if it is anticipated that the project will lead to creation of habitat for species such as the Piping Plover or Diamondback Terrapin and if monitoring of these or other species will be conducted.
* Please summarize previous shoreline efforts and any lessons learned. In nearby areas, the presence of additional sand within the nearshore system was anticipated to lead to the formation of offshore sand bars which would dissipate wave energy. Have offshore sandbars formed since the additional sand was incorporated into the nearshore system? Please describe how any offshore sandbars formed may influence the construction of the shoreline features of this project.
* The study should evaluate and discuss secondary and cumulative impacts, as defined by CEQ (40 CFR 1508.7 and 1508.8), of the proposed actions. Impacts may be positive or adverse (see CEQ 1997- “Considering Cumulative Effects Under the National Environmental Policy Act”).
* As you may be aware, the Mid-Atlantic Ocean Data Portal (MARCO) is an Interactive ocean mapping tool. It includes data layers of fishing grounds, recreational areas, shipping lanes, critical habitat areas, and energy sites, among others. The portal is a collaboration among federal agencies including NOAA, BOEM, the Coast Guard, the U.S. Fish and Wildlife Service, the Department of Defense, EPA, as well partners from nonprofit organizations and the private sector. We recommend this tool be used as part of the EA analysis. The MARCO website is: Blockedhttp://portal.midatlanticocean.org/ocean-stories/every-map-tells-a-story/ <Blockedhttp://portal.midatlanticocean.org/ocean-stories/every-map-tells-a-story/>

Thank you for coordinating with EPA on this project. We look forward to working with you as more information becomes available. Please let me know if you have any questions on the recommended topics above. Please provide a copy of the EA to EPA when it is available for review.

Thank you,

Aaron

Aaron Blair
Physical Scientist

U.S. EPA Mid-Atlantic Region 3
Environmental Assessment and Innovation Division
1650 Arch Street

Philadelphia, PA 19103

215-814-2748

From: Keith Hanson - NOAA Federal
To: Spaur, Christopher C CIV USARMY (US)
Cc: Piatkowski, Douglas; Gomez, Michele L CIV USARMY CENAB (US)
Subject: Re: [Non-DoD Source] Re: [EXTERNAL] Re: Atlantic Coast Project - EFH Assessment Chat
Date: Thursday, May 10, 2018 2:08:23 PM

Thanks for this, Chris.

On Thu, May 10, 2018 at 1:58 PM, Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> > wrote:

Keith

I'll review documents you forwarded. Meanwhile, as you know, many dilemmas in trying to figure out how to do least environmental and fisheries harm. The 2008 SEIS provides information covering shoals versus other potential sand sources, selection of shoals, and how we think impacts to shoals from future dredging would be minimized with proposed guidelines/constraints. We tried then and are trying now to figure out to best provide sand for Ocean City while at the same time minimizing environmental and fisheries impacts. We considered the artificial reefs then and are considering them now. We can have further discussion on shoal versus other sources topic.

For some independent agency perspective, I've attached a file containing USFWS coordination excerpted from the 2008 SEIS that I think is informative and well-reasoned, and would be particularly useful for you to review (it's in previous files you received via file share, but buried in there and might take some time to notice).

One point not recorded in the SEIS though (nor USFWS coordination), is decision made years ago regarding how to protect Ocean City, also relevant for big-picture. Beach nourishment arguably has less impact to the shoreline (not the shoals) than a large-scale traditional engineering project that would've relied on massive rock structures would have caused (groins, breakwaters). Somewhat progressively for its time back in the 1980s, USACE and MD chose to rely on beach nourishment without large structures. (Although the constructed dunes do have hard structures within them).

Chris

-----Original Message-----
From: Piatkowski, Douglas [mailto:douglas.piatkowski@boem.gov <mailto:douglas.piatkowski@boem.gov>]
Sent: Thursday, May 10, 2018 8:32 AM
To: Keith Hanson - NOAA Federal <keith.hanson@noaa.gov <mailto:keith.hanson@noaa.gov> >
Cc: Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> >; Gomez, Michele L CIV USARMY CENAB (US) <Michele.Gomez@usace.army.mil <mailto:Michele.Gomez@usace.army.mil> >; Douglas Piatkowski <douglas.piatkowski@boem.gov <mailto:douglas.piatkowski@boem.gov> >
Subject: [Non-DoD Source] Re: [EXTERNAL] Re: Atlantic Coast Project - EFH Assessment Chat

Thanks Keith...these documents are helpful! I was aware of the section titled "Policies on Beach Nourishment" and have reviewed it again. As we discussed the other day, I do have concerns with the general nature of the recommendation to "Avoid mining sand from sandy ridges, lumps, shoals, and rises that are named on maps. The naming of these is often the result of the area being an important fishing ground."

I appreciate the concern from fisherman that depend on these features as prime fishing grounds; however, the recommendation is very general in nature and recommends screening out limited sand resources that are a critical component of long term coastal resiliency needs without considering the idea that there are opportunities to support both uses if done correctly using targeted mitigations. We should consider the fact that not all sand ridges, lumps,

and shoals offer the same habitat value and all projects that dredge these resources are unique. By understanding the geomorphologic evolution and dynamics of each feature, we can better understand how to dredge each of these different features in ways that support shoal integrity and maintain biological productivity. As you know, maintaining shoal integrity supports the physical dynamics of the system which drive the biological productivity. For example, in the case of Ocean City, the project has proposed a suite of mitigations including a limit in total volume removed from each shoal in order to maintain integrity. Though we may have new information that could result in a few tweaks to these original recommendations, they serve as a pretty good baseline based on the literature that currently exists. There is an extensive literature base that supports short term recoverable impacts when specific mitigations are in place. With that said, I think it is important that we focus our time on developing win-win solutions that address the use conflict concerns; thus allowing the project to move forward while avoiding/minimizing impacts to the maximum extent. I think we can get there as a team!

On Wed, May 9, 2018 at 3:08 PM, Keith Hanson - NOAA Federal <keith.hanson@noaa.gov <mailto:keith.hanson@noaa.gov> <mailto:keith.hanson@noaa.gov > > > wrote:

Hey All,

I want to point you to the "Coastal Development" document under "Council Policies" on the link I sent you yesterday (here it is again: Blockedhttp://Blockedwww.mafmc.org/habitat/ <Blockedhttp://www.mafmc.org/habitat/> <Blockedhttp://Blockedwww.mafmc.org/habitat/ <Blockedhttp://www.mafmc.org/habitat/> >).

Specifically, on Page 3 of the "Council Policy on Coastal Development" document, Item #2 under "Policies on Beach Nourishment" is very important. This item reads, "Avoid mining sand from sandy ridges, lumps, shoals, and rises that are named on maps. The naming of these is often the result of the area being an important fishing ground." Though this seems like a simple/general recommendation, it is taken very seriously by our leadership.

I have attached the most recent NOAA Chart for the area (last correction 4/20/2018). It clearly shows Fenwick and Isle of Wight Shoals, as well as numerous Obstruction Fish Havens (artificial "reef" sites). I've also attached a helpful document that concisely describes the Fish Havens.

You may notice while looking at the chart that Shoal B is surrounded by Fish Havens, and same structures may have even been placed atop the shoal. This may also be the case for Shoal A.

Thanks and look forward to talking with you all soon.

Best,
Keith

On Tue, May 8, 2018 at 12:02 PM, Keith Hanson - NOAA Federal <keith.hanson@noaa.gov <mailto:keith.hanson@noaa.gov> <mailto:keith.hanson@noaa.gov > > > wrote:

Hey All,

Great talking with you so early in the process. I look forward to our continued work together on this project.

Here is the MAFMC page I mentioned at the end of the call. It has recent Council policies on non-fishing activities, basically broad "conservation recommendations."

Blockedhttp://Blockedwww.mafmc.org/habitat/ <Blockedhttp://www.mafmc.org/habitat/>

From: Blair, AaronM
To: Spaur, Christopher C CIV USARMY (US)
Cc: Piatkowski, Douglas; Rudnick, Barbara
Subject: [Non-DoD Source] Re: Atlantic Coast MD Shoreline Protection EA
Date: Friday, May 11, 2018 8:08:14 AM

Chris -

Thanks for the clarification on the barrier islands and coastal bay species. We weren't entirely sure of the scope and extent of the sand placement, so this helps. Feel free to contact me if any other questions may arise. Otherwise, we're looking forward to reviewing the EA.

Aaron

Aaron Blair
Physical Scientist
Environmental Assessment and Innovation Division
U.S. EPA - Region III

215-814-2748

From: Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil>
Sent: Friday, May 11, 2018 7:18:28 AM
To: Blair, AaronM
Cc: Piatkowski, Douglas
Subject: RE: Atlantic Coast MD Shoreline Protection EA

Aaron

Thanks for response.

We intend to cover most of the topics you raised below. However, two I would prefer to leave out. We weren't intending to cover barrier island nor coastal bays species. Sand would go only to Ocean City to maintain coastal storm damage reduction function of existing USACE/MD DNR project (principal benefit also recreation). The beach is heavily used by people and as such the project would not provide nesting habitat for piping plover (it's also not ideal in that foraging opportunities with chicks would be poor). Sand is not being placed on the bayside, so no nesting habitat for terrapin would be created.

Chris

-----Original Message-----

From: Keith Hanson - NOAA Federal
To: Spaur, Christopher C CIV USARMY (US); Piatkowski, Douglas
Cc: Karen Greene - NOAA Federal; Christine Vaccaro - NOAA Federal
Subject: [Non-DoD Source] MD Offshore Sandy Shoals Project
Date: Wednesday, May 30, 2018 4:43:21 PM

Hi Chris,

I wanted to touch base regarding the Maryland Offshore Sandy Shoals project.

I have discussed the project with various NOAA NMFS folks, and am still waiting to have a few calls with some from the Northeast Fisheries Science Center. However, the fact I'm waiting to have those calls do not preclude me from updating you.

As is outlined in our letter dated May 3, 2018, new studies focused on the areas directly and indirectly impacted by the proposed dredging and placement will be necessary for the proposed project. Much of the work done in the mid-2000s for the 2008 EIS can certainly be useful for comparisons, but are not adequate to evaluate the potential adverse effects of the current proposed project.

With that being said, it is important to note that recent studies (e.g., BOEM WEA assessments) have been conducted within a few miles of some of the shoals that are proposed to be harvested, and could certainly be valuable as reference areas for current comparisons (e.g., comparing species richness and abundance of species in/around the sandy shoals v. in nearby areas dominated by shellhash, gravel and sand bottom [not sandy shoals]).

We can get into very specific survey/study methodologies (otter/beam trawling, underwater camera systems/camera traps, grab sampling, etc.) and timing at a later date, but I did not want to leave you hanging on this, since your office seems motivated to move forward.

I'll be mostly out of touch for the next 7 or so business with a very busy schedule, some leave time, and regional travel for other coastal projects, but can certainly touch base with you through email during that period.

I have copied Karen Greene on this, so she is kept in the loop. She may also participate in future calls/meetings related to the project.

I hope you are well.

Best,
Keith

--

Keith M. Hanson
Marine Habitat Resource Specialist
NOAA Fisheries
Greater Atlantic Region
Habitat Conservation Division

177 Admiral Cochrane Drive
Annapolis, MD 21401

From:	Piatkowski, Douglas
To:	Spaur, Christopher C CIV USARMY (US)
Cc:	Callahan, Justin B CIV USARMY CENAB (US); Gomez, Michele L CIV USARMY CENAB (US)
Subject:	[Non-DoD Source] Re: [EXTERNAL] BOEM 2017-088, MD WEA Assessment: Analogue and Data Source for Atlantic Coast of MD Project Borrow Areas
Date:	Friday, June 08, 2018 1:51:23 PM

Thanks Chris. I reached out to Brian Hooker who was the COR on that particular contract. He is loading some of the MD specific files right now. I will try to send them to you via AMRDEC. I am not a GIS expert either. Lets start by loading what he provided and spatially overlaying with the proposed borrow areas. Assuming you have a GIS support team member.....once you are able to see what is provided....we can start teasing out more specific data needs. Sound good?

On Fri, Jun 8, 2018 at 11:56 AM, Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> > wrote:

Doug

My general impression is that NW portion of MD WEA, because it's close to Weaver and Isle of Wight Shoals, would itself be an appropriate analogue from which to provide a more up-to-date characterization of the physical environment and living things of the project's candidate shoals. In 2008 SEIS, we used data from the region, plus data that MMS had funded collection of that was actually on some of the project's candidate shoals. Eyeballing the maps in BOEM 2017-088, it looks like the NEFSC trawls depicted in Figure 2-26 and Delmarva beam trawls depicted in Figure 2-27 probably included sampling on Weaver Shoal, Isle of Wight Shoal, and or Shoal A, as well as immediately adjacent areas.

If above eyeballing correct, please forward over GIS data (shapefiles?) or instruct me where we can get it so that we could prepare maps showing these NEFSC and DelMarVa beam trawls position, as well as MD and DE WEAs generally, with respect to our candidate shoals for borrow*. Also, please ensure that we can query the GIS data to know which trawls are which in event we need to mine out the trawl data for shoal vs non-shoal areas. In event we do want specific trawl data/findings, is extracting that out a not-too-painful task? In the 2008 SEIS we made an effort to contrast shoal vs non-shoal habitats so that agency reviewers and public can think through impacts of borrowing from shoals vs non-shoal areas. Based on recent coordination with NMFS and fishermen, this basic point - values of shoal vs non-shoal areas as habitat - is probably more controversial than it was at time of 2008 SEIS (although we were debating it then, too).

Thanks,

Chris

* I'm GIS illiterate, so request may not be worded exactly right.

--

Doug Piatkowski
Physical Scientist

From: Piatkowski, Douglas
To: Spaur, Christopher C CIV USARMY (US)
Subject: [Non-DoD Source] Re: [EXTERNAL] Conference Call - Draft MFR
Date: Thursday, June 14, 2018 12:51:09 PM

Thanks for the thorough documentation of the discussion. I am good with it.

On Wed, Jun 13, 2018 at 1:13 PM, Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> > wrote:

All

Please review attached by Tuesday of next week (June 19th) while your memories are still fresh. Make any revisions you'd like with track changes tool. If I have no contradictory recollections, I'll then finalize it and include it in EA. Conversely, if there's some differences in perspective, I'll make revisions and send out for another round. Thanks for having participated.

Chris

--

Doug Piatkowski
Physical Scientist

douglas.piatkowski@boem.gov <mailto:douglas.piatkowski@boem.gov>

703-787-1833
Department of the Interior, Bureau of Ocean Energy Management Headquarters,
<Blockedhttp://www.boem.gov/images/boem/layout/logo.png>
Division of Environmental Assessment

45600 Woodland Road, VAM-OEP
Sterling, VA 20166
Blockedhttp://www.boem.gov/OEP/ <Blockedhttp://www.boem.gov/OEP/>

-----Original Message-----
From: Keith Hanson - NOAA Federal [mailto:keith.hanson@noaa.gov]
Sent: Friday, June 15, 2018 10:22 AM
To: Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil>
Cc: Karen Greene - NOAA Federal <Karen.Greene@noaa.gov>; Piatkowski, Douglas <douglas.piatkowski@boem.gov>; Gomez, Michele L CIV USARMY CENAB (US) <Michele.Gomez@usace.army.mil>
Subject: [Non-DoD Source] Re: Atlantic Coast MD: EFH Impacts Assessment - Diadromous Spp as Other Trust Resources

Hi Chris,

I would agree with the document-structure you proposed. Only include the relevant species in the "other NOAA-trust resources" section, as the worksheet lists a number of species that may not be relevant to this project. For now, yes, include the shad and river herring under that section as well - being sure to discuss their importance as prey for many federally managed species. We are unaware of a timeline for the MAFMC action, if there will be an action at all.

Best,
Keith

-----Original Message-----
From: Spaur, Christopher C CIV USARMY (US)
Sent: Friday, June 15, 2018 6:30 AM
To: 'Keith Hanson - NOAA Federal' <keith.hanson@noaa.gov>
Cc: Karen Greene - NOAA Federal <Karen.Greene@noaa.gov>; Piatkowski, Douglas <douglas.piatkowski@boem.gov>; Gomez, Michele L CIV USARMY CENAB (US) <Michele.Gomez@usace.army.mil>
Subject: Atlantic Coast MD: EFH Impacts Assessment - Diadromous Spp as Other Trust Resources

Keith

So document-structure wise, it seems like it would make sense to cover all the species below (other than Atlantic sturgeon) in a part of the document called "other NOAA trust resources" rather than in EFH impacts assessment. That would also be consistent with how the GARFO EFH impacts assessment worksheet is set up. That worksheet of course identifies numerous additional trust resources of concern that lack designated EFH. So should I also provide some brief specific coverage for each of those?

Information online stated that the Mid-Atlantic Council is considering adding river herring and/or shads as stocks in the management plans for other fisheries. If that happens, then EFH would be designated specifically for river herring and/or shads. However, I didn't read that that has happened yet (?) - supporting making it sensible to instead cover species below under "other trust resources" rather than EFH.

I'll get back with you in near future regarding species list for which EFH is designated.

Thanks for your help,

Chris

-----Original Message-----
From: Keith Hanson - NOAA Federal [mailto:keith.hanson@noaa.gov]
Sent: Thursday, June 14, 2018 2:04 PM
To: Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil>
Cc: Karen Greene - NOAA Federal <Karen.Greene@noaa.gov>; Piatkowski, Douglas <douglas.piatkowski@boem.gov>; Gomez, Michele L CIV USARMY CENAB (US) <Michele.Gomez@usace.army.mil>
Subject: [Non-DoD Source] Re: Atlantic Coast MD: EFH Impacts Assessment - Diadromous Spp

Hey Chris,

You are on the right track, but there are a few minor issues. Here are my comments:

Atl. Sturgeon: I concur that this is the best approach (ESA).

Alewife and blueback herring are collectively known as river herring. That term does not include/encompass American shad or hickory shad. You can simply refer to these as "shad" in introductory paragraphs/summaries (once you've identified both species), but be sure to identify which shad species you're referencing in stressors/effects sections. Maybe give each species it's own subsection. It is important to note that the river herring have declined dramatically since the mid-1960s and have remained very low in recent years. Because landing statistics and the number of fish observed on annual spawning runs indicate a drastic decline in alewife and blueback herring populations throughout much of their range since the mid-1960s, river herring have been designated as Species of Concern by NOAA. Species of Concern are those about which we have concerns regarding their status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act (ESA). American shad (and hickory) are not listed as Species of Concern, but are listed by various states (under state authorities) as either vulnerable, threatened, or endangered.

You are correct to focus mainly on juvenile and adult river herring and shad and there is good info out there on effects of dredging (e.g., direct physical effects, behavioral effects, etc.). No need to worry about egg or larval stages, however the young of year (YOY) will migrate out of freshwater rivers into more saline water and eventually into the open ocean during their first year of life. American shad and river herring are important prey species for many federally managed species. We know less about the importance of hickory shad as prey.

I would be remiss if I didn't bring up the Fish and Wildlife Coordination Act (FWCA), which is another authority which allows us to review, comment, and provide recommendations on projects. That will likely be the vehicle for our comments on Striped Bass and hickory shad, but we may also comment on other species including some already named (river herring and American shad).

It might be good to include a few paragraphs on Striped Bass (potentially under "other species/non-EFH" or "other NOAA-trust resources" section). Please refer to Step 6. of our EFH Assessment Worksheet as a

guide (link here for EFH Worksheet: Blockedhttps://www.greateratlantic.fisheries.noaa.gov/habitat/efh/efhassessment.html). As an important commercial and recreational fishery, some evaluation of potential impacts on striped bass will be important. This section may also be appropriate for hickory shad, but you can include hickory under EFH if you'd like. The same would be true for American Eel, another species on which we regularly provide comments via the FWCA. Bare minimum consideration is fine with the American Eel, a paragraph should suffice.

Though it may be confusing, the FWCA gives us a lot of latitude to comment on various species that may be impacted by a project. Meaning, we can actually comment on federally managed species (MSA species [species for which EFH has been designated]) and other NOAA-trust resources under the FWCA. So, in our comments, we don't always breakup the MSA/FWCA because there is a lot of crossover. However, if there is no EFH component (e.g., importance as prey) for a species (like striped bass), we only comment under the FWCA.

I think that about does it. Please let me know if I've failed to address anything from your email!

Hope this helps.

Best,
Keith

On Thu, Jun 14, 2018 at 11:05 AM, Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> > wrote:

Keith

Trying to figure out list of species that require consideration in EFH impacts assessment. First, anadromous and catadromous.

In the 2008 SEIS EFH impacts assessment we did not include consideration of anadromous or catadromous species that occur in the area of interest because that wasn't considered procedurally necessary at that time. As we discussed in the conference call earlier this week though, some of the anadromous species life history stages that are present in ocean are now typically included in EFH impacts assessments, although they don't actually have marine EFH designated yet as I understand it. (I don't recollect that we discussed consideration of catadromous American eel).

I figured it's best if I double-check with you on all the diadromous species covered in ASMFC 2009 to see whether this assessment needs to cover them. Based on that publication, diadromous species candidates could potentially include: alewife, blueback herring, American shad, hickory shad, striped bass, Atlantic sturgeon, and American eel.

Please look over the following proposed approaches and let me know if the approach is sound. I would probably primarily reference ASMFC 2009 as that appears to be quite thorough.

- Atlantic sturgeon: Exclude from consideration because it's federally listed and protected under ESA, so outside of purview of MSA

- River herring (alewife, blueback herring, American shad, hickory shad [juvenile and adult]): All are pelagic, so they'd not likely be vulnerable to direct impacts. Indirect impact-wise, provide minimal coverage of planktivorous spp (American shad, alewife, blueback), but conversely provide more text on piscivorous hickory shad because bottom impacts could cause loss of sand lance, etc., that it may feed on at sea. Because hickory shad (as with other river herring) serves as prey for important commercial and recreational fish species, need to then consider how possible minor effect on hickory shad could affect these other spp.

-Striped bass (juvenile and adult): Pelagic so not vulnerable to direct impacts, but could be impacted by loss of prey from dredging impacts on bottom. Striped bass coastal migratory stocks are managed under a fishery management plan developed by the Atlantic States Marine Fisheries Commission. However, I'm confused over whether it should be included in an EFH impacts assessment - should I include it?

- American eel (3 life history stages potentially present: larvae, glass eel, silver eel). Larvae would be in upper water column so minimal vulnerability to entrainment into dredge. Glass eel could be migrating westward through area and could be entrained. However, migration is by advection in lateral currents (they can move up or down only [?]) and they are apparently almost planktonic in character. Silver eel could pass through heading eastward towards Sargasso Sea to spawn but apparently don't feed at sea. Added altogether, although some could be entrained in dredge, minimal concern over project impacts to American eel, so I'd provide bare minimum consideration in document.

Thanks for your help,

Chris

Atlantic States Marine Fisheries Commission. 2009. Atlantic Coast Diadromous Fish Habitat: A Review of Utilization, Threats, Recommendations for Conservation, and Research Needs. Habitat Management Series #9. January 2009. Greene, K. E., J. L. Zimmerman, R. W. Laney, and J. C. Thomas-Blate. Blockedwww.asmfc.org/files/Habitat/HMS9_Diadromous_Habitat_2009.pdf <Blockedhttp://www.asmfc.org/files/Habitat/HMS9_Diadromous_Habitat_2009.pdf>

--

Keith M. Hanson

Spaur, Christopher C CIV USARMY (US)

From: Spaur, Christopher C CIV USARMY (US)
Sent: Tuesday, June 26, 2018 8:57 AM
To: 'Catherine McCall -DNR-'
Cc: Kimberly Hernandez -DNR-; Callahan, Justin B CIV USARMY CENAB (US); 'Piatkowski, Douglas'; Gomez, Michele L CIV USARMY CENAB (US)
Subject: RE: [Non-DoD Source] Re: FW: USACE/MD DNR/BOEM Fishermen's Meeting

Catherine

I include "DNR" generally when I describe the project because the "Local Cooperation Agreement" for the project is entered into by USACE and the State of MD acting through the Secretary of DNR. (So, you're part project "owners"). I have been coordinating with Dave Blazer of DNR occasionally since March on how to best proactively coordinate with fishermen regarding future dredging for sand from offshore shoals in federal waters (and environmental assessment we're preparing to update 2008 EIS). I can try to cc you routinely on various goings-on related to that if you'd like*. We also coordinate occasionally with MGS of DNR.

We're conducting this meeting to reach out to fishermen who've asked for one, but it is open to the general public, of course. I think this meeting will most likely be attended primarily by charter boat captains, although probably some recreational and perhaps commercial fishermen will also attend. I don't have a good sense for how many will come out for this, so I don't know whether it's worth your time or not. That said, I'd welcome you or others of your staff there in event there's questions you can best answer. I've been making decisions on details of this meeting based on advice from Colin Campbell of the Ocean City Marlins Club.

Chris

*I think all agencies have the dilemma of one hand not knowing what the other is doing.

-----Original Message-----
From: Catherine McCall -DNR- [mailto:catherine.mccall@maryland.gov]
Sent: Monday, June 25, 2018 10:07 PM
To: Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil>
Cc: Kimberly Hernandez -DNR- <kimberly.hernandez@maryland.gov>
Subject: [Non-DoD Source] Re: FW: USACE/MD DNR/BOEM Fishermen's Meeting

Hi Chris,

Dave Blazer forwarded this over and I actually wasn't aware of this effort. It notes that MD DNR is involved and I was curious who you might be working with - Engineering & Construction or the Maryland Geological Survey, perhaps? Kim and I are involved in a lot of the offshore work with regional collaboration such as MARCO and the RPB so may try to make it down that day if you think it would be worthwhile to stay engaged and hear the conversation. There's a lot going on with sand resources, beneficial use, resilience and habitat!

Thanks,
Catherine

<Blockedhttp://www.maryland.gov/>

Spaur, Christopher C CIV USARMY (US)

From: Keith Hanson - NOAA Federal <keith.hanson@noaa.gov>
Sent: Thursday, July 12, 2018 11:30 AM
To: Spaur, Christopher C CIV USARMY (US)
Cc: Karen Greene - NOAA Federal; Piatkowski, Douglas; Callahan, Justin B CIV USARMY CENAB (US); Gomez, Michele L CIV USARMY CENAB (US)
Subject: [Non-DoD Source] Re: Atlantic Coast MD EA - EFH Impacts Assessment Progress
Attachments: AC_EFHsppList_hansoncomments.xlsx

Hi Chris,

Great effort on this and I support the approach regarding the addendum. I have made a few minor comments on your Excel Spreadsheet (added column and dark orange colored comments), which I've attached to help you as you move forward.

An important note: please be sure to clearly describe the mitigative measures that were part of the 2008 consultation, how/why they were developed, and whether or not some or all of those will be included again going forward.

** As far as the SAFMC species, I think the best approach would be to briefly mention their distribution/abundance (if available) and use of the area, but it does not need to be exhaustive. We would likely include them in our response, but it would be very unlikely that we would have a specific EFH Conservation Recommendation for only those species.

I know this wasn't part of your email, but don't forget to include anadromous species like American shad, river herring, and striped bass, as well as other important forage fish (anadromous species are important prey) in your final document. The EFH rule states that the loss of prey may be an adverse effect on EFH and managed species because the presence of prey makes waters and substrate function as feeding habitat and the definition of EFH includes waters and substrate necessary to fish for feeding. Therefore, actions that reduce the availability of a major prey species, either through direct harm or capture, or through adverse impacts to the prey species' habitat may be considered adverse effects on EFH if such actions reduce the quality of EFH.

Great work and talk with you soon.

Best,
Keith

On Thu, Jun 28, 2018 at 4:45 PM, Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> > wrote:

Keith and Karen

0 Sending this to hopefully get an agreed-upon species list and further details of assessment content/structure worked out (follow-up from conference call of a couple of weeks ago). I believe that preparing what would effectively constitute an addendum to the 2008 document as described below is an appropriate path forward (rather than preparing a "new" EFH impacts assessment).

1 I've made a good-faith effort to review various NMFS online information sources to identify species that may have EFH in the area of interest (rechecking 2008 list, plus checking for new species and life history stages), and review the updated EFH descriptions to further screen which species should be considered/screened out*. I will include write-up of this screening effort in addendum (not emailing it now).

2 I believe that it's appropriate for this addendum to include consideration (further defined below) of 19 bony fish spp, 13 cartilaginous fish spp, and 2 molluscs (see full list in attached updated Excel file). This 2018 list differs from the 2008 assessment list as follows (also covered in attached updated Excel file).**

Bony fish.

A New species to consider: 4 tuna species.

B Species previously considered but now need to consider additional life history stages: yellowtail flounder eggs, plus Atlantic mackerel eggs and juveniles.

C Species no longer requiring consideration in 2018 although they were considered in 2008: Atlantic cod and winter flounder.

Cartilaginous fish.

D New species: 6 not previously considered (2 sharks, 2 dogfish sharks, 2 skates).

E Species previously considered but now need to consider additional life history stage: Dusky shark juvenile/adult.

F Species no longer needing consideration: scalloped hammerhead.

Molluscs

G Species previously considered but now need to consider additional life history stage: longfin squid (eggs).

7 I've been reviewing new information available for the Continental Shelf (quite massive since 2008). I am writing EA to briefly reference/summarize new physical and biological information, and EFH addendum would reference that. I have not encountered any physical or biological information that causes me to think that this EFH impacts assessment addendum needs to put new detail forward for the previously evaluated species and life history stages (i.e., assessed in 2008), other than to account for deletions (Atlantic cod, winter flounder, and scalloped hammerhead). Thus, for the previously evaluated species and life history stages, I propose that addendum consider these by providing very brief text explaining this and just reference the 2008 assessment and state it's still adequate for EFH impacts assessment purposes.

8 The new species and life history stages (2 above) require more detailed consideration. To provide updated characterization of new species and life history stages in the area, I'll use BOEM (2017) which contains data from the MD WEA close to the shoals of interest, and likely data specific to the candidate shoals (one of our GIS folks working on this). Additionally, I'll go back to older documents that cover the area that were referenced in 2008 assessment. And, I'd also need to compile natural history information for the life history stages of interest, probably mostly just using NMFS summaries.

9 Biggest concern would of course be if there's any additional benthic or demersal life history stages as they could be vulnerable to dredge entrainment. Also possible major concern (highly unlikely) would be any new species or life history stage strongly dependent upon shoals (such as for forage or congregation/migration). Conversely, species that are pelagic, highly migratory, and derive their food over a broad region would be of little concern. For both of these groups, I'd like to provide background information comparable to level of detail of 2008 assessment. Basically, I'll compile little information on the pelagic highly migratory life history stages, but provide more information for benthic and demersal species life history stages. Actual utility of this is to double-check whether mitigation implications would be different (dredging guidelines/constraints) from we've already established. Perhaps biggest concern would be if longfin squid egg masses were present in substantial numbers. Interestingly, although this area is now designated EFH for that species life history stage, BOEM (2017) found these egg masses to be in NY and VA, but not MD.

10 Let me know what you think soon so I can get this in good order in near future.

Chris

*(Not easy on account of numerous source documents being needed to find updated EFH descriptions, and then a challenge to figure out whether or not the area of interest fits the description [depth often inconclusive].)

** Point of uncertainty, but with no implications if addendum idea presented above accepted. As per a number of recent emails between Keith and I, I still haven't found any text or information conclusively supporting that the coastal migratory pelagic group from SAFMC (cobia, king mackerel, Spanish mackerel) should be included if we were preparing a brand new EFH impacts assessment. However, that could be because I have been unable to view SAFMC's Volume IV of the Fishery Ecosystem Plan for the South Atlantic which my understanding is contains EFH descriptions supporting their inclusion. I've tried multiple times, but am unable to obtain that document from the SAFMC webpage (Blockedhttp://safmc.net/habitat-and-ecosystems/fishery-ecosystem-plan/ <Blockedhttp://safmc.net/habitat-and-ecosystems/fishery-ecosystem-plan/>) or other sources. If addendum idea is inadequate, and I need to provide updated information on coastal migratory pelagics, then I need your help confirming that they need to be included - I'd appreciate it if you could email the updated EFH description clarifications for these species from Volume IV. Additional possible confusion Keith pointed out is that cobia management will be returned to states, so strictly speaking may no longer require consideration in an EFH impacts assessment, and I guess I could move "new" consideration of that to separate NMFS trust resources impacts part of EA. If we determine that they don't need to be included, but addendum idea above is okay, then I could add coverage of deletions for these species as per 7 above.

BOEM. 2017. Habitat Mapping and Assessment of Northeast Wind Energy Areas. Sterling, VA: US Department of the Interior, Bureau of Ocean Energy Management. Guida, V., A. Drohan, H. Welch, J. McHenry, D. Johnson, V. Kentner, J. Brink, D. Timmons, E. Estela-Gomez OCS Study BOEM 2017-088. 312 p. Blockedhttps://www.boem.gov/espis/5/5647.pdf <Blockedhttps://www.boem.gov/espis/5/5647.pdf>

--

Keith M. Hanson
Marine Habitat Resource Specialist
NOAA Fisheries

Spaur, Christopher C CIV USARMY CENAB (US)

From: Steve Doctor -DNR- <steve.doctor@maryland.gov>
Sent: Monday, July 23, 2018 11:31 AM
To: Spaur, Christopher C CIV USARMY (US)
Subject: [Non-DoD Source] Re: Offshore Shoals as Sand Sources for Ocean City - Isle of Wight Shoal?

Follow Up Flag: Follow up
Flag Status: Flagged

How we would judge the relative value and impacts is a hard one. I was going on a few phone calls i made to charter captains and I asked them if you had to give up one. Which would it be? I will keep this on my radar and give ti some more thought. Will let you know if I come up with anything you may be able to use.

After the meeting I looked at your presentation and saw that Fenwick shoal has a lot of potential material. The outside of this shoal might also be acceptable to get sand from if you could preserve the inside edge and area of this shoal.

Thanks Chris

<Blockedhttp://www.maryland.gov/>

<Blockedhttps://www.facebook.com/MarylandDNR/> <Blockedhttps://twitter.com/MarylandDNR>

dnr.maryland.gov <Blockedhttp://dnr.maryland.gov/>

Steven Doctor

Biologist, Fishing and Boating Services

Department of Natural Resources

12917 Harbor Rd

Ocean City, Maryland 21842

410-213-1531 (office)

Steve.Doctor@maryland.gov <mailto:Steve.Doctor@maryland.gov>

On Wed, Jul 18, 2018 at 1:40 PM, Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> > wrote:

Steve

At the fishermen's meeting in west Ocean City last week (July 10th), you said that of the three offshore shoals (Isle of Wight Shoal, Weaver Shoal, and Shoal A) USACE is considering dredging for Ocean City beach at this time* that Isle of Wight Shoal would be least desirable from a fisheries impacts perspective. It supports a decent level of fishing effort and has concentrations of rock fish seasonally. Presumably this is because of these three it is the tallest off the seafloor plus has shallowest water depths.

USACE could potentially postpone dredging, or never dredge, Isle of Wight Shoal if concerns warrant. How do we determine that though? If you have or are aware of any additional information on fishing effort/productivity of these shoals that would help support the preference to postpone dredging it, I'd appreciate receiving it. I think for next round (2022 at latest), not dredging Isle of Wight Shoal and instead dredging Weaver Shoal preferentially would make no difference from an engineering or cost perspective. Shoal A dredging would cost more than Weaver Shoal because of greater distance, so is less favored.

In the future though, if sand volume needs are high (say storm frequency and or severity high) such that USACE can't get enough sand from Weaver Shoal while still following borrow plan dredging guidelines and constraints, and fishery values of shoals change such that Weaver isn't acceptable (let's say for example that commercially harvestable populations of surf clam become established), choosing a sand source may be a much higher stakes decision. USACE will need to occasionally re-assess the relative values of the candidate shoals in the future if it looks like we might cross one of these bridges.

It was good seeing you again, and thanks very much for attending the meeting. I look forward to hearing back from you on this.

Chris

*Bass Grounds Shoal determined to be unacceptable for forseeable future because of high fishing ground value presumably related to permanent artificial reefs there. Fenwick Shoal came up in meeting conversation, but that was screened out from consideration in 2008 borrow plan as source for Ocean City, I recollect because of higher unexploded ordnance/munitions concerns and because being along the state line it could potentially be needed by Delaware in the future. Legally though, state line is meaningless beyond 3 miles as far as I know.

Spaur, Christopher C CIV USARMY (US)

From: Christine Vaccaro - NOAA Federal <christine.vaccaro@noaa.gov>
Sent: Monday, July 23, 2018 12:50 PM
To: Ostrofsky, Tarrie L CIV USARMY CENAB (US)
Cc: Douglas Piatkowski; Spaur, Christopher C CIV USARMY (US); Gomez, Michele L CIV USARMY CENAB (US)
Subject: [Non-DoD Source] Re: Atlantic Coast of Maryland - NMFS ESA - 19 July 2018 Conference Call
Attachments: _DRP_Biological Assessment_FINAL.pdf

Hi all,

To follow up, I've attached a good incoming analysis from the Philadelphia District for you to use as a guide. I will go through your word document with project details this week and get you comments so we can see what needs to be done with this BiOp and if in fact re-initiation is actually required. I will talk to our GC this week as well to get some input on re-initiation triggers as well. From what we know right now it sounds like take numbers may need updating and some information about UXO screening, but let's see how we can approach this with the most ease.

I will be in touch soon.

Cheers,
Chris

Chris Vaccaro
Fisheries Biologist
Protected Resources Division
NOAA Fisheries, Greater Atlantic Region
Gloucester, MA
Phone: 978-281-9167
Email: christine.vaccaro@noaa.gov <mailto:christine.vaccaro@noaa.gov>

For additional ESA Section 7 information and Critical Habitat guidance, please see:
Blockedwww.greateratlantic.fisheries.noaa.gov/protected/section7
<Blockedhttp://www.greateratlantic.fisheries.noaa.gov/protected/section7>

On Wed, Jul 18, 2018 at 10:18 AM, Ostrofsky, Tarrie L CIV USARMY CENAB (US) <Tarrie.L.Ostrofsky@usace.army.mil <mailto:Tarrie.L.Ostrofsky@usace.army.mil> > wrote:

Hi Everyone:

In preparing for tomorrows conference call at 11:00 p.m., attached is a document which includes some history of the project and proposed future dredging actions.

Also attached is a document provided to me by Chris Spaur. This is the 2001 EFH impacts assessment prepared for the Assateague Short-Term Restoration Project. This may be helpful, as well.

As a reminder, the call-in information is as follows:

USA Toll-Free: (877) 402-9757

Access Code: 2672823
Security Code: 1234

This is my designated conference call number and will be the first time in use. Hopefully, it will work correctly. :)

Thank you, and I look forward to the call.

Tarrie

Tarrie Ostrofsky
Biologist, Planning Division
U.S. Army Corps of Engineers
Baltimore District
2 Hopkins Plaza
Baltimore, MD 21201
Phone: 410-962-4633

Spaur, Christopher C CIV USARMY CENAB (US)

From: Steve Doctor -DNR- <steve.doctor@maryland.gov>
Sent: Tuesday, August 07, 2018 2:51 PM
To: Spaur, Christopher C CIV USARMY CENAB (US); David Blazer -DNR-
Subject: [Non-DoD Source] Re: Atlantic Coast of MD Project - Offshore Shoals to Dredge/Not Dredge in Near Future (Isle of Wight, Weaver, A, B)

I talked with Dave we cannot give you an 'official DNR or State of Maryland' response but can give you staff opinions based on conversations with anglers. I would be happy to have a conference call with you.

I have had more discussions with anglers both commercial and recreational and they are in agreement with the information you have. Bass grounds and Isle of Wight shoal should be "off limits", as they are premier fishing areas.

Weaver and shoal A and possibly the mid section of Fenwick shoal (not the deep or inside edge) would have the least impact on local fishing if used for sand borrow.

Please let me know if this is the information you are looking for and I would be glad to attend a conference call anytime on Thursday of this week.

Thanks Chris

<Blockedhttp://www.maryland.gov/>

<Blockedhttps://www.facebook.com/MarylandDNR/> <Blockedhttps://twitter.com/MarylandDNR>

dnr.maryland.gov <Blockedhttp://dnr.maryland.gov/>

Steven Doctor

Biologist, Fishing and Boating Services

Department of Natural Resources

12917 Harbor Rd

Ocean City, Maryland 21842

410-213-1531 (office)

Steve.Doctor@maryland.gov <mailto:Steve.Doctor@maryland.gov>

On Tue, Aug 7, 2018 at 2:43 PM, Spaur, Christopher C CIV USARMY CENAB (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> > wrote:

Dave/Steve

Re-sending in case this got buried in your inbox. Please look at below and let me know what your thoughts are.

Thanks,

Chris

-----Original Message-----
From: Spaur, Christopher C CIV USARMY (US)
Sent: Thursday, July 26, 2018 10:28 AM
To: 'David Blazer -DNR-' <david.blazer@maryland.gov <mailto:david.blazer@maryland.gov> >; 'steve.doctor@maryland.gov <mailto:steve.doctor@maryland.gov> ' <steve.doctor@maryland.gov <mailto:steve.doctor@maryland.gov> >
Cc: Callahan, Justin B CIV USARMY CENAB (US) <Justin.Callahan@usace.army.mil <mailto:Justin.Callahan@usace.army.mil> >; Gomez, Michele L CIV USARMY CENAB (US) <Michele.Gomez@usace.army.mil <mailto:Michele.Gomez@usace.army.mil> >; 'Piatkowski, Douglas' <douglas.piatkowski@boem.gov <mailto:douglas.piatkowski@boem.gov> >; Snyder, James R CIV USARMY CENAB (US) <James.R.Snyder@usace.army.mil <mailto:James.R.Snyder@usace.army.mil> >
Subject: Atlantic Coast of MD Project - Offshore Shoals to Dredge/Not Dredge in Near Future (Isle of Wight, Weaver, A, B)

Dave/Steve

As was expressed at the meeting we had with fishermen July 10th, Bass Grounds (Shoal B) would be unacceptable (as has consistently been the case)*. Of the remaining 3 candidates, Isle of Wight Shoal is considered the least preferred by some fishermen. We could accept that preference (or not). If we accept that determination, the remaining candidates are Weaver Shoal and Shoal A.**

From a cost perspective, Shoals A and B would cost more than Weaver or Isle of Wight Shoals because of greater travel distance. So, it's preferable from a cost perspective to go to Weaver or Isle of Wight Shoals for near future.

Put these ideas together, and our candidate for the near term (one or more dredging cycles) could be Weaver Shoal.

We'd like to have a brief conference call with you to discuss this and confirm whether or not DNR would like to take the position of not dredging Isle of Wight Shoal for the near future. (I'm assuming DNR doesn't want Bass Grounds dredged now much more firmly than any opinion on Isle of Wight Shoals would be). This wouldn't necessarily mean that we determine that Isle of Wight Shoal would never be dredged in the future though. Relative value of the candidate shoals could change over time, with one possibility being if commercially viable populations of surf clam become established. In that event, any of these shoals could be ruled out as borrow areas while that's the case. Because of uncertainty, we need as flexible a plan as possible for the future.

Please suggest some dates/times over the next two weeks that we could seek to have a conference call with you regarding this.

Thanks,

Chris

* As Bass Grounds fishery value is likely partly a function of the large artificial reefs there which probably keeps structure-oriented fish in the vicinity much of the time, it seems likely that Bass Grounds would not be of low value from a fishery perspective for the foreseeable future. However, completely ruling it out for the future brings its own risks as per uncertainty of fishery value of other shoals in the future. Also, USACE and MDDNR dredged Great Gull Bank for Assateague back in ~2001/2 in spite of the fact that there's an artificial reef there (Russel's Reef, I think). We just avoided it plus a buffer.

**(The 2008 EIS has record of process by which these shoals were selected and others rejected. Reopening this to other candidate shoals would be expensive proposition).

From:	Stephen VanRyswick -DNR-
To:	Spaur, Christopher C CIV USARMY CENAB (US)
Cc:	Snyder, James R CIV USARMY CENAB (US); Callahan, Justin B CIV USARMY CENAB (US); Gomez, Michele L CIV USARMY CENAB (US)
Subject:	[Non-DoD Source] Re: Great Gull Bank - post 2002 dredging "monitoring" through 2008
Date:	Monday, August 13, 2018 3:13:11 PM

Chris,

Thank you for your patience while I took some time to look over the data from Great Gull Bank. Based on these data, there has been some change to the shoal crest over the period between 2002 and 2008. There were some minor changes in the central area of the crest (see attached) with about 5 feet increase in depth denoting a divide of the shoal crest into two distinct parts. The crest in this area can be seen as very narrow in the pre-dredge survey in 1999. Overall, this deeper divide is still approximately 10 feet shallower than the surrounding seabed and would continue to function as a continuous sand ridge. Since overall shoal crest volume over time was not calculated, it can not be determined if the decrease in elevation in this area relates to an overall decrease in shoal crest volume or only changes in bathymetric topology of the shoal crest. Over the same period, there were areas of decreased elevation along the crest to the NE and SW of this divide indicating that the overall shoal crest volume may have changed very little or not at all post-dredge despite changes in topology.

The apparent scour along the SE edge of the shoal is indeed a bit puzzling. The overall movement being more southwesterly over this period is indicative of the lack of large storm events during this period as you indicated. Great Gull Bank, denoted as sand ridge "E" in Pendelton and others (2017) is the southern most ridge in what they refer to as the "Fenwick ridge fields". In reference to this report, the change in migration patterns extends south of the inlet as well and occurs at the inflection point approximately halfway down Assateague Island. Proceeding quotes are from Pendelton and others (2017). "In general, north of the inflection point the east-west component of migration frequently changes direction, such that the net east-west migration within each of the northern survey areas is typically less than +/- 1.5 m/yr." The offshore, easterly, component of sand ridge migration is a result of storm-driven flow and, in the absence of large storm events, the migration over the Great Gull Bank study period would likely have been south to south west as indicated by the deposition of sediments denoted in green to the SW of the borrow area in your maps. The time scale of the trends calculated by Pendelton and others is also important to consider. "The distance of migration or rate over decadal time-scales have a large uncertainty (as much as 50% of the rate) due to positional errors associated with the 1975-1982 data...." As they noted, the overall trends are usable and indicative of long term sand ridge migration patterns. The trends over the 6 year Great Gull Bank study period likely are not indicative of the long-term decadal trends and is rather a snapshot of the trends over the study period. While it is possible that some of the shoal crest sands are rolling southward into the western edge of the dredged area, the lack of large storm events over this period would both reduce the volume of downdrift deposition migrating into the dredged area and allow the predominant wave patterns to migrate these sand along the shoal flank in a more alongshore migration pattern where they are then deposited to the south/southwest of the shoal as indicated by the figures in your report.

While the data indicates scour within the borrow area over this period, significant storm events since 2008 or in the future would increase the offshore migration to reflect the long term southerly trend. In my opinion, a possible question to consider is has the increased depth post dredge scoured any areas within the borrow area deeper than the ambient depths of the adjacent seafloor? Looking at the generated map figures, it would not appear so. However, the bathymetric map is a bit deceiving due to changes in elevation of 1 foot receiving a different color from -18 to -39 feet then all depths in a 15 foot range from -40 to -55 feet being dark blue. While highly unlikley that natural hydrologic scouring along the shoal flank would generate holes deeper than the adjacent seafloor, the figure is not fully representative that this has not occurred in areas of elevation less than -40 feet. Regardless of the net loss of sediment within the borrow area over the 6 year study period, one could argue that the guideline goals continue to be met in the long-term as long as the depths remain no deeper than the adjacent seafloor.

In review of the individual bathymetric maps, I noted that the 2003 dataset collected by Weeks Marine, Inc. contains anomalies seen as both the striations in the resulting bathymetric interpretation and the very linear edge of the depositional zone in the SW corner (see attached). This straight edge along track raises concern over the accuracy of this particular data set. Also, and perhaps a result of the 2003 dataset, I am very curious of the very different elevation change maps when comparing the "1999 to 2003" map to the "2003 to 2008" map. While you did not discuss the 2003 to 2008 map in your findings discussion, this map indicates less scour in the borrow area overall but with 8-12 feet of scour in the same area that indicated 8-10 feet of deposition in the 1999 to 2003 map. If this

amount of scour occurred in this area between 2003 and 2008, I would also expect to see it reflected in the 6 year analysis map of elevation change 1999 to 2008. Is this a mis-interpretation on my part or any thoughts/comments? With regards to the dredging guidelines and constraints moving forward, the current guidelines are likely still suitable for future work and were accepted by concerned parties at that time as the best fit guidelines for both maintaining the shoal crest features and habitat value. Aiming to dredge on the downdrift side of the shoals "preferentially" and "if possible" provides flexibility for the borrow areas to be adjusted when warranted but remains as the preferred site selection based on long term trend analysis. The short-term data analysis provided over the 6 year period for Great Gull Bank is an indicator that short term migration patterns will not always be indicative of the long term trends which are largely driven by large storm events that create the offshore due south migration of sand ridges north of the inflection point defined by Pendelton and others.

-Stephen

On Thu, Aug 9, 2018 at 12:10 PM, Spaur, Christopher C CIV USARMY CENAB (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> > wrote:

Stephen

I would appreciate any thoughts you have on the draft desktop Great Gull Bank bathymetric write-up and maps (most recent version attached). I'm encouraged by the shoal crest apparently showing no indirect impacts (which could be induced by volume loss even though we avoided direct impact. However, I'm puzzled by apparent scour on SE side in dredged area. These maps show net southerly or perhaps SW motion overall. Based on Pendleton and others (2017) work showing offshore shoals north of inlet generally having southerly migration, I would think that shoal itself would roll southward into the dredged area. It didn't seem to over that time period, although if there were no severe storms with energy sufficient to do that, perhaps that could account for it (?).

Basically, I would like to think through whether the mitigational dredging guidelines and constraints proposed in 2008 SEIS and used for dredging of Great Gull Bank back in 2002 need any adjustment. These were developed to maintain shoal habitat value, which appears to be largely dependent upon them being large features with substantial relief and shallow water at the crest. However, the preferentially dredge on downdrift side if possible guideline would likely not be practicable.

Chris

- No more than about 5% of the total volume of any shoal would be dredged.
- Dredging would
  avoid the crest
  be conducted uniformly over a wide area,
  go no deeper than ambient depths of the adjacent seafloor,
  be preferentially conducted on the up and downdrift ends of each shoal if suitable sand is present there.

--

<Blockedhttp://www.maryland.gov/>

<Blockedhttps://www.facebook.com/MarylandDNR/> <Blockedhttps://twitter.com/MarylandDNR>

dnr.maryland.gov <Blockedhttp://dnr.maryland.gov/>

Stephen M. Van Ryswick

Coastal and Environmental Geology Program Chief,

Maryland Geological Survey

Department of Natural Resources

2300 St. Paul Street

Baltimore, Maryland 21218

410-554-5544 (office)

stephen.vanryswick@maryland.gov <mailto:stephen.vanryswick@maryland.gov>

Click here <Blockedhttp://www.doit.state.md.us/selectsurvey/TakeSurvey.aspx?agencycode=DNR&SurveyID=86M2956#> to complete a three question customer experience survey.

Spaur, Christopher C CIV USARMY CENAB (US)

From: Hooker, Brian <brian.hooker@boem.gov>
Sent: Thursday, August 30, 2018 8:16 AM
To: Piatkowski, Douglas
Cc: Spaur, Christopher C CIV USARMY CENAB (US)
Subject: [Non-DoD Source] Re: [EXTERNAL] Offshore Shoals - NMFS Other Trust Resources

Doug, prior to working at BOEM I was the Federal rep on the ASMFC's Horseshoe Crab Management Board. Although brief, I don't ever remember good offshore (Federal waters) data on harvest location/local abundance of HSC. I'm not even sure how much data went into the establishment of the Schuster HSC Reserve offshore DE Bay (north of Ocean City MD). I think the Virginia Tech Benthic Trawl survey might cover your area of interest. So I'd contact VT or the ASMFC plan coordinator. see: Blockedhttp://www.asmfc.org/fisheries-science/surveys.

Brian R. Hooker
Marine Biologist
Bureau of Ocean Energy Management <Blockedhttp://www.boem.gov/Renewable-Energy-Program/index.aspx>
Office of Renewable Energy Programs
Mail Stop VAM-OREP
45600 Woodland Road
Sterling Virginia 20166
Office: 703-787-1634
Mobile: 571-393-4367

On Thu, Aug 30, 2018 at 6:43 AM Piatkowski, Douglas <douglas.piatkowski@boem.gov <mailto:douglas.piatkowski@boem.gov> > wrote:

Good morning Brian,

As mentioned in Chris Spaur's email below, there is some potential concern that horseshoe crabs may seasonally be in high abundance within one of the proposed offshore shoals to be dredged for the Ocean City, MD project. Do you know if any of the work that you have done offshore of the DELMARVA area discussed horeshoe crab habitat, migration, and spawning? We are just trying to put our hands on any relevant literature that should be considered in the analysis. We know that hopper dredges can entrain high numbers of horeshoe crabs if they are present on the shoal, so we are trying to figure out if it will be a seasonal concern or not. Any other POC's that may have data would be appreciated as well. Thanks in advance for any help!

---------- Forwarded message ----------
From: Spaur, Christopher C CIV USARMY CENAB (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> >
Date: Wed, Aug 29, 2018 at 2:00 PM
Subject: [EXTERNAL] Offshore Shoals - NMFS Other Trust Resources
To: Douglas Piatkowski <douglas.piatkowski@boem.gov <mailto:douglas.piatkowski@boem.gov> >
Cc: "May, Andrew NAB" <Andrew.May@usace.army.mil <mailto:Andrew.May@usace.army.mil> >, "Gomez, Michele L CIV USARMY CENAB (US)" <Michele.Gomez@usace.army.mil <mailto:Michele.Gomez@usace.army.mil> >

Doug

Andy in reviewing online fishing intensity/productivity maps has noted that the offshore shoals seem to have sufficient horseshoe crab numbers at times to support substantial fishing effort. This topic (horseshoe crab and offshore shoals) came up years ago when we were looking into dredging Great Gull Bank, but we ultimately decided it didn't have any management implications at that time. Do you know whether horseshoe crab migration patterns into/out of Delaware Bay have been characterized? My thought for now is that if they haven't, we could put a recommendation in EA that this topic ideally would be further investigated and findings considered in planning future dredging. Worse-case scenario (I think highly unlikely), if horseshoe crabs preferentially utilize Weaver Shoal during migration or that shoals is along a major migration route and they cross it in large numbers, dredging could have a relatively big negative short-term impact at a population level that might warrant a time-of-year restriction. I'd appreciate any thoughts you have on this topic.

Thanks,

Chris

--

Doug Piatkowski
Physical Scientist

douglas.piatkowski@boem.gov <mailto:douglas.piatkowski@boem.gov>

703-787-1833
Department of the Interior, Bureau of Ocean Energy Management Headquarters,
<Blockedhttp://www.boem.gov/images/boem/layout/logo.png>
Division of Environmental Assessment

45600 Woodland Road, VAM-OEP
Sterling, VA 20166
Blockedhttp://www.boem.gov/OEP/ <Blockedhttp://www.boem.gov/OEP/>

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201

SEP 25 2018

Ms. Kimberly Damon-Randall
Assistant Regional Administrator for Protected Resources
Greater Atlantic Regional Fisheries Service
National Marine Fisheries Service
U.S. Department of Commerce
55 Great Republic Drive
Gloucester, Massachusetts 01930

Dear Ms. Damon-Randall:

The U.S. Army Corps of Engineers, Baltimore District (USACE) is writing your office regarding the need for re-initiation of formal Section 7 consultation with the National Oceanographic and Atmospheric Administration, National Marine Fisheries Service (NMFS) pursuant to the Endangered Species Act for the Atlantic Coast of Maryland Shoreline Protection Project, located in the Town of Ocean City, Worcester County, Maryland (Enclosure map). In reviewing the biological opinions (BO) that assessed impacts to ESA species listed by NMFS, as well as reviewing all new and updated information about the species and the project, the USACE has determined that re-initiation is not required.

The triggers for re-initiation are as follows: 1. Incidental take statement has been exceeded; 2. If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; 3. If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this consultation or; 4. If a new species is listed or critical habitat designated that may be affected by the identified action.

1. Incidental take statement has been exceeded.

USACE has conducted dredging in accordance with NMFS mitigation requirements since 1998, and there have been no observed sea turtle takes in that time. However, NMFS assumed in preparing the BOs that one (1) sea turtle take would occur for every 500,000 cubic yards of material dredged annually. USACE conducted dredging in 2006, 2010, 2014, and 2017 that averaged 1,000,000 cubic yards dredged per cycle. Accordingly, based on volume serving as a proxy for observed takes, it can be assumed that eight (8) loggerhead takes occurred from 2006 through 2017.

2. If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation.

All populations of humpback whales will still be protected under the Marine Mammal Protection Act of 1972, as amended, from hunting and other activities. However, since the USACE completed formal consultation with NMFS in 2013, changes to species designations

have occurred. Specifically, in 2016, 9 of the 14 populations of humpback whales were delisted as protected species under the Endangered Species Act, including the population where the proposed project would occur. The 2006 BO included NMFS determination that the dredging and vessel movement activities associated with the Atlantic Coast of Maryland Shoreline Protection Project were not likely to adversely affect the endangered right whale, finback whale, and humpback whale.

Given the above factors, we believe that delisting of populations of the humpback whales does not warrant re-initiation of formal consultation, since the effects analysis will not change nor are any effects revealed that have not been previously considered.

3. If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this consultation.

Dredging operations will not affect listed species or critical habitats in a manner or to an extent not previously considered in the initial consultation. The new action is not subsequently modified in a manner to cause an effect to the listed species or critical habitat that was not considered in the initial consultation.

USACE reviewed the prior BOs in regard to NMFS evaluation specific to potential effects from required munitions and explosives of concern (MEC) screening techniques on ESA species. USACE evaluated the potential environmental consequences of encountering and dredging MEC within the shoals under the 2008 SEIS; however, there is no mention of NMFS evaluation in the BOs. The information within the 2008 SEIS includes that there is a moderate probability that MECs occur on or within the offshore shoals, and as such MEC screening techniques have been used by the USACE. To mitigate for the chances of encountering and dredging MEC from the borrow areas, as well as placement on the beach, USACE will continue to use MEC screening on both the hopper dredge intake and beach discharge pipes. However, the usage of this screening does not introduce any new effects, nor does it change the analysis of effects that was previously completed in past BOs. Additionally, the Incidental Take Statement (ITS) for the 2006 BO uses a proxy take for sea turtles, which is appropriate for projects using MEC screening, since the take of turtles is not distinguishable by observers when screens are used.

4. If a new species is listed or critical habitat designated that may be affected by the identified action.

No new species have been listed, or critical habitat designated that may be affected by the dredging operation.

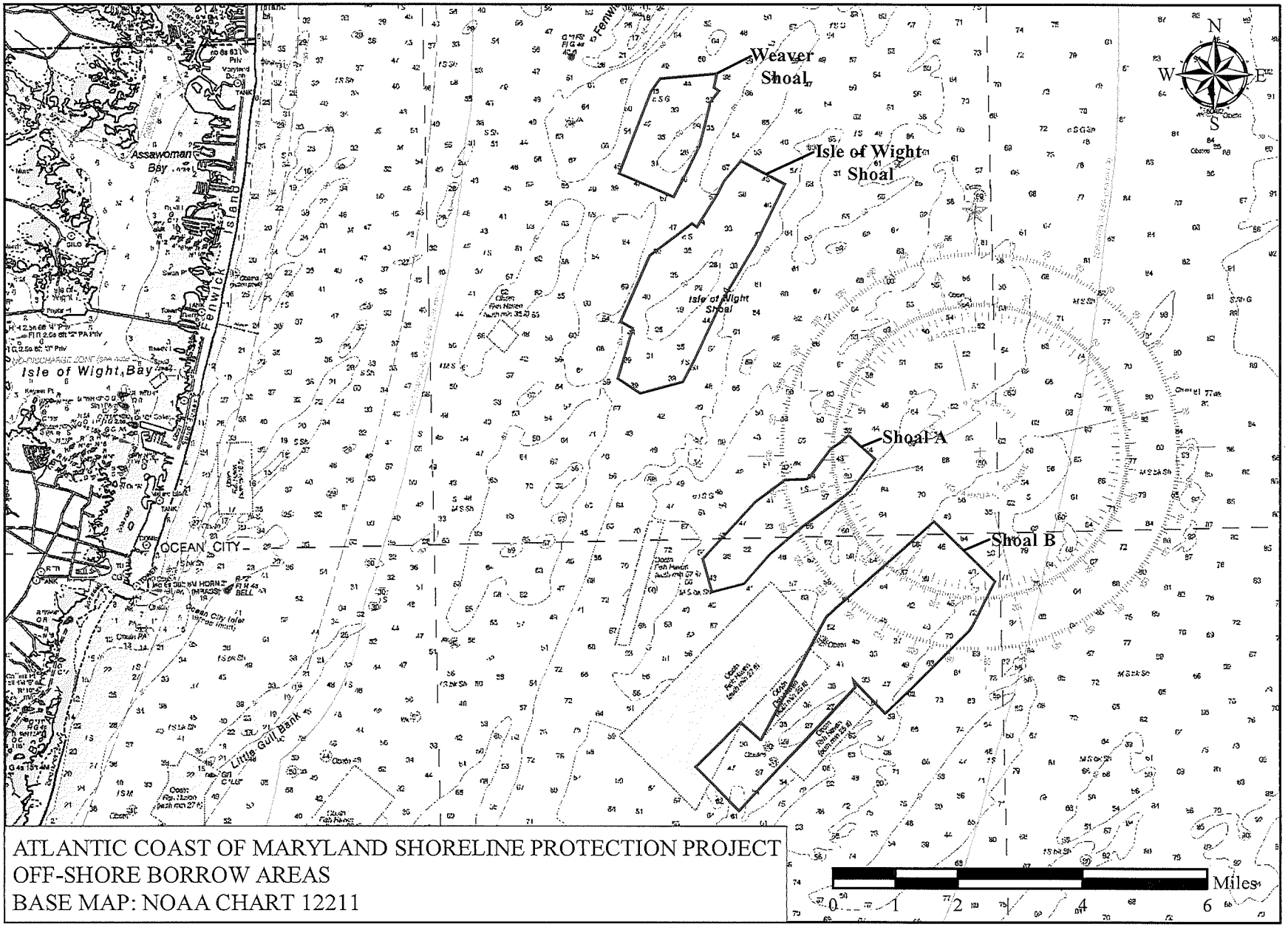
Given that dredging operations will continue to use mitigation methods as required by NMFS to minimize adverse effects on listed aquatic species, and there is no new information or modification to the project that triggers re-initiation of formal consultation, the USACE has determined that re-initiation of formal consultation is not warranted. USACE has determined that with adherence to MEC screening, prior BO Reasonable and Prudent Measures, dredging constraints, and required sea turtle mitigation measures, the proposed dredging of the shoals in

federal waters may adversely affect, but is not likely to jeopardize the continued existence of, loggerhead, Kemp's ridley and green sea turtles. Additionally, the USACE has determined that the proposed dredging of the shoals in federal waters is not likely to adversely affect any distinctive population segments of Atlantic sturgeon, in accordance with the prior BOs and NMFS determination letter. If you, or your staff, have any additional questions regarding this matter, please contact Mr. Christopher Spaur by email at Christopher.c.spaur@usace.army.mil or by telephone at 410-962-6134.

Sincerely,

Daniel M. Bierly, P.E.
Chief, Civil Project Development Branch
Planning Division

Enclosure:
Offshore Shoals Map



ATLANTIC COAST OF MARYLAND SHORELINE PROTECTION PROJECT
OFF-SHORE BORROW AREAS
BASE MAP: NOAA CHART 12211

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

OCT 24 2018

Daniel M. Bierly
Chief, Civil Project Development Branch
Planning Division
Department of the Army
Corps of Engineers, Baltimore District
2 Hopkins Plaza
Baltimore, MD 21201

Re: No re-initiation of Formal Consultation for Atlantic Coast of Maryland Shoreline Protection Project

Dear Mr. Bierly:

Thank you for contacting us regarding re-initiation of the Atlantic Coast of Maryland Shoreline Protection Project. We previously completed formal consultation and provided a Biological Opinion in 1998 and an updated Opinion in 2006. Additionally, on August 1, 2013, we provided a letter of concurrence regarding effects to the newly listed Atlantic sturgeon and the Northwest Atlantic Distinct Population Segment (DPS) of loggerhead sea turtles, which were both listed in 2012, concluding that the project was not likely to adversely affect Atlantic sturgeon, and that the designation of the Northwest Atlantic DPS of loggerhead turtles did not change the previous analysis of effects to that species. Re-initiation of consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and: (a) the amount or extent of taking specified in the incidental take statement is exceeded; (b) new information reveals effects of the action that may not have been previously considered; (c) the identified action is subsequently modified in a manner that causes an effect to listed species; or (d) a new species is listed or critical habitat designated that may be affected by the identified action.

Based on the information and analysis you provided in your September 25, 2018, letter received on October 2, 2018, we concur with your determination that re-initiation of formal consultation is not required at this time. As such, our 2006 Opinion, the analysis of effects on sea turtles, whales, and shortnose sturgeon, and all Reasonable and Prudent Measures contained therein, in addition to the findings in our August 1, 2013, letter of concurrence, remain active and valid.

Conclusions

No further consultation pursuant to section 7 of the ESA is required at this time. Re-initiation of consultation is required according to the triggers previously listed in this letter. No additional take is anticipated or exempted. If at any point your project meets any of the re-initiation triggers listed above, re-initiation of consultation may be necessary at that time. Should you have any questions about this correspondence, please contact Chris Vaccaro at 617-281-9167 or Christine.Vaccaro@noaa.gov.

Sincerely,

Jennifer Anderson
Acting Assistant Regional Administrator
for Protected Resources

PCTS: NER-2006-3915
File Code: H:\Section 7 Team\Section 7\Non-Fisheries\ACOE\Formal\2006\Atlantic Coast of Maryland Dredging 2006\2018\No re-initiation needed

Ec: Keller, Gomez, Spaur, ACOE
Beard, NMFS/HCD
Vaccaro, NMFS/PRD

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 21401
http://www.fws.gov/chesapeakebay

November 21, 2018

Mr. Daniel M. Bierly, P.E.
U.S Army Corps of Engineers
Chief, Planning Division
Baltimore District
2 Hopkins Plaza
Baltimore, Maryland 21201

Re: Atlantic Coast of Maryland Shoreline Protection Project

Dear Mr. Bierly:

Enclosed is the Planning Aid Report in support of the Service's Fish and Wildlife Coordination Act (16 U.S.C. Section 661 *et. seq*.) for the subject study. In accordance with the scope of work, dated June 2018, it contains information on the baseline environmental conditions, effects of the project, and suggestions to improve project outcomes. If you need further information regarding this project review, please contact Craig Koppie at 410/573-4534 or craig_koppie@fws.gov.

Sincerely,

Genevieve LaRouche
Field Supervisor

cc: Christopher Spaur, USACE, Baltimore District Planning Division, Baltimore, MD

Planning Aid Report:
Atlantic Coast of Maryland Shoreline Protection Project

Northern Gannet

Red-throated Loon (Photos: Johnathan Fiely)

Prepared for:
U.S. Army Corps of Engineers
Baltimore District

Prepared by:
Craig Koppie
Fish and Wildlife Biologist

Under supervision of:
Genevieve LaRouche, Supervisor
Chesapeake Bay Field Office
U.S. Fish and Wildlife Service

November 2018

INTRODUCTION

The Baltimore District, U.S. Army Corps of Engineers (USACE) is conducting a re-evaluation of their 2008 Final Supplemental Environmental Impact Statement (FSEIS) for the Atlantic Coast of Maryland Shoreline Protection Project. Ten years has lapsed since the FSEIS was written making it necessary to assess any potential changes to baseline environmental conditions since that time; including National Environmental Policy Act (NEPA) review. USACE proposes to dredge sand from off-shore shoals located in Federal waters in accordance with the recommended plan identified in the 2008 FSEIS through the end of the authorized project life in 2044. Sand replenishment obtained from borrow sources is an ongoing need necessary for coastal flood and shoreline protection from storms for the town of Ocean City, Maryland. Presently, sand extraction has occurred solely from nearby shoals in state waters. These borrow areas can no longer provide the necessary volume of sand anticipated in the upcoming years. The 2008 FSEIS estimated between 6,800,000 and 15,000,000 cubic yards of sand will be needed to provide coverage for the years 2010 to 2044. It is anticipated that dredging sand from shoals in Federal waters would be undertaken in the next beach nourishment cycle scheduled to occur in 2022.

This Planning Aid Report provides information on the baseline environmental conditions, effects of the project alternatives, and potential measures to improve project outcomes. It is based primarily on re-examining published literature and more recent communications with Federal and state agencies regarding current information on fish and wildlife resources occurring at off-shore shoals. It is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq*.), Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq*.) and Anadromous Fish Conservation Act (16 USC 757a-757g; 79 Stat. 1125), as amended.

BASELINE ENVIRONMENTAL CONDITIONS

The study area encompasses shoals located in Federal waters located 7 to 11 miles offshore of Ocean City in Worcester County, Maryland. Four shoals have been identified and are proposed for future sand acquisition. The shoals include Weaver Shoal, Isle of Wight Shoal, Shoal A, and Shoal B (Figure 1). These shoals were selected for their high volumes of available sand that could be economically dredged for long-term beach re-nourishment projects. Shoal B also has suitable sand but was identified to be of high value to recreational and commercial fisheries. Accordingly, the 2008 FSEIS recommended that Shoal B only be used if its fishery value declined.

Also described in the 2008 FSEIS, the shoals have a northeast/southwest orientation with up to tens of feet of relief off the seafloor, with gentle side slopes and a wide flat crest area. They are maintained by ocean waves and currents. In areas adjacent to the shoals, water depths reach approximately 60 feet**.** Water depths are lower over the shoal's crest (tallest relief) and range from 18 to 24 feet below the surface.

The most common bottom-dwelling species associated with the offshore shoals in terms of frequency of occurrence are species such as, haustorid amphipods, isopods, bivalves, and polychaete worms. Benthic megafaunal species occurring on the shoals and adjacent seafloor include lobed moon snails (*Polinices duplicatus*), whelks (*Busycon* spp.), starfish, and various crabs and shrimp (USACE, 2008).

Along with a variety of finfish species and sea turtles, marine birds and sea ducks are known to utilize near and off-shore shoals for foraging. Densities of sea birds that utilize outer shoals have not been adequately determined, due to difficulties in monitoring birds at far distances from the coast. Subsequently, sea ducks utilizing off-shore habitat are not detected by Mid-Winter Waterfowl Surveys which are conducted throughout the Chesapeake Bay during the winter months. Numerous species of marine birds feed on plankton and small fish at the surface and in the water. Sea ducks are bottom-feeding, and dive to obtain benthic prey.

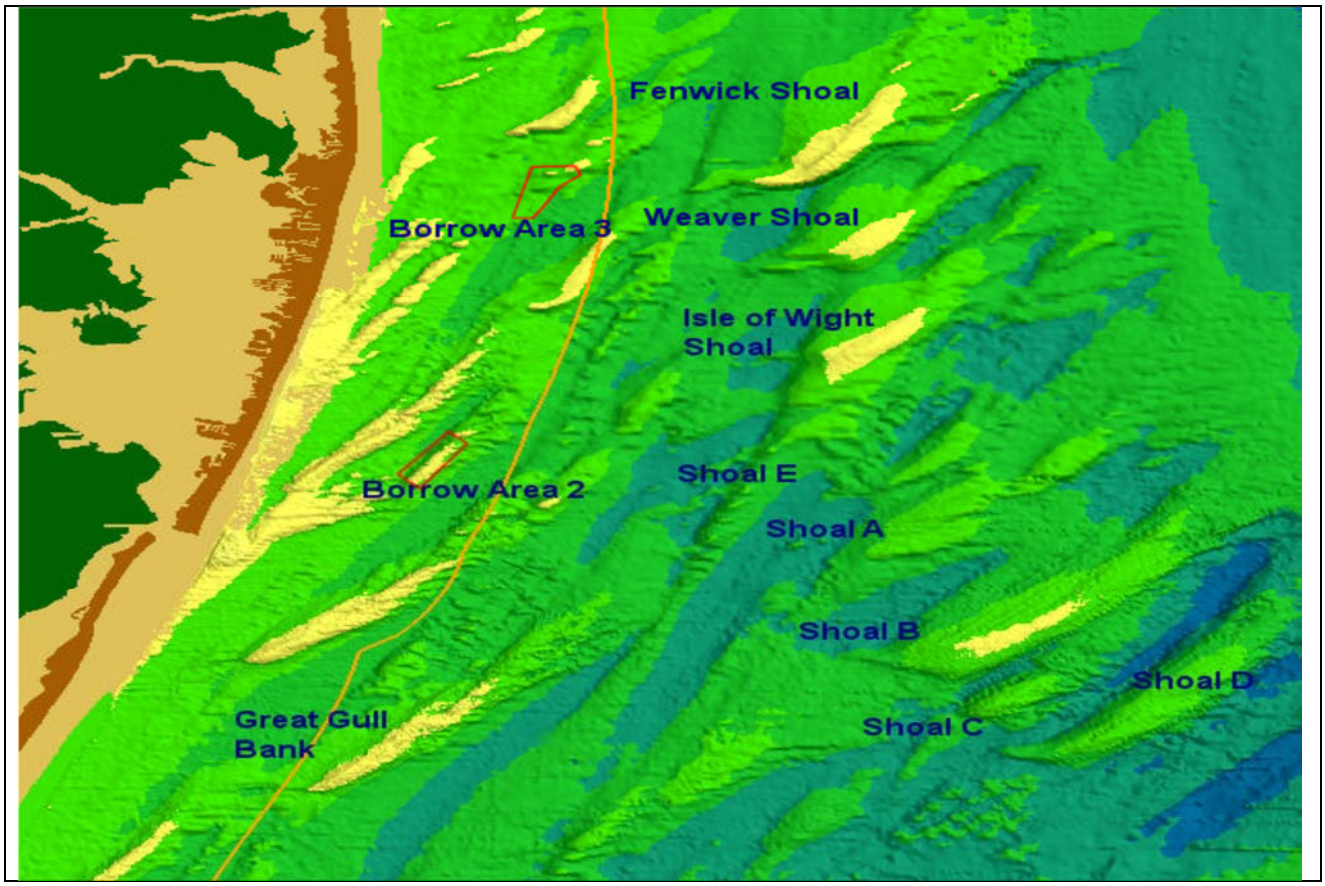


Figure 1. Off-shore shoals of the Continental Shelf (orange boundary line denotes the 3-mile distance inclusive of State waters from Ocean City, MD). Proposed sand borrow sites are outside the boundary (FSEIS, 2008).

Sea ducks, such as surf scoters (*Melanitta perspicillata*) will dive beneath the surface (15 to 20 foot zone) to forage for benthic species (A. Berlin, USGS, pers. comm.). Both pelagic birds and sea ducks are mostly migratory occurring offshore in the fall and winter months. Overwintering species of marine birds include northern gannets, grebes, cormorants, gulls, loons, sea ducks (notably scoters), murres, and many others (Table 1). Spatial abundance and frequency of marine birds and sea ducks are variable depending on environmental factors which include water temperature, changes in atmospheric conditions, and shifts in prey abundance.

Since the preparation of the FSEIS (2008), additional studies have been conducted which is helping to increase our knowledge on marine bird occurrence on the Outer Continental Shelf. These include studies funded and conducted by BOEM (2009, 2017), TNC (2010), Goyert et al. (2015), and NOAA (2018). Goyert et al. (2015) investigated marine bird occurrence along the Delmarva Peninsula by shipboard survey and modeling from 2012 through 2014. BOEM (2017) funded studies on three species of marine diving birds, red-throated loon (*Gavia stellata*), surf scoter, and northern gannet (*Morus bassanus*), along the New Jersey to North Carolina coastline. These three bird species were found in relatively large numbers and generally associated with shallow inshore waters with only limited use of Federal off-shore waters during migratory periods (spring and fall). Using satellite telemetry, researchers detected seasonal high use areas by waterfowl at the mouths of the Chesapeake and Delaware Bays with the highest diversity and abundance in the winter months.

Detection of sea birds at the outer shoals were limited due to the small sample size of marked birds tracked in the study. However, a general conclusion coming from the BOEM studies (2017) is that distance from shore is the most common predictor of marine bird abundance with abundance decreasing further offshore. Based on foraging behaviors of diving ducks observed along shoals found closer to the shoreline, it is thought that outer shoal "crests" found on the Outer Continental Shelf may also provide some forage benefits to marine birds.

Aerial sea duck monitoring surveys were conducted by the U.S. Fish and Wildlife Service (Service) from 2001 to 2003. The study area included the coastline from Maine to Florida southward and eastward to shoals in state and Federal waters. Low-altitude flights followed transects to outward distances of 10 nautical miles (M. Koneff, USFWS, pers comm.). Water birds such as common loon, red-throated loon, and northern gannet were observed at shoals in Federal waters, however, the results of the survey(s) did not reflect any correlations to species population numbers, frequency, or spatial abundance since the monitoring surveys were extremely limited.

A geospatial tool was recently developed to aid in predicting relative densities of marine birds likely to occur on the Outer Continental Shelf when sufficient monitoring survey information is available (NOAA 2018). This computer application relies on input of available survey effort along with other layers that collectively predict relative densities. Through this mapping tool, numerous species of sea birds were identified as having the potential be found in Federal waters of the Continental Shelf.

Table 1. List of Migratory Birds Potentially in the Project Area.
Arctic Tern (*Sterna paradisaea)*
Common Scoter (*Melanitta nigra*)
Black-legged Kittiwake (*Rissa tridactyla*)
Bonaparte's Gull *(Chroicocephalus philadelphia*)
Bridled Tern (*Onychoprion anathetus*)
Brown Pelican (*Pelecanus occidentalis*)
Common Eider (*Somateria mollissima*)
Dovekie (*Ale alle*)
Great Black-backed Gull (*Larus marinus*)
Herring Gull (*Larus argentatus*)
Common Loon (*Gavia immer*)
Common Tern (*Sterna hirundoCory's*)
Cory's Shearwater (*Calonectris diomedea*)
Double-crested Cormorant (*Phalacrocorax auritus*)
Leach's Storm-petrel *(Oceanodroma leucorhoa*)
Manx Shearwater (*Puffinus puffinus*)
Northern Gannet (*Morus bassanus*)
Least Tern (*Sternula antillarum*)
Long-tailed Duck (*Clangula hyemalis*)
Parasitic Jaeger (*Stercorarius parasiticus*)
Pomarine Jaeger (*Stercorarius pomarinus*)
Razorbill (*Alca torda*)
Red Phalarope (*Phalaropus fulicarius*)
Red-breasted Merganser (*Mergus serrator*)
Red-necked Phalarope (*Phalaropus lobatus*)
Red-throated Loon (*Gavia stellata*)
Ring-billed Gull (*Larus delawarensis*)
Roseate Tern (*Sterna dougallii*)
Royal Tern (*Thalasseus maximus*)
Sooty Tern (*Onychoprion fuscatus*)
Surf Scoter (*Melanitta perspicillata*)
White-winged Scoter (*Melanitta fusca*)
Wilson's Storm-petrel (*Oceanites oceanicus*)
Reference: U.S. Fish and Wildlife Service's Information and Planning System; 8/01/2018(http:// www.fws.gov/chesapeakebay/endspweb/ProjectReview/Index.html)

FUTURE WITHOUT THE PROJECT

Without the offshore dredging project, shoals would remain similar to existing conditions found today. However, we anticipate that the demand will continue to be high for sand extraction needed for beach nourishment projects for years to come due to climate change and more frequent and severe seasonal coastal storms.

Under the no action alternative, the project would be conducted following findings of the 2008 FSEIS and sand would be dredged for the Atlantic Coast Project from any combination of the offshore shoals - Isle of Wight Shoal, Weaver Shoal, and Shoal A for the next beach nourishment cycle. Shoal B would not be dredged as its fishery value relative to the other shoals would be assumed not to decline. Updated information regarding environmental conditions and fisheries would not be sought or utilized to further select among these three offshore shoals or further plan the sequence of dredging from the candidate shoals. Dredging would be implemented in accordance with the dredging guidelines and constraints presented in the 2008 FSEIS without further review to determine whether modifications to the dredging constraints would be appropriate.

EFFECTS OF THE PROJECT ALTERNATIVES

ENDANGERED AND THREATENED SPECIES

Within the project impact area, no federally proposed or listed endangered or threatened species under the U.S. Fish and Wildlife Service's jurisdiction are known to exist. Transient species such as red knot (*Calidris canutus*) and piping plovers (*Charadrius melodus*) could migrate through the action area but would not be impacted since these species do not forage on open waters. However, listed species under National Marine Fisheries Service (NMFS) jurisdiction do occur in the project area, with sea turtles being of particular concern because they are vulnerable to impacts from dredging. NMFS prepared a Biological Opinion in 2006 that included mandatory measures to mitigate risks to sea turtles. USACE and NMFS are coordinating separately regarding concerns over listed and federally proposed species under NMFS jurisdiction.

ANADROMOUS FISH CONSERVATION ACT

Offshore shoals provide habitat for a variety of benthic species which are also food sources for macro fauna such as finfish and shellfish. Studies have indicated that many types of fish including striped bass (*Morone saxatilis*), concentrate near shoals during spring, summer, and fall months. Conversely, species diversity and abundance was less during the winter when they leave the area to migrate for warmer waters (Slacum *et al.*, 2010). Striped bass, an anadromous fish, are ecologically and economically important to the Chesapeake Bay region. Nursery and grow-out areas for juveniles include the Chesapeake Bay, Atlantic coastline, and use of near and far shoal areas located along the

Maryland's Eastern Shore. According to Maryland Department of Natural Resources, striped bass frequent Shoal B where artificial reef habitats have been created (FSEIS, 2008). Impacts to striped bass and other fish would be minimal since no dredging is proposed at this shoal.

FISH AND WILDLIFE COORDINATION ACT

Effects to benthic species from any alternative would have temporary impacts to benthos found directly at the dredge site. Even though benthic species would be removed during sand excavation, populations would likely recover from physical disturbances in one years' time (FSEIS 2008).

It is well known that marine birds and waterfowl utilize coastal bays and other shallow areas for nesting and foraging throughout the year. They also migrate to concentration areas in southern latitudes especially, the mid-Atlantic region during winter months. Marine birds and sea ducks have become a more recent topic of environmental concern over the past decade due to increased demand for off-shore wind development (FSEIS, 2008). Thus far, based on limited monitoring, data suggests that there have been no discernable concentrations of sea ducks or marine birds at the proposed dredge sites.

CONCLUSION

The project was authorized initially by Congress under Section 501(a) of the Water Resources Development Act of 1986 (Public Law 99-662) based on the Report of the Chief on Engineers, dated September 29, 1981. In 1989, Congress, under Public Law 101-101, Section 104, dated September 29, 1989, modified the previous authorization to authorize the Secretary (of the Army) to construct hurricane and storm protection measures based on the District Engineer's Post Authorization Change Notification Report dated May 1989.

Under this authorization, the USACE has been dredging sand from nearby borrow areas for many years to implement hurricane and storm protection measures at Ocean City, Maryland. The current borrow areas are exhausted so alternate sources must be located. Large quantities of sand are available from off-shore shoals in Federal waters which can be utilized for future shoreline protection. The 2008 FSEIS estimated dredging impacts at 7 square miles of the total seafloor spread out over the life of the project to the year 2044. The best available information on spatial distribution and abundance of water birds and sea ducks at shoals on the Continental Shelf is lacking, or significantly limited. However, numerous species of pelagic birds and sea ducks could potentially occupy off-shore shoals (USFWS IPAC, 2017). Currently, spatial distribution and abundance for most of these species cannot be determined because of limited survey data up to this point. Using the best available science, the Service believes that some level of temporal impacts would likely occur but would be minimal, based in part, on the following:

- Project impacts to benthic species at Weaver Shoal, Isle of Wight Shoal, and Shoal A would be directly impacted at the footprint, but temporal;

- Anadromous fish are migratory and are lower in numbers during fall/winter months;

- Turbidity of the water column during dredging would be short term since residual sand particles would fall out more quickly than organic substrates;

- The proposed dredging sites are located approximately 9.5 miles away from documented high-use coastal and bay areas favored by waterfowl concentrations and sea ducks during fall and winter months when dredging would occur;

- Marine birds and sea ducks are mobile; they can fly to and from areas where disturbances occur or prey species have shifted.

In conclusion, sand dredging at the proposed shoals would have a no impact to endangered species (where the Service has jurisdiction), and negligible impacts to migratory bird foraging areas and anadromous fish that reside in waters of the project area.

REFERENCES

BOEM. 2009. Compendium of Avian Occurrence Information for the Continental Shelf Waters along the Atlantic Coast of the United States, Final Report (Database Section - Seabirds). Prepared by the USGS Patuxent Wildlife Research Center, Beltsville, MD. U.S. Department of the Interior, Geological Survey, and Bureau of Ocean Energy Management Headquarters. O'Connell, A. F., B. Gardner, A. T. Gilbert, and K. Laurent. OCS Study. BOEM 2012-076.

BOEM. 2017. Determining Fine- scale Use and Movement Patterns of Diving Bird Species in Federal Waters of the Mid- Atlantic United States Using Satellite Telemetry. U.S. Department of the Interior, Sterling (VA). Spiegel, C.S., A.M. Berlin, A.T. Gilbert, C.O. Gray, W.A. Montevecchi, I.J. Stenhouse, S.L. Ford, G.H. Olsen, J.L. Fiely, L. Savoy, M.W. Goodale, and C.M. Burke. OCS Study BOEM 2017-069.

BOEM August, 2018. https://marinecadastre.gov/espis/#/

Goyert HF, Gardner B, Sollmann R, Veit RR, Gilbert AT, Connelly EE, Williams KA. 2015. Predicting the offshore distribution and abundance of marine birds from shipboard surveys, using a hierarchical community distance sampling model. In: Wildlife Densities and Habitat Use Across Temporal and Spatial Scales on the Mid-Atlantic Outer Continental Shelf: Final Report to the Department of Energy EERE Wind & Water Power Technologies Office. Williams KA, Connelly EE, Johnson SM,

Stenhouse IJ (eds.) Award Number: DE-EE0005362. Report BRI 2015-11, Biodiversity Research Institute, Portland, Maine. 42 pp.

NOAA. 2018. Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf: Maine - Florida. National Centers for Coastal Ocean Science. https://coastalscience.noaa.gov/project/statistical-modeling-marine-bird-distributions/

Slacum, HW, Jr., Burton, WH and Methratta ET, 2010. Assemblage Structure in Shoal and Flat-Bottom Habitats on the Inner Continental Shelf of the Middle Atlantic Bight, USA 2010. In: Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science 2:277–298, 2010 Copyright by the American Fisheries Society 2010
DOI: 10.1577/C09-012.

USGS, 2018, Alicia Berlin; personal communication, Beltsville, MD

USFWS, 2018, Caleb Spiegal, Personal communication, Region 5

USFWS, 2018, Mark Koneff, Personal Communication, Region 5

USFWS, http://www.fws.gov/chesapeakebay/endspweb/ProjectReview/index.html)

Waterbirds: The International Journal of Waterbird Biology Vol. 30, Special Publication *Waterbirds of the Chesapeake Bay and Vicinity (2007), pp.4-16*

file: P/Div Strategic Resource Conservation/CPA/Army COE/Coordination Act Report/Atlantic Coast of Maryland Shoreline Protection

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
DIVISION OF CLIMATE, COASTAL, & ENERGY

DELAWARE COASTAL MANAGEMENT PROGRAM

100 W. WATER STREET, SUITE 7B
DOVER, DELAWARE 19904

Phone: (302) 739- 9283
http://de.gov/coastal

January 3, 2019

Andrew May
USACE, Baltimore District
2 Hopkins Plaza
Baltimore, MD 21201

RE: Delaware Coastal Management Program — Federal Consistency Determination Conditional Concurrence for USACE Baltimore District Atlantic Coast of Maryland (FC 2019.0003)

Dear Mr. May,

The Delaware Coastal Management Program (DCMP) of the Delaware Department of Natural Resources and Environment Control (DNREC) has completed its review of the above referenced project. This letter is in response to the federal consistency determination dated and received November 2, 2018, submitted by you on behalf of the U.S. Army Corps of Engineers (USACE) Baltimore District.

PROPOSED ACTION

The USACE Baltimore District is proposing to continue periodic placement of up to 95,000 cubic yards of beach-compatible sand on the Atlantic coast beach, from the Maryland/Delaware state line to a point not more than 0.3 miles north at Fenwick Island, Delaware. Placement is anticipated to occur approximately every four years as part of the continuing Atlantic Coast of Maryland Project. The purpose of this project is to provide coastal flood and erosion risk management in the vicinity of Ocean City, Maryland, against a one percent annual chance storm event on the Atlantic Ocean.

FEDERAL CONSISTENCY UNDER THE COASTAL ZONE MANAGEMENT ACT

Pursuant to the Coastal Zone Management Act of 1972, as amended, federal activities located inside or outside of Delaware's federally approved coastal management area that can have reasonably foreseeable effects on coastal uses must be implemented in a manner consistent with the enforceable policies of the DCMP including: wetlands management, beach management, coastal waters management, subaqueous lands and coastal strip management, public lands management, flood hazard areas management, historic and cultural areas management, state owned coastal recreation and conservation, recreation and tourism, air quality management, living resources, pollution prevention, and coastal management coordination.

FEDERAL CONSISTENCY ANALYSIS

The Delaware CZM Program consists of a network of programs administered by several agencies. The DNREC DCMP coordinates the review of consistency determinations with agencies administering the enforceable and advisory policies of the program. The following agencies participated in this review:

DNREC, Division of Parks and Recreation
DNREC, Division of Watershed Stewardship, Shoreline and Waterway Management
DNREC, Division of Fish and Wildlife
DNREC, Division of Air Quality
DNREC, Division of Water, Wetlands and Subaqueous Lands

To protect living resources of the State, the DNREC, Division of Fish and Wildlife recommended further coordination with the appropriate agencies if specific nesting birds are documented in the area (see Conditional Concurrence section).

PUBLIC PARTICIPATION

In accordance with 15 CFR §930.42, the public was invited to participate in the review of the Atlantic Coast of Maryland project. Public notice of this proposed action was published in the Delaware State News, The News Journal, and DNREC public notices list service on November 11, 2018. The public was given 20 days to submit comments on the published notice. No public comments were received in response to this notice.

CONDITIONAL CONCURRENCE

Based on its review and pursuant to National Oceanic and Atmospheric Administration regulations (15 CFR 930), the DCMP conditionally concurs that the USACE Atlantic Coast of Maryland Project, as proposed above, is consistent to the maximum extent practicable with the program.

The project area may be utilized by piping plovers (Charadrius melodus). As such, to be consistent with the DCMP's enforceable and advisory policies, the following condition must be satisfied as it relates to the Living Resources policies 5.11.2.1, 5.11.3.1, 5.11.3.2, and 5.11.4.1:

1. If piping plovers nest within the project site, the USACE will need to coordinate and cooperate with DNREC, Division of Fish and Wildlife on the protection and management of this new nesting habitat.

Failure to comply with 15 CFR §930.4 as it relates to the condition above will result in this conditional concurrence being considered an objection. Under this scenario, the applicant is advised that pursuant to 15 CFR 930, subpart H, and within 30 days from receipt of this letter, a request may be submitted to the Secretary of Commerce to override the objection. In order to grant an override request, the Secretary must find that the activity is consistent with the objectives or purposes of the Coastal Management Act, or is necessary in the interest of national security. A copy of the request and supporting information must be sent to the Delaware Coastal Management Program and the federal permitting or licensing agency. The Secretary may collect fees for administering and processing the request.

Thank you for the opportunity to review and respond to the Atlantic Coast of Maryland federal consistency determination. If you have any questions, please contact me or Jennifer Holmes of my staff at (302) 739-9283.

Sincerely,

Kimberly B. Cole, Administrator
Delaware Coastal Management Program

KBC/jlh

cc: FC File 2019.0003
Robert Ehemann, DNREC DPR
Mike Powell, DNREC DWS
Audrey DeRose-Wilson, DNREC DFW
Katie Esposito, DNREC WSLS
Deanna Morozowich Cuccinello, DNREC DAQ

MEETING AND CONFERENCE CALL RECORDS

Memorandum for the Record

Minutes: Conference Call, June 12, 2018
Subject: Atlantic Coast of MD Project - EFH Impacts Assessment and NMFS Recommendation for Additional Studies
Agency (Participant): BOEM (Doug Piatkowski), NMFS (Keith Hanson, Karen Greene), USACE (Chris Spaur, Michele Gomez, Tarrie Ostrofsky)

1 CS provided brief overview of project status. Next regular beach renourishment scheduled for 2022. However, if severe storm occurs before then could need sand sooner. Previous sand sources in state waters exhausted, so need to obtain sand from federal waters. Supplemental EIS prepared in 2008 covered federal sources, but USACE has continued to dredge from state sources since then and didn't actually dredge from federal waters yet. That SEIS now 10 years old so needs updating. To be prepared in event of severe storm, need to promptly prepare updated NEPA document (a supplemental EA). That EA includes updated EFH impacts assessment and consideration of impacts to endangered species.

2 TO provided update on project ESA coordination. USACE and NMFS have coordinated since 1990s on this project and interrelated Assateague project, including preparation of formal consultation documents, plus other correspondence. Now possible increased concerns over right whale. Chris Vaccaro of NMFS will provide guidance on how to proceed with consultation. DP requested that BOEM be included in ongoing consultation, and offered assistance.

3 CS provided history of previous Atlantic Coast and Assateague projects EFH impacts assessment efforts, noted that audience for previous EFH documents included concerned environmental groups who requested copies. Because of improvement/revision in EFH information since 2008, need to update list of species and life history stages assessed. Based on various NMFS online maps and documents, have provisionally identified 17 bony fish spp, 13 cartilaginous fish spp, and 2 mollusc spp now requiring consideration. Many of these species and some life history stages weren't included in 2008 assessment. Provisional list includes 4 new tuna spp; additional life history stages for cod, Atlantic mackerel, and yellowtail flounder; 4 new shark spp; 3 new skate spp; one new life history stage for dusky shark; and one new life history stage for longfin squid. Need NMFS assistance in determining what species should be included in EFH impacts assessment to accompany new EA. KH said that list also needs to include several anadromous fish spp. KG said to use online dynamic maps and document maps to aid identification of species to include, and reviewed strengths/limits of various sources. However, EFH text description has ultimate determining criteria and so that should be consulted for ultimate determination. Amendment 10 lays out changes in text descriptions. CS will revise prospective spp list and re-forward to NMFS for review in near future.

4 CS inquired how new EFH impacts assessment could reference/build upon previous documents. KH and KG said that new assessment should reference previous work, but needs to reflect changes since then and cover stressors project would cause. Need to include changes in species ranges and water temperatures. For example, winter flounder and surf clam have shifted further north. However, other flat fish may be making greater use of shoals. Not much concern over impacts to highly migratory spp such as tuna, so can prepare document with minimal consideration of these. DP said that basically need to cover key issues, then incorporate the rest by reference.

5 CS stated that NMFS its May response letter and subsequent email suggested that additional studies would be needed. CS inquired to what degree findings of the BOEM MD WEA studies just several miles away could be considered representative of conditions of the Atlantic Coast Project candidate borrow shoals. DP noted that 2008 SEIS had data specific to the candidate shoals that had been acquired by various MMS studies. Since then, BOEM has conducted extensive studies of the nearby MD WEA. KH suggested that we need to compare and contrast WEA with candidate shoals to determine/demonstrate whether MD WEA studies adequate means to characterize candidate shoals now. CS noted that the western side of the MD WEA has ridge and swale topography comparable to that of the candidate shoall area. However, the eastern side of the MD WEA is flatter and deeper. Thus, should be able to utilize information from the west side of the MD WEA. KG and KH noted that NMFS has concerns over flounder and surf clams, and need to consider the populations and the fishery. NY District does surf clam surveys pre-dredging, and avoid areas of high surf clam density. While surf clam fishery has moved north, population may be recovering to the south. NMFS will look into information they have on commercial fishing in candidate shoal area and provide that.

6 KH inquired about whether any TOY restrictions would be in place. CS noted that mitigation measures are required for sea turtles in warmer water conditions. Otherwise, summer tourist season is unacceptable time for Ocean City beach nourishment (so that's an economic TOY restriction). Winter has rough seas, so is more dangerous and probably more expensive, but they do some work then still. KH noted that fall work poses greater risk for impacts to fish than spring because in spring only a fewer number of winter resident species are typically present. KH said that NMFS has applied no TOYs to protect fish from dredging for beach sand though yet.

7 It seems likely that mitigation suite as proposed in 2008 SEIS is still implementable today. However, further follow-up needed to verify. Towards that end several near future action items:

CS provide revised EFH spp list to KH for review

CS (working with DP) compare and contrast MD WEA study area to candidate shoal area and provide list of topics for which post 2008 MD WEA studies "cover" the candidate shoals. Provide to KH

KH compile and provide NMFS commercial fishing data for candidate shoal area, with particular need to consider flounder and surf clam.

CS emailed out copies of draft MFR for review on June 13, 2018 to DP, KH, KG, MG, and TO. CS received response from DP on June 14, 2018 stating no changes needed. CS re-emailed draft out to KH, KG, MG, and DP on June 26, 2018. No other comments received.

Memorandum for the Record

Minutes: Meeting between USACE and DNR Staff and Ocean City Area Fishermen, July 10, 2018, 630-8 PM. Ocean City Marlins Club, West Ocean City, MD.
Subject: Atlantic Coast of MD Project – Offshore Shoal Dredging and Fishing Ground Value, Ocean City Inlet Navigation Concerns
Agency (Participant): USACE (Chris Spaur, Justin Callahan, Tony Clark); DNR (Dave Blazer, Steve Doctor); BOEM (Doug Piatkowski [listening capability only])

0 USACE staff, DNR staff, and fishermen introduced themselves. CS requested that all present sign sign-in sheets. 16 people signed sign-in sheets in addition to MD DNR participants. One reporter from the "Maryland Coast Dispatch" newspaper attended. Two fishermen introduced themselves as commercial fishermen, and the remaining fishermen were split between charter boat and recreational. CS stated that meeting would be organized in three parts: overview of proposed borrow plan, discussion of fishery value of the offshore shoals being considered as borrow sources, and then open discussion on navigation concerns in Ocean City Inlet vicinity.[1]

1 CS provided overview of project status and 2008 borrow plan with updates (attached slide handout). During the presentation on the 2008 borrow plan and project status, multiple fishermen asked questions regarding the plan and other alternatives. Several notable questions and responses are provided below.

Question: Why not dredge the flat plain (desert) areas of the seafloor rather than the offshore shoals? Answer: Sea floor plains sands are thin (several feet or less) and then typically interbedded with other sediments not suitable for the beach (gravel and mud). Conversely, shoals are almost entirely gradually moving undersea dunes. Additionally, shoal sand is of grain size highly compatible with Ocean City beach.

Question: Where does the sand placed on the Ocean City beach go? Answer: The Ocean City beach is an engineered beach and the character of the ocean and coastal bays shorelines are a consequence of combined impacts of natural processes and engineering. Sand is dredged from offshore shoals and deposited by USACE on Ocean City beach. Then natural processes transport sand southward along the beach and into the Coastal Bays in the inlet vicinity and also then on the growing ebb shoal off northern Assateague Island. USACE dredges sand from the inlet vicinity and the ebb shoal and places sand on Assateague Island south of the ebb shoal. From there, natural processes carry sand southward along Assateague Island. (This topic was covered more thoroughly in subsequent discussion of USACE navigation projects in vicinity.)

[1] Meeting minutes are organized into three sections accordingly, although in reality questions and discussion overlapped back and forth on these topics at different times during the meeting.

Question: Is data available to show what happened to sea life in state waters where dredging has been conducted? Answer: USACE hasn't conducted biological monitoring of the seafloor following dredging off MD. However, USACE has taken multiple bathymetric surveys over time so changes in seafloor bathymetry are known. Biological monitoring of comparable dynamic sandy substrates has been conducted elsewhere on the Atlantic and Gulf Coasts. These studies find that bottom life generally recovers to pre-dredging conditions within several years - provided the post-borrow substrate remains sandy with good water quality and minimal change in depth. Under the borrow plan, dredging guidelines and constraints would serve to maintain sandy substrates with depth changes not enough to affect bottom life. No long-term impacts to water quality would occur. So, bottom life would be expected to recolonize the dredged shoals within several years following dredging. Because of these findings elsewhere, no biological monitoring following dredging was proposed in the 2008 borrow plan. However, bathymetric monitoring to ensure that shoal integrity was maintained over time is proposed.

Question: Could coarser sand or finer sand be put on the Ocean City beach? What would the consequences be? Answer: Coarser sand or gravel is more resistant to erosion, but would cause the beach to get steeper over time, increasing wave energy that bathers would be exposed to, making it perhaps more dangerous. Gravel is less desirable from a recreational perspective in that it's harder to walk on, and sand is part of beach character that draws tourists and keeps Ocean City an economic success. Finer sand would get washed away more quickly. So to meet the needs of Ocean City, USACE strives to place sand that's the same as the engineered beach that's there now. However, USACE does place coarser sand at several locations along the beach where erosion is most severe – "hotspots."

Question: Is USACE considering impacts of projects on Delaware beaches? Answer: USACE Baltimore District maintains Atlantic Coast of MD (Ocean City) and Assateague Island Projects while USACE Philadelphia District is undertaking projects on Delaware beaches. The two districts are in contact with each other, but dredging and beach work is arranged by each district separately.

Question: Could dredging be undertaken with a time of year restriction that would better protect fish, as fishing "turns off" during dredging? In particular, could dredging be done when rockfish aren't present? Answer: USACE can't put sand on the beach from Memorial to Labor Day because that would interfere with summer beach season. Sea conditions are roughest in winter, limiting work, although some beachwork is done then. So, much of the work ends up being done in fall and spring.

2 JC stated that the Ocean City beach is part of an authorized USACE project and will be maintained. USACE has to obtain sand from somewhere for the project. CS said that borrow plan from 2008 identified multiple shoals because of uncertainty over how their future value as fishing grounds might change, uncertainty over total sand needs which would be affected by storms, and to allow dredging to be done in accordance with 2008 guidelines and constraints which would limit dredging from any one shoal to less than 5% of its total volume. Borrow plan developed in 2008 determined that Shoal B (Bass Grounds) was not suitable from a fishery

impact perspective, and wouldn't be used unless its value as fishing grounds decreases. Instead, it identified several offshore shoals as the best sources: Isle of Wight Shoal, Weaver Shoal, and Shoal A. Based on economic considerations and situation where future storms aren't more severe than past, then USACE could get all needed sand from just Isle of Wight and Weaver Shoal and dredge in accordance with 2008 borrow plan dredging guidelines and constraints.

CS asked whether USACE should avoid dredging Shoal B (Bass Grounds)? Or, has its value as a fishing ground changed such that it could be dredged instead of or in addition to the other shoals? Multiple participants stated that Bass Grounds is an important fishing area, particularly because of the artificial reefs there, and that it shouldn't be dredged. CS noted that presumably fishing value is in part dependent upon artificial reef. Because that's permanent, then presumably fishing value will remain high in future.

Cs asked whether Isle of Wight Shoal, Weaver Shoal, or Shoal A are of particular importance from a fishery perspective? SD and one fishermen noted that Isle of Wight Shoal has concentrations of striped bass seasonally, is a good fishing area, and is the tallest of the shoals. They'd prefer that USACE instead dredge Weaver Shoal and or Shoal A.

4 CS presented a quick overview of USACE projects and studies in the inlet vicinity. Then, an open discussion was then held to address navigation concerns. In this, USACE staff responded to various questions regarding conditions in the inlet vicinity. Numerous questions focused on whether USACE could make increased use of accumulating sand near harbor, inlet, and ebb shoal for Ocean City or Assateague and therefore improve navigation while reducing need for dredging offshore shoals. USACE staff stated that volume of sand that can be moved from these sources is not enough to meet needs of Ocean City, and that cost of getting sand from these sources to Ocean City is higher than getting sand from offshore shoals because of smaller dredge that is used in inlet vicinity. Additionally, sand from accumulating sources inside the inlet is often finer than the sand on the Ocean City beach. Sand from the ebb shoal has a wider variety of grain sizes.

5 In summary, general opinion expressed by fishermen was that they'd rather USACE doesn't dredge offshore shoals, but the proposed borrow plan seemed to be carefully thought out. They would agree with dredging Weaver Shoal and Shoal A as the least-harm options.

CS emailed out copies of draft MFR for review on July 18, 2018 to USACE, BOEM, and MDDNR participants. CS received no comments.

Cultural and Historic Resources Coordination Records

THIS PAGE INTENTIONALLY LEFT BLANK

JUL 03 2018

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201

July 3, 2018

Susan Bachor
Tribal Historic Preservation Representative
Delaware Tribe of Indians
P.O. Box 64
Pocono Lake, PA 18347

Dear Ms. Bachor,

The purpose of this letter is to initiate consultation with your office in accordance with Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations at 36 CFR Part 800, regarding the Atlantic Coast Shoreline Protection Project. The goal of the project is to evaluate the impacts of dredging two offshore shoals on the Outer Continental Shelf (OCS) to provide sand for beach nourishment through the year 2044. The project was initially authorized by Congress under Section 501(a) of the Water Resources Development Act of 1986, and subsequently modified in 1989 under Public Law 101-101, Section 104. Thus far, two offshore shoals located in Federal waters have been recommended: Weaver Shoal and Isle of Wight Shoal, each delineated into sub-areas based on sand suitability (Enclosure 1). The shoals proposed for dredging are approximately 0.6 and 0.4 square miles in size, respectively. Both shoals are located approximately 7.2 miles from the shore and are situated at a base water depth of 60 feet.

The project's area of potential effect is defined as the areas of each shoal being dredged for suitable sand material. It is important to note that dredging would be conducted uniformly over a wide area and go no deeper than ambient depths of the adjacent sea floor. According to an *Inventory and Analysis of Archaeological Site Occurrence on the Atlantic Outer Continental Shelf* (MMS 2014), the sea floor contains a high sensitivity for prehistoric resources. However, dredging activities will be confined to the more recently developed shoals, in a high-dynamic environment that has no likelihood of containing intact prehistoric resources or paleolandforms.

A desktop examination of the project areas was completed using the National Oceanic and Atmospheric Administration's Automated Wreck and Obstruction Information System (AWOIS) and their Historical Map and Chart Collection. The AWOIS indicated that no submerged resources have been recorded within or on the shoals. The nearest obstructions occur 6,000 feet west of Weaver Shoal and 12,000 feet west of Isle of Wight Shoal. No shipwrecks were documented on the shoals during a precursory review of maps and charts dated between 1852 and 2017. Neither of the shoals have been surveyed for submerged archaeological resources.

Given the information described in this letter, we have determined that a Phase I archaeological investigation for submerged resources is warranted to identify historic properties within the Weaver and Isle of Wight Shoals. This investigation will be conducted in accordance with the Bureau of Ocean Energy Management's *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR 585*.

Please let us know if you are interested in consulting on this project on a Government-to-Government basis, and the extent to which you wish to participate. We will provide a USACE representative at consultation and fact-finding meetings, and we will fully consider any information you wish to provide.

Thank you for your assistance with the Atlantic Coast Shoreline Protection Project. We respectfully request your response within 30 days of the receipt of this letter. If you have any questions about the project, please contact Ethan A. Bean at (410) 962-2173 or ethan.a.bean@usace.army.mil.

Sincerely,

for Daniel M. Bierly, P.E.
Chief, Civil Project Development Branch
Planning Division

Enclosures

Absentee Shawnee Tribe of Oklahoma

Ms. Edwina Butler-Wolfe
Governor, Absentee Shawnee Tribe of Oklahoma
2025 South Gordon Cooper Drive
Shawnee, OK 74801

Cayuga Nation of New York

Chief Clint Halftown
Cayuga Nation of New York
P.O. Box 803
Seneca Falls, NY 13148

Chickahominy Indian Tribe

Chief Stephen Adkins
Chickahominy Indian Tribe
7240 Adkins Road
Charles City, VA 23030

Chickahominy Tribe Eastern Division

Gerald A. Stewart
Chickahominy Tribe Eastern Division
1191 Indian Hill Lane
Providence Forge, VA 23140

Delaware Nation

Deborah Dotson
President, Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Delaware Tribe of Indians

Susan Bachor
Tribal Historic Preservation Representative
Delaware Tribe of Indians
P.O. Box 64
Pocono Lake, PA 18347

Delaware Tribe of Oklahoma

Chief Chet Brooks
Delaware Tribe of Oklahoma
5100 Tuxedo Boulevard
Bartlesville, OK 74006-2838

Eastern Shawnee Tribe of Oklahoma

Chief Glenna Wallace
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, MO 64865

Monacan Indian Nation

Chief Dean Branham
Monacan Indian Nation
104 Walnut Place
Lynchburg, VA 24502

Nansemond Indian Tribe

Chief Lee Lockamy
Nansemond Indian Tribe
1001 Pembroke Lane
Suffolk, VA 23434

Oneida Indian Nation

Chief Arthur Halbritter
Oneida Indian Nation
5218 Patrick Road
Verona, NY 13478

Oneida Tribe of Indians of Wisconsin

Corina Williams
Tribal Historic Preservation Officer
Oneida Tribe of Indians of Wisconsin
P.O. Box 365
Oneida, WI 54155-0365

Onondaga Nation

Tony Gonyea
Faithkeeper, Onondaga Nation
Hemlock Road, 11a Box 319-B
Via Nedrow, NY 13120

Pamunkey Indian Tribe

Chief Robert Gray
Pamunkey Indian Tribe
1054 Pocahontas Trail
King William, VA 23086

Rappahannock Indian Tribe

Chief G. Anne Richardson
Rappahannock Indian Tribe
5036 Indian Neck Road
Indian Neck, VA 23148

Seneca Cayuga Nation Tribe of Oklahoma

Chief William L. Fisher
Seneca Cayuga Nation Tribe of Oklahoma
P.O. Box 1283
Miami, OK 74355

Seneca Nation of Indians

Todd Gates
President, Seneca Nation of Indians
90 O:hi'yoh Way
Salamanca, NY 14779

Shawnee Tribe

Ron Sparkman
Chairman, Shawnee Tribe
29 South 69a Highway
Miami, OK 74354

St. Regis Mohawk Tribe

Chief Eric Thompson
St. Regis Mohawk Tribe
412 State Route 37
Akwesasne, NY 13655

Stockbridge-Munsee Community of Mohican Indians

Shannon Holsey
President, Stockbridge-Munsee
Community of Mohican Indians
P.O. Box 70
Bowler, WI 54416

Tonawanda Band of Seneca Indians

Chief Darwin Hill
Tonawanda Band of Seneca Indians
7027 Meadville Road
Basom, NY 14013

Tuscarora Nation

Chief Leo Henry
Tuscarora Nation
2006 Mount Hope Road
Lewiston, NY 14092

Upper Mattaponi Indian Tribe

Chief W. Frank Adams
Upper Mattaponi Indian Tribe
5932 East River Road
King William, VA 23086

THIS PAGE PURPOSEFULLY BLANK

From: Eastern Historic Preservation
To: Spaur, Christopher C CIV USARMY (US)
Subject: [Non-DoD Source] EA Offshore Shoals as Sand Sources
Date: Monday, June 11, 2018 9:35:01 AM

Mr. Spaur,
We do have concerns regarding buried archaeological resources buried at these sites. Has side scan radar or other archaeological method been performed?
Susan Bachor, M.A.

Archaeologist
Delaware Tribe Historic Preservation
P.O. Box 64
Pocono Lake, PA 18347
sbachor@delawaretribe.org

From: Eastern Historic Preservation
To: Bean, Ethan A CIV USARMY CENAB (US)
Subject: [Non-DoD Source] Re: EA Offshore Shoals as Sand Sources
Date: Monday, June 11, 2018 6:42:36 PM

Hi, Ethan.
I look forward to learning more about the project.
Susan

Archaeologist
Delaware Tribe Historic Preservation
P.O. Box 64
Pocono Lake, PA 18347
sbachor@delawaretribe.org

From: "Bean, Ethan A CIV USARMY CENAB (US)" <ETHAN.A.BEAN@usace.army.mil>
To: "sbachor@delawaretribe.org" <sbachor@delawaretribe.org>
Cc: "temple@delawaretribe.org" <temple@delawaretribe.org>
Sent: 6/11/2018 3:39 PM
Subject: EA Offshore Shoals as Sand Sources

Hi Susan,

I was forwarded the email you sent to Chris Spaur earlier today about our Atlantic Coast offshore dredging project. You indicated that you had concerns about buried archaeological resources.

It is extremely unlikely that intact prehistoric archaeological resources exist within the shoals, since they form and move in a high-energy environment. Buried resources may be likely to exist in the sea floor, but our project is proposing to borrow sand only from the shoals, without going below the sea floor.

You actually emailed us right before we planned on sending out consultation letters to you and the MD SHPO (I believe you received the study initiation notice?) so you should be getting that shortly. Within the coming months, we plan on conducting surveys (side scan sonar, magnetometer, and sub-bottom profiler) to see if any resources are within the specific borrow areas, but we're mainly expecting to find more recent ship wrecks that are more likely to have been preserved (should they exist).

Let me know if you have any other questions,

Thanks!
Ethan

_____

Ethan A. Bean
Archaeologist
U.S. Army Corps of Engineers

Baltimore District
(410) 962-2173

From: Carrier, Brandi
To: Bean, Ethan A CIV USARMY CENAB (US)
Subject: Re: [EXTERNAL] RE: [Non-DoD Source] Information to support USACE/MD DNR Atlantic Coast of MD Project
Date: Tuesday, June 19, 2018 6:34:00 PM
Attachments: 20.tif
MGS Survey Plan_June2018_BC.docx
Contractor SOW_June 2018_BC.docx

Hi Ethan,

Attached are my suggested edits; thanks so much for the opportunity to review.

1) I've left out the sub-bottom profiler from the scopes. Should they be included given that we're not dredging into the sea floor?
I recommend that you leave it in, and have added the sections to the survey plan and contractor SOW (in tracked changes) for your consideration. My reasoning is that a shallowly buried archaeological site (i.e. shipwreck) with a low magnetic moment would be missed by the side scan and may not register on the mag, but may still be picked up by the sub-bottom profiler as an anomaly. Since all instruments can be towed simultaneously, it does not add to the survey costs. There will be some labor cost for processing and analysis of these data, but it is minimal, completes the dataset, and renders confidence to the SHPOs that an area has received a good faith identification effort.

2) You mentioned that you've seen previous projects have data collected by a non-archaeological organization, but processed by qualified archaeologists. In those projects, did the agency collecting the data have an archaeological monitor while surveying?
They typically do not, though we encourage them to allow the archaeologist to be aboard if he or she desires. Think about the large industry-driven surveys lasting many weeks at sea just mowing the lawn and you'll get my drift: nobody wants to be stuck on a boat that long, just watching data go by, if they can get it after-the-fact. A lot of problems can be prevented at the outset if the geophysicists and the archaeologist coordinate effectively before the survey begins. However, if they want to perform anomaly and target delineation on the same mobilization, then the archaeologist might need to be on board to select those targets / anomalies if data can't be sent ashore electronically for the archaeologist's near real-time review. Let me know if you want to discuss more... happy to chat.

Speaking of, let me be the first to thank you for including the instruction to perform the additional delineation of potential anomalies and targets. I wish everyone would do this!

Regarding my comment on 200% overlapping coverage of the seafloor and the nadir gap (i.e., data holiday in the middle of side scan data), I attach an image that may help to illustrate our unfortunate learning experience. This is a post-construction side scan sonar image of the Mica wreck with a pipeline laying directly across it (attached). It was completely invisible in the original sonar data, hiding in that data gap. Since then, we've always required 200% overlapping coverage.

Let me know if you want to discuss any of this, but hopefully it makes sense.

Best,
Brandi

Brandi M. Carrier, MA, RPA
Archaeologist | Deputy Federal Preservation Officer
US Department of the Interior, Bureau of Ocean Energy Management
Office of Environmental Programs, Division of Environmental Assessment

760 Paseo Camarillo, Suite 102 (CM-102) | Camarillo, CA 93010

Phone: 703.787.1623
Mobile: 571.393.4358

On Tue, Jun 19, 2018 at 9:36 AM, Bean, Ethan A CIV USARMY CENAB (US) <ETHAN.A.BEAN@usace.army.mil <mailto:ETHAN.A.BEAN@usace.army.mil> > wrote:

> Hi Brandi,
>
> Friday works for me. I'm out of the office that day so I might not respond back until Monday.
>
> Thanks!
> Ethan
>
> -----Original Message-----
> From: Carrier, Brandi [mailto:brandi.carrier@boem.gov <mailto:brandi.carrier@boem.gov>]
> Sent: Tuesday, June 19, 2018 8:44 AM
> To: Bean, Ethan A CIV USARMY CENAB (US) <ETHAN.A.BEAN@usace.army.mil <mailto:ETHAN.A.BEAN@usace.army.mil> >
> Subject: Re: [EXTERNAL] RE: [Non-DoD Source] Information to support USACE/MD DNR Atlantic Coast of MD Project

Good morning Ethan,

Thanks for reaching out. I'm happy to do a review and get you answers, and apologize for the delay in my response; I was out on Thursday and Friday and traveling on Monday.

If I get back to you by Friday, will that be acceptable?

Thank you,

Brandi M. Carrier, MA, RPA
Archaeologist | Deputy Federal Preservation Officer US Department of the Interior, Bureau of Ocean Energy Management Office of Environmental Programs, Division of Environmental Assessment

760 Paseo Camarillo, Suite 102 (CM-102) | Camarillo, CA 93010

Phone: 703.787.1623
Mobile: 571.393.4358

On Thu, Jun 14, 2018 at 3:15 PM, Bean, Ethan A CIV USARMY CENAB (US) <ETHAN.A.BEAN@usace.army.mil <mailto:ETHAN.A.BEAN@usace.army.mil> <mailto:ETHAN.A.BEAN@usace.army.mil > > > wrote:

Hi Brandi,

Thank you for taking the time to speak with us on Tuesday. It definitely cleared up some questions I had about this process.

I've attached two scopes of work...one details the survey parameters for MGS and their submission of raw data, and the other is for when the contractor is processing the data and preparing the report. Would you be able to review these documents?

I also had two other questions:

1) I've left out the sub-bottom profiler from the scopes. Should they be included given that we're not dredging into the sea floor?

2) You mentioned that you've seen previous projects have data collected by a non-archaeological organization, but processed by qualified archaeologists. In those projects, did the agency collecting the data have an archaeological monitor while surveying?

Thanks!
Ethan

-----Original Message-----
From: Carrier, Brandi [mailto:brandi.carrier@boem.gov <mailto:brandi.carrier@boem.gov> <mailto:brandi.carrier@boem.gov > >]
Sent: Tuesday, June 12, 2018 3:45 PM
To: Spaur, Christopher C CIV USARMY (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> <mailto:Christopher.C.Spaur@usace.army.mil > > >; Bean, Ethan A CIV USARMY CENAB (US) <ETHAN.A.BEAN@usace.army.mil <mailto:ETHAN.A.BEAN@usace.army.mil> <mailto:ETHAN.A.BEAN@usace.army.mil > > >
Cc: Piatkowski, Douglas <douglas.piatkowski@boem.gov <mailto:douglas.piatkowski@boem.gov> <mailto:douglas.piatkowski@boem.gov > > >
Subject: [Non-DoD Source] Information to support USACE/MD DNR Atlantic Coast of MD Project

Good afternoon Ethan and Christopher,

It was a pleasure chatting with you today. I have three items to share:

* Guidelines for Providing Archaeological and Historic Properties Information <Blockedhttps://Blockedwww.boem.gov/Guidelines_for_Providing_Archaeological_and_Historic_Property_Information_Pursuant_to_30CFR585/ <Blockedhttp://Blockedwww.boem.gov/Guidelines_for_Providing_Archaeological_and_Historic_Property_Information_Pursuant_to_30CFR585/> <Blockedhttp://Blockedwww.boem.gov/Guidelines_for_Providing_Archaeological_and_Historic_Property_Information_Pursuant_to_30CFR585/ <Blockedhttp://www.boem.gov/Guidelines_for_Providing_Archaeological_and_Historic_Property_Information_Pursuant_to_30CFR585/> > > ,
* Template for contracting language (attached), and
* Qualified Marine Archaeologist language (below).

The Guidelines document is the one we went through briefly that discusses geophyscial survey techniques, instruments, and archaeological reporting standards that will be useful for MD Geological Survey and your Archaeological contractor.

The Template for contracting language is what we recommend you include in your contract(s) to ensure you get the data you need.

Perhaps not as relevant with a state partner like MD Geological Survey, but our friends at Jacksonville District got into a situation where their (private sector) contractor refused to provide the data, claiming that "it wasn't in their contract."

Finally, as you're selecting your archaeological contractor to perform the archaeological analysis on the remote sensing data and write the archaeological report, this definition might help: "a qualified marine archaeologist meets the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738- 44739) and has experience in conducting HRG surveys and processing and interpreting the resulting data for archaeological potential."

Feel free to loop me in or send docs for review. I'm happy to assist as you like.

Best Wishes,
Brandi

Brandi M. Carrier, MA, RPA
Archaeologist | Deputy Federal Preservation Officer US Department of the Interior, Bureau of Ocean Energy Management Office of Environmental Programs, Division of Environmental Assessment

760 Paseo Camarillo, Suite 102 (CM-102) | Camarillo, CA 93010

Phone: 703.787.1623
Mobile: 571.393.4358

From: Troy Nowak -MDP-
To: Bean, Ethan A CIV USARMY CENAB (US)
Subject: [Non-DoD Source] Re: Atlantic Coast Shoreline Protection Project - SOW
Date: Tuesday, July 10, 2018 3:55:32 PM
Attachments: planning-mht-logo-plus-changemd-smaller.png
MGS Survey Plan_June2018 (1).pdf

Hi Ethan,

Looks good. I have a few minor comments. Most for clarification. See attached.

Let me know if you have any questions.

Best, Troy

Troy J. Nowak
Asst. State Underwater Archeologist
Maryland Historical Trust
Maryland Department of Planning
100 Community Place
Crownsville, Maryland 21032-2023
(410) 697-9577

troy.nowak@maryland.gov <mailto:troy.nowak@maryland.gov>

Help shape the future of preservation, archeology and cultural heritage in Maryland! Take our short survey here <Blockedhttp://mht.maryland.gov/plan.shtml> .

Please take our customer service survey.
<Blockedhttp://www.doit.state.md.us/selectsurvey/TakeSurvey.aspx?agencycode=MDP&SurveyID=86M2956#>
MHT.Maryland.gov <Blockedhttp://MHT.Maryland.gov> <Blockedhttp://mht.maryland.gov/>

On Fri, Jun 29, 2018 at 8:19 AM, Bean, Ethan A CIV USARMY CENAB (US) <ETHAN.A.BEAN@usace.army.mil <mailto:ETHAN.A.BEAN@usace.army.mil> > wrote:

> Hi Troy,
>
> You should soon be receiving a consultation letter regarding the subject project. Attached are the scopes of work for the project that BOEM (Brandi Carrier) has reviewed and given the thumbs up. One is for MGS to perform the survey and the other is for a contractor to analyze the data and write the report. Do you think you'd have time within the next week to look at these and provide any comments?
>
> Thanks!
> Ethan
>
> _____
> Ethan A. Bean
> Archaeologist
> U.S. Army Corps of Engineers
> Baltimore District
> (410) 962-2173

From: Troy Nowak -MDP-
To: Bean, Ethan A CIV USARMY CENAB (US)
Subject: [Non-DoD Source] Re: Atlantic Coast Shoreline Protection Project - SOW
Date: Tuesday, July 10, 2018 3:55:32 PM
Attachments: planning-mht-logo-plus-changemd-smaller.png
MGS Survey Plan_June2018 (1).pdf

Hi Ethan,

Looks good. I have a few minor comments. Most for clarification. See attached.

Let me know if you have any questions.

Best, Troy

Troy J. Nowak
Asst. State Underwater Archeologist
Maryland Historical Trust
Maryland Department of Planning
100 Community Place
Crownsville, Maryland 21032-2023
(410) 697-9577

troy.nowak@maryland.gov <mailto:troy.nowak@maryland.gov>

Help shape the future of preservation, archeology and cultural heritage in Maryland! Take our short survey here <Blockedhttp://mht.maryland.gov/plan.shtml> .

Please take our customer service survey.
<Blockedhttp://www.doit.state.md.us/selectsurvey/TakeSurvey.aspx?agencycode=MDP&SurveyID=86M2956#>
MHT.Maryland.gov <Blockedhttp://MHT.Maryland.gov> <Blockedhttp://mht.maryland.gov/>

On Fri, Jun 29, 2018 at 8:19 AM, Bean, Ethan A CIV USARMY CENAB (US) <ETHAN.A.BEAN@usace.army.mil <mailto:ETHAN.A.BEAN@usace.army.mil> > wrote:

> Hi Troy,
>
> You should soon be receiving a consultation letter regarding the subject project. Attached are the scopes of work for the project that BOEM (Brandi Carrier) has reviewed and given the thumbs up. One is for MGS to perform the survey and the other is for a contractor to analyze the data and write the report. Do you think you'd have time within the next week to look at these and provide any comments?
>
> Thanks!
> Ethan
>
> _____
> Ethan A. Bean
> Archaeologist
> U.S. Army Corps of Engineers
> Baltimore District
> (410) 962-2173

From:	Lockamy, Ronald L.
To:	Bean, Ethan A CIV USARMY CENAB (US)
Cc:	Aaron Bass (silenthunder26@gmail.com); Brian C. Bass (friendsofbrianbassformayor@gmail.com); Buddy Leary (gcatesz06@hartmail.com); Dave Hennaman; Earl Bass (earllbass@hughes.net); Matt Hausken (hauskenmatt@gmail.com); nikki bass (nikkibass@gmail.com); Robin Smith (robinsmith1562@gmail.com); Sam Bass (samflyingeagle48@yahoo.com); thom bandamo (woodenworks@yahoo.com)
Subject:	[Non-DoD Source] Atlantic Coast Shoreline Protection Project
Date:	Thursday, July 19, 2018 10:23:04 AM

Dear Sir,
I am interested on consulting. I would like to see the shoreline and its inhabitants protected as much as possible as well any reports on historic properties found.

Respectfully,

_____

Chief Lee Lockamy
Nansemond Nation

MARYLAND DEPARTMENT OF
PLANNING
MARYLAND HISTORICAL TRUST

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

Robert S. McCord, Acting Secretary

December 4, 2018

Ethan Bean
U.S. Army Corps of Engineers
Archeologist
Planning Division
2 Hopkins Plaza
Baltimore, MD 21201

Re: Atlantic Coast Shoreline Protection Project – Maryland

Dear Mr. Bean:

Thank you for your recent communication regarding the Atlantic Coast Shoreline Protection Project (the Project). The Maryland Historical Trust (MHT) understands the U.S. Army Corps of Engineers (the Corps) is considering various approaches to meet the reasonable and good faith identification standard related to Project elements including transport of sediments via placement of temporary 36-in. pipelines throughout a broad area on Maryland's Atlantic bottomlands.

MHT staff have reviewed information in our library and program records which shows archeological surveys have not been conducted in the Maryland portion of the project area which meet acceptable standards for the identification of historic properties. MHT recommends the Corps conduct work to identify historic properties in Maryland where activities with potential to cause adverse effects to historic properties are expected to occur. These activities include pipeline installation, operation, removal, and ancillary activities such as anchor drops, drags, pulls, and spud placement related to use of construction vessels and barges.

MHT understands the Corps does not plan to designate specific pipeline corridors which will be reused throughout the life of the project – until 2044, but will site these temporary pipelines on an as needed basis over a broad area of hard bottom. Four-to-five temporary pipeline placements are expected per renourishment episode with each lasting less than two weeks and potentially impacting an area measuring up to 2000 ft. x 100 ft. Therefore, MHT recommends that targeted pre-installation side scan sonar surveys are integrated into the overall project workflow to identify objects and areas for avoidance which represent or contain potential submerged archeological historic properties.

Data collection and processing could be undertaken by a qualified survey contractor with data transferred to a Corps staff archeologist for review. MHT is willing to provide training and technical assistance to the assigned Corps staff archeologist through ongoing coordination as needed.

If the Corps does not have a staff archeologist available and/or the hardware and programs to review the data, MHT recommends an archeologist with appropriate training and experience is contracted to review the data and provide recommendations to the Corps for consideration prior to each pipeline placement.

In addition, MHT recommends the project workflow also include recording of pipeline locations after installation and immediately before retrieval to track movement under various weather conditions to help inform the Corps regarding adjustments to the size of the Area of Potential Effects for this portion of the Project.

Recommendations for defining the survey area and the Area Potential Effects, and details related to side scan sonar survey for temporary pipeline placement for the Project are attached.

Thank you for providing this opportunity to comment. We look forward to further coordination related to the Atlantic Coast Shoreline Protection Project to complete Section 106 Consultation.

If you have questions or require further assistance, please contact me at troy.nowak@maryland.gov or (410) 697 9577.

Sincerely,

Troy J. Nowak
Asst. Underwater Archeologist

Atts.: (2 pages)

cc: Daniel Bierly, P.E., Chief, Civil Project Development Branch, U.S. Army Corps of Engineers

The following recommendations are provided assuming the Corps will assign a staff archeologist to review the side scan sonar data and identify objects and areas for avoidance which represent or contain potential submerged archeological historic properties prior to placement of temporary sediment transport pipelines.

Should the Corps decide to hire an archeological contractor to undertake this work, MHT would be happy to provide comments on draft scopes of work or similar documents.

Temporary Pipeline Placement and the Area of Potential Effects (APE)
Survey areas associated with temporary pipeline placement should encompass the associated APE which includes all areas where bottom impacts are expected, including:

- Dredging
- Anchor drops, drags, and pulls
- Spud placement
- Pipeline placement
- Pipeline movement and scouring resulting from use and typical weather/sea conditions including storm activity for the period it will remain in place

Side Scan Sonar Survey
A high-resolution side scan sonar should be employed which can detect small and partially buried objects.

Instrument Specifications
- Frequency – no less than 600 kHz
- Sensors - Integrated heading, pitch, roll and depth

Settings and parameters
- Range – 15 to 30 m (50 to 100 ft.) per channel
- Altitude – 1.5 to 3 m (5 to 10 ft.) / 10% range

Navigation
A hydrographic survey program should be used to plan, direct, and record navigation and data should be collected along pre-planned transects parallel to the pipeline centerline and spaced to ensure 100% coverage. The number of transects should be determined on a case-by-case basis considering the sonar's practical detection range which is largely determined by frequency, settings, and altitude.

GPS Accuracy - +/- 1 m or better
Vessel Speed – Should not exceed 5 kn (5.5 mph)

Data Presentation and Transfer
The contractor should provide a cover letter which describes survey methods, procedures, and general observations including:

- Specifications for navigation, GPS and side scan sonar systems
- Frequency
- Range
- Altitude
- Vessel speed
- Transect spacing
- Weather and sea conditions
- Assessment of data quality

Raw data should be provided digitally in its native format (*.jsf, *.mstl, etc.) and as *.xtf files.

Data should be post-processed including bottom-tracking, position-correction, and signal processing to produce high resolution individual Geo Images for each transect. These should be provided as GeoTIFF files with a spatial resolution of 5 cm per pixel.

Matthew M. Grunewald, RPA
District Archeologist
USACE, Planning Division Mobile District
CESAM-PD-EI
109 St. Joseph Street
PO Box 2288
Mobile, Alabama 36608

June 21, 2019

Re: Management Summary
Cultural Resources Investigation for the Atlantic Coast Shoreline Protection Project, Outer Continental Shelf, Isle of Wight and Weaver Shoals, Offshore Ocean City, Worcester County, Maryland
Contract W91278-15-D-0046, Task Order W912PP19F0011

Dear Mr. Grunewald,

SEARCH recently completed the Phase I maritime remote-sensing survey for the referenced project. This work was conducted for the US Army Corps of Engineers (USACE), Baltimore District which is proposing to provide beach nourishment to Ocean City, Maryland through the year 2044 to reduce the risk of coastal storm damage. USACE is now evaluating the potential effects that may result from borrowing sand from two shoals, Isle of Wight and Weaver Shoals, in federal waters. The USACE Mobile District is providing technical expertise and contract oversight to the Baltimore District for this endeavor. The USACE contracted SEARCH of Pensacola, Florida, to conduct the remote-sensing investigation to identify the location of any shipwrecks or other potentially significant submerged cultural resources which may be adversely affected by dredging activities (**Figure 1**).

SEARCH completed remote-sensing operations on June 1, 2019. The survey was conducted on favorable weather days between May 30 and June 1, 2019, and followed methodology guidelines established by BOEM and the USACE Performance Work Statement. Equipment for the work included a differentially corrected global positioning system, a cesium marine magnetometer, a side-scan sonar, and subbottom profiler. Survey line spacing was maintained at 30-meter (m) (100-foot [ft]) intervals. At remote-sensing target locations possibly indicative of potential submerged cultural resources, additional perpendicular lines were run at 7.6-m (25-ft) intervals to delineate the boundaries of the possible resource.

SEARCH has completed initial data processing and analysis, consisting of magnetic data contouring and review of raw side-scan sonar and sub-bottom profiler imagery. SEARCH identified no remote-sensing targets within the Area of Potential Effects (APE) that are indicative of potential submerged cultural resources. SEARCH recommends cultural resources clearance for the APE, as the remote-sensing data and archaeological analyses do not reveal the presence of potential submerged cultural resources. SEARCH will continue analysis of remote-sensing data to add and finalize recommendations and prepare a more in-depth draft report for your review. Should you have any questions or comments at this time, please do not hesitate to contact me or Jeff Enright (Project Manager).

Sincerely,

Joseph Grinnan, MA, RPA
Maritime Principal Investigator

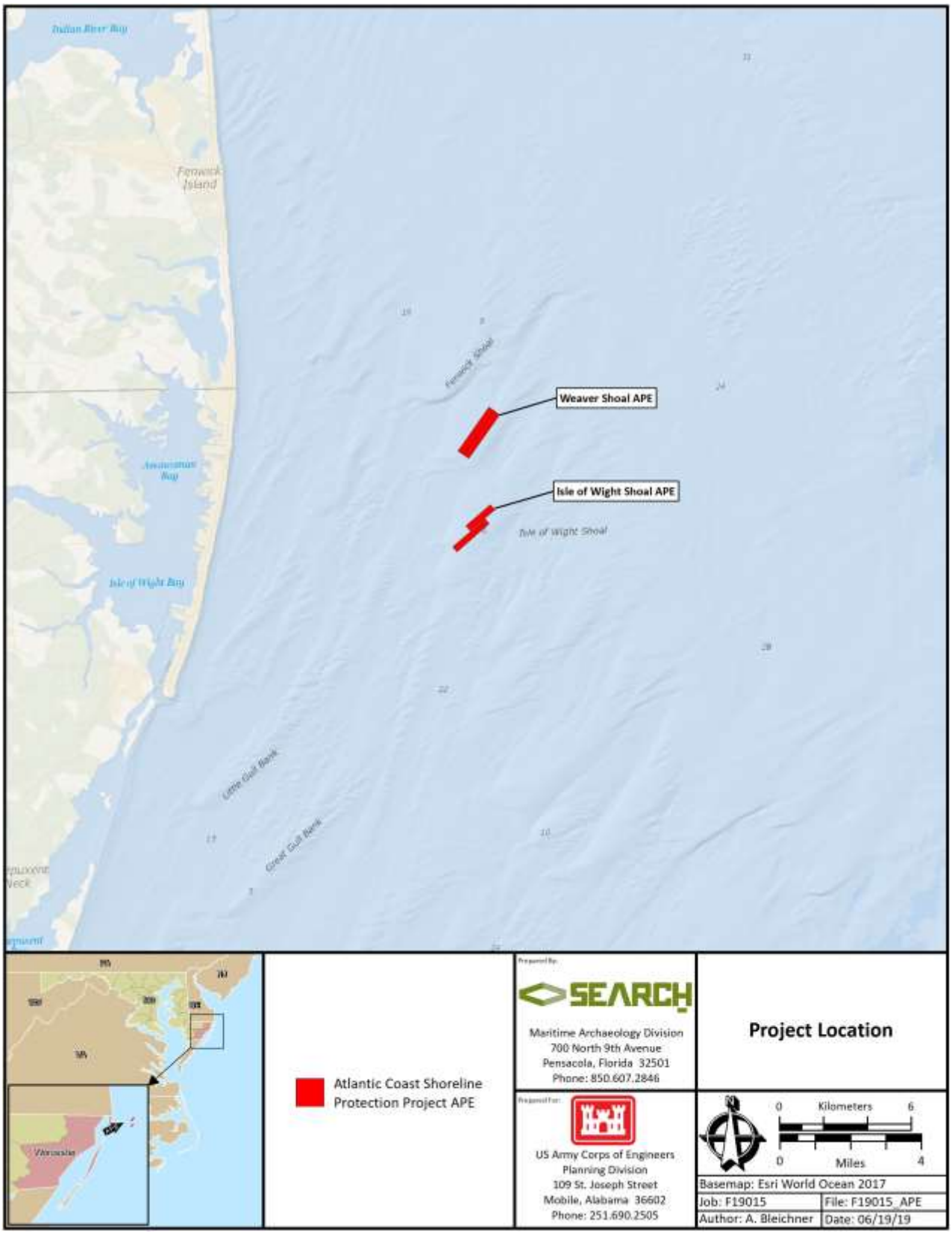


Figure 1. Project Location Map.

Annex B

SUPPLEMENTAL INFORMATION

Table of Contents

Assateague Previous Projects Summary Information

Volume of Sand Remaining

Isle of Wight Shoal Sand

Hydrology

MEC/UXO Potential Engineering Implications

Regional Air Quality

Forecasting Future Sand Needs Tables

Great Gull Bank Bathymetric Change: 2002-2008

Consideration Given to MAFMC Policies

Non-Applicable Federal Statutes and EOs

Emissions Estimate

Assateague Previous Projects

Assateague Island Emergency Sand Placement: Project constructed in August through September of 1998 to compensate for impacts of northeasters in January and February of 1998. USACE dredged approximately 134,000 cubic yards of sand from Great Gull Bank and placed it on northern Assateague Island from 3.2 to 4.8 miles south of the Ocean City Inlet.

Assateague Short-Term Restoration: Project construction completed in December 2002. USACE placed 1,800,000 cubic yards of sand dredged from Great Gull Bank on the northern end of the island from 1.6 to 7.4 miles south of the Ocean City Inlet. Project purpose is to restore the geologic integrity of the island jeopardized by interruption of longshore transport sand flow caused by the USACE' jetties at the Ocean City Inlet.

Assateague Island State Park Sand Placement: The State of Maryland dredged 95,000 cubic yards of sand from Great Gull Bank and placed it on the state park. This project was constructed in conjunction with the Assateague Short-Term Restoration Project described above.

Volume of Sand Remaining on OCS From 2008 EIS Forecast

The 2008 EIS provided a minimum and maximum sand needs forecast from the offshore shoals based upon beach volume placement records. Minimum sand needs were estimated based on project performance in 2002 and 2006 as volumes placed in those years were distinctly less than placement volumes in the years 1998 and earlier, and better fit the general down-ward trend of beach sand needs observed to that time (Table 1-1). Utilizing 2002 and 2006 beach volume placement records which average 800,000 cubic yards placed every four years, the 2008 EIS estimated a minimum future total need through the end of the project authorized life in 2044 of 6,800,000 cubic yards of sand. Based on project performance over the longer period 1992-2006, the 2008 EIS estimated a maximum sand need of 15,000,000 cubic yards through 2044. The 2008 EIS allowed for about one percent sand loss while at sea and then at Ocean City subtidally below -20 feet (depth of closure). The 2008 EIS did not account for sand placed on the beach outside of the construction template that was not measured.

Since the 2008 EIS, combining the years 2010, 2014, and 2017, borrow actions placed 2,717,000 cubic yards of sand on Ocean City beach measured within the construction template (Table 1-1). Assuming that an additional 10 percent greater volume than the contract volume was placed on the beach but not measured in the construction template, then approximately 2,989,000 cubic yards was dredged from offshore sources in state waters in the combined years 2010, 2014, and 2017.

Subtracting the 2,989,000 cubic yards estimated to have actually been dredged from the 2008 EIS minimum and maximum needs forecasts results in the total volume remaining through 2044 of offshore sand being a minimum of 3,855,300 cubic yards and a maximum of 12,055,300 cubic yards. However, because no sand has yet been dredged from offshore shoals in federal waters,

the entire balance of sand identified in the 2008 EIS remains available for dredging from OCS sources with respect to the need to maintain offshore shoal habitat values while still meeting Ocean City sand needs.

Isle of Wight Shoal – Sand Engineering Qualities

Borrow area I was further divided into sub-areas IA and IB, with IA containing sand of greater suitability than IB. Sand from sub-area IA could be dredged and placed on Ocean City beach without blending. Approximately 940,000 cubic yards would be available to -40 feet within IA alone. Approximately 8,900,000 cubic yards of beach-suitable sand could be obtained from IA alone without blending if dredging was conducted to -60 feet.

Pipeline Engineering

Typical practices involved in deployment and retrieval of the pipeline (subline) through which sand is pumped between the dredge and the beach are useful for more detailed consideration of potential impacts to any cultural/historic resources that could be present. For the Ocean City project, the contractor chooses where the sublines are placed. Before pumping operations are commenced, the contractor must first place a subline. The subline runs perpendicular to the shore out to a depth where the dredge can safely navigate. Typical dredges on past projects have required a depth anywhere between 25 and 30 feet. This corresponds to 2,000 to 3,000 feet offshore. The subline is composed of welded steel pipe, typically with a diameter between 30 and 36 inches. Lengths of pipes vary, but are typically between 350 and 750 feet long. The contractor employs a special barge to place the pipe. The contractor caps the first pipe on either end and fills it with air so it floats. The barge maneuvers the pipe so that the landward end is close enough to the shore so that onshore equipment can grab it and pull it onto the berm and secure it. Once the first pipe is placed, the workers on the barge successively weld additional sections of pipe until the desired length is reached. Throughout the operation, the subline is still filled with air and floats on the surface of the water. At the end, the contractor attaches a floating flexible pipe with a buoy. The flexible pipe will be connected to the dredge during pumpout operations. Once the contractor has welded all the pipe lengths and attached the flexible pipe, the subline is filled with water so that it gently sinks to the seafloor. Once placed, the subline filled with water does not move around on the seafloor. At the end of the project, the contractor blows the water out of the subline so that it floats again, and disassembles the pipe.

Hydrology

The Mid-Atlantic is now home to the most advanced ocean observing systems in the world, NOAA's Mid-Atlantic Coastal Ocean Observing System (MARACOOS). The MARACOOS Oceans Map provides a means to plot winds, waves, currents, water level, water temperature, and salinity for stations as well as modeled points between stations. Real-time oceanographic wind, wave, current, water temperature, and salinity data is available from the Mid-Atlantic

Regional Association Coastal Ocean Observing System (MARACOOS), which covers the region from Cape Cod, MA to Cape Hatteras, NC.

For the Atlantic Coast Project, this data could be summarized and potentially be used to more accurately determine when sea turtle mitigation measures need to be implemented.

MEC/UXO Screening - Potential Engineering Implications

The 2008 EIS did not address impacts of MEC/UXO measures on geology. Dredging with screens to exclude MEC elsewhere along the US coastline where sand resources contained substantial gravel or shell has caused the relative concentration of these coarse materials to increase at the surface with repeated dredging because the MEC screen prevents large particles from being dredged. The possibility that repeated dredging of a particular borrow area off MD could cause a coarsening of the substrate left behind was identified as a concern by BOEM. The substrates of Borrow Areas 2, 3, and 9 within state waters were repeatedly dredged, but this problem did not occur. This was apparently because the fraction of gravel and shells prevented from being dredged by the screen that accumulated on the surface was insignificant from an engineering perspective. Thus, assuming that the findings of dredging on Borrow Areas 2, 3, and 9 would apply to OCS offshore shoals, there would be no need to avoid dredging the same borrow area in repeated cycles. However, it was determined that future monitoring would verify whether this is occurring. If coarsening of the substrate remaining at the surface following dredging does occur, then guidelines/constraints to minimize this problem would need to be developed.

Regional Air Quality:
Nearby Areas in Non-Attainment or Maintenance for Non-revoked Pollutant Standards. USEPA "Greenbook" 2018.

Pollutant	Standard	Nearby Area of Concern	Status of Area of Concern
Ozone	8-Hour (2015)	None	
	8-Hour (2008)	Seaford, DE. Delaware Region III, Sussex County	Marginal-Nonattainment
Particulate Matter	PM 2.5 (2012)	None	
	PM 2.5-(2006)	None	
	PM 2.5-(1997)	None	
	PM 10-(1987)	None	
Sulfur Dioxide	2010	None	
	1971	None	
Lead	2008	None	
	1978	None	
Carbon Monoxide	1971	None	
Nitrogen Dioxide	1971	None	

Consideration Given to MAFMC Policy on Offshore Shoals

Subsequent to the 2008 EIS, the Mid Atlantic Fishery Management Council (MAFMC) developed a policy in 2015 recommending avoiding dredging offshore shoals as sources of sand for beach nourishment. NMFS gives serious consideration to MAFMC recommendations in decision making. NMFS concerns over use of shoals have increased because of the substantial increase or planned use of offshore sands for beach nourishment along the Atlantic Ocean and Gulf of Mexico coastlines. Although not having the weight of law, policies of the MAFMC are utilized by NMFS in decision-making. MAFMC policy on Coastal Development provides Policies on Beach Nourishment which contain several policies pertinent to use of offshore shoals as sand sources.

Avoid mining sand from sandy ridges, lumps, shoals, and rises that are named on maps. The naming of these is often the result of the area being an important fishing ground.
Existing sand borrow sites should be used to the extent possible. Mining sand from new areas introduces additional impacts.
Each beach nourishment activity should be treated as a new activity (i.e., subject to review and comment), including those identified under a programmatic environmental assessment or environmental impact statement.
Bathymetric and biological monitoring should be conducted before and after beach nourishment to assess recovery in beach borrow and nourishment areas.

USACE and BOEM coordinated with NMFS in preparing this EA and determined that because the Atlantic Coast of MD is an authorized project founded on use of offshore shoal sand sources, the 2008 EIS adequately considered use of other sources, and because measures to mitigate habitat impacts are already incorporated into the dredging plan, USACE and BOEM would not investigate other non-shoal seafloor sand sources for this EA.

Table: Non-applicable federal statutes and executive orders.

Federal Statutes
Coastal Barrier Resources Act
Comprehensive Environmental Response, Compensation and Liability Act
Estuary Protection Act
Farmland Protection Policy Act
Federal Water Project Recreation Act
Land and Water Conservation Fund Act
Marine Protection, Research and Sanctuaries Act
Noise Control Act
Resource Conservation and Recovery Act
Safe Drinking Water Act
Solid Waste Disposal Act
Toxic Substances Control Act
Wetlands Conservation Act
Wild and Scenic Rivers Act
Executive Orders (EO), Memoranda, etc.
Prime and Unique Farmlands (CEQ Memorandum, 11 Aug 80)
Protection of Wetlands (E.O. 11990)
Protection of Children from Environmental Health Risks and Safety Risks (E.O.13045)
Invasive Species (E.O. 13112)
Protection of Children from Environmental Health Risks and Safety Risks (E.O.13045)
Facilitation of Cooperative Conservation (E.O. 13352)

Forecasting Future Sand Needs

Table: Ocean City Beach Sand Placement History

	Year	Contract Volume* (cubic yards)	Estimated Volume Dredged** (cubic yards)	Project Constructed by	Notes
	1988	2,260,000	2,486,000	MD	Initial beach re-establishment
	1990	2,199,000	2,418,900	USACE	Initial beach re-establishment
	1991	1,623,000	1,785,300	USACE	Initial beach re-establishment
	1992	1,592,000	1,751,200	USACE	Severe storms
	1994	1,245,000	1,369,500	USACE	
	1998	1,290,000	1,419,000	USACE	
	2002	745,000	819,500	USACE	
	2006	932,000	1,025,200	USACE	
	2010	909,000	999,900	USACE	
	2014	902,000	992,200	USACE	
	2017	906,000	996,600	USACE	
Total 1988-2017		14,603,000	16,063,300	MD & USACE	Includes initial beach re-establishment
Total 1990-2017		12,343,000	13,577,300	USACE	Entire USACE placement from offshore sources
Total 1992-2017		8,521,000	9,373,100	USACE	Post initial beach re-establishment
Total 2002-2017		4,394,000	4,833,400	USACE	
Total 2010-2017		2,717,000	2,988,700	USACE	
Greatest 1988-2017	1998	2,260,000	2,486,000	MD	
Greatest 1992-2017	1992	1,592,000	1,751,200	USACE	
Greatest 2002-2017	2006	932,000	1,025,200	USACE	
Greatest 2010-2017	2,010	909,000	1,025,200	USACE	
Least 1988-2017	2002	745,000	819,500	USACE	
Least 1992-2017	2002	745,000	819,500	USACE	
Least 2002-2017	2002	745,000	819,500	USACE	
Least 2010-2017	2017	902,000	992,200	USACE	

*On beach as per construction template field measurements, 1990-2017. 1988 volume assumed to also be measured on beach.

**Assuming 10% extra dredged placed on beach but not measured

Forecasting Future Sand Needs

Table: Ocean City Beach 2018-2044 Sand Need Forecast

Metric	Contract Volume Measured* (cubic yards)	Estimated Volume Dredged** (cubic yards)	Notes
Total 1992-2017	8,521,000	9,373,100	Assumes engineered beach establishment completed in 1991.
Average Yearly 1992-2017	327,731	360,504	Average yearly following initial beach re-establishment, thus counts each placement and non-placement year from 1992 forward. 1992 is Year 1.
Forecast future average per 4 years based on annual yearly average 1992-2017	1,310,923	1,442,015	Note that this differs from actual average per every 4 years because placement in 2017 occurred after 3 years.
Forecast need 2022, 2026, 2030, 2034, 2038, 2042	7,865,538	8,652,092	
Total 1999-2017	4,394,000	4,833,400	Assume change in conditions starting 1999 between 1990s and earlier and 2000s and later. No sand placed in 2000 or 2001. So, total includes 2002 through 2017
Average per placement event, 2002-2017	878,800	966,680	Placements in years 2002-2017
Average Yearly 1999-2017	231,263	254,389	Average yearly following 1998 beach renourishment, thus counts each placement and non-placement year from 1999 forward. Year 1999 is year 1.
Average per 4 years, 1999-2017***	925,053	1,017,558	
Forecast need 2022, 2026, 2030, 2034, 2038, 2042	5,550,316	6,105,347	

*On beach as per construction template field measurements, 1990-2017. 1988 volume presumed to also be measured on beach (however, did not confirm with MD).

**Assuming 10% extra dredged placed on beach but not measured

***Separate 1990s from 2000s as sand needs in 90s were generally greater.

Consider beach nourishment volume each placement as having covered period of years since the previous placement.

Then volumes placed from 2002-2017 actually provided sand on the beach for the years 1999-2017 inclusive, 19 years total.

It's 19 years instead of 20 years total because sand placement in 2017 occurred after 3 years rather than 4 years.

Forecasting Future Sand Needs						
Table: Determination of Beach Placement vs Shoal Volume Available for Dredging						
	2008 SEIS Forecast Volume Need: 2010 - 2044 (yd3)		**Re-assessment: Dredge Volume Needed to Produce 2008 Beach Volume**			
Minimum	6,800,000		7,480,000			
Maximum	15,000,000		16,500,000			

Great Gull Bank – Bathymetric Changes from 1999-2008

Introduction

Bathymetric change at Great Gull Bank was characterized over the period of 1999 – 2008 using several data sources. Sand was dredged from a large borrow area on the southeast side of the shoal in 2002 to restore Assateague Island National Seashore. Bathymetric changes on the shoal were anticipated to reflect combined impacts of dredging and natural processes. This characterization was conducted to help inform dredging from offshore shoals in federal waters for the USACE/MD DNR Atlantic Coast of MD (Ocean City) Project.

Other dredging for borrow also occurred on Great Gull Bank in 1998 and 2002, however those were substantially smaller volumes. Those other borrow areas and effects were not explicitly considered in this examination[1].

Background

Great Gull Bank is an offshore shoal located 4 to 5 miles east of Assateague Island in the Atlantic Ocean. The shoal covers an area of approximately 1,980 acres. Maximum length and width are about 20,000 feet and 6,000 feet respectively. The shoal contains 56,000,000 yd3 of sand (USACE, 2001). USACE (2008) reviewed scientific studies of offshore shoals off MD. The shoals have a NE/SW orientation caused by high energy storm waves/currents generated by Nor'easter storms. The shoals show a general regional pattern of S/SE migration over the years. MMS (2010) classified the SE side of Isle of Wight, Weaver, and Shoal A as the leading edge of those shoals. Pendleton and others (2017) determined that offshore shoal migration patterns differ regionally off the MD coast with those being N of the Ocean City Inlet generally showing a net southerly migration, whereas offshore shoals S of the inlet generally show a net southeasterly migration.

Great Gull Bank was selected in 1998 as the source of sand to restore the geologic integrity of Assateague Island to compensate for sediment starvation caused by the Ocean City Inlet jetties. Consistent with the restorative purpose of the Assateague restoration project, dredging guidelines and constraints were developed in 2001 to mitigate dredging impacts such that the geomorphologic integrity of Great Gull Bank would also be maintained. A borrow area 321 acres in size was selected on the southeast side of the shoal (USACE, 2001).

USACE (2008) provided information on bathymetric changes at Great Gull Bank between 1998 and 2003 to determine whether borrow of 1,800,000 cubic yards of sand

[1] In 1998 for the Assateague Island National Seashore emergency project, approximately 134,000 cubic yards of sand were dredged from a borrow area located immediately northwest of the crest in the southern portion of Great Gull Bank. Impacts of that dredging in comparison to 1995 bathymetric data were characterized in the USACE (2008) (Appendix B2). 95,000 cubic yards of sand were also dredged in 2002 for Assateague State Park prior to the 2002 dredging conducted for the national seashore. The 1998 emergency dredging and 2002 state park dredging were not considered in this current analysis.

in 2002 had been done within the assigned borrow area and in accordance with the dredging plan's mitigation guidelines. Dredging was planned to be spread out widely within the borrow area and to not remove more than several feet of sand from any one spot. These mitigation guidelines had been developed to ensure that dredging did not degrade shoal long-term geomorphologic integrity. The USACE (2008) determined that dredging had been conducted as planned. USACE (2008) contained a comparison of bathymetric data sets for Great Gull Bank for the years 1999 and 2003 and found that Great Gull Bank appeared to be migrating SE over that period.

Methods

Bathymetric data sets suitable for the purpose of characterizing change on the shoal (within and outside of the 2002 borrow area) and in adjacent areas were identified and compiled in GIS (Table 1). Three of the data sets had been collected by USACE contractors, and were stored in USACE electronic files. One of the data sets was obtained from NOAA and was downloaded from the worldwide web.

Table 1: Bathymetric Data Sets

Bathymetric Survey Date	Data Source	Notes on Resolution and Quality	Bathymetric Survey Purpose
1999	USACE Contractor	Bathymetric Multibeam Data	Pre-dredge
2002	USACE Contractor	Data set degraded. Only contours available	Immediate Post-dredge Conditions
2003	USACE Contractor	Bathymetric Multibeam Data	Post-dredge
2008	NOAA Contractor	Bathymetric Multibeam Data	Regional Mapping

The bathymetric data sets include multibeam ocean bottom surface elevations along long stretches of the seafloor. The 1999 and 2003 dataset include similar resolution point elevation data converted into a 10 foot square raster surface for geospatial analysis using ESRI's ArcGIS 10.5.1. NOAA's 2008 regional ocean bottom surface mapping effort has higher vertical and horizontal accuracy than preceding data and was readily available as a raster surface. A major constraint of this analysis was being able to examine immediate post-dredge conditions in great detail due to the low resolution of available contour data for the 2002 post-dredge survey. The study team could not immediately locate the higher resolution original survey carried out by USACE contractors.

In order to analyze processed survey data, ocean bottom raster surfaces were projected into the same projected coordinate system (Maryland State Plane NAD83) and vertical datum (MLLW) and all datasets were examined in feet for both vertical and horizontal units. Datasets were examined using the Raster Calculator tool to subtract the absolute value of newer raster surveys from preceding raster survey data (e.g. Abs |"1999 Survey"| - |"2003 Survey"|). This was conducted to examine changes observed in the

surveys for 2002 (immediate post-dredging), 2003 (1 year post-dredging), and 2008 (6 years after dredging) from baseline pre-dredging conditions established by the 1999 survey. Additionally, analysis was extended to examine continuing change in ocean bottom morphology driven by natural processes by comparing the 2003 survey (1 year post-dredging) to the 2008 survey (6 years post-dredging) using the same methodology previously discussed.

In preparing the comparison maps, masks were placed that reflect the extent of the 1999 survey to hide any data outside of the limits of the comparison. Areas of elevation loss are represented by reds, while elevation gains were represented by greens. A change of -1 to +1 feet was determined to be insignificant and was not assigned a color (was transparent in the comparison maps). Consequently, in the comparison maps, bathymetry from the baseline shoal survey from which the comparison is made (i.e., 1999 or 2003) is displayed, reflecting that there was no change from the baseline survey conditions for that comparison (i.e. there is data there that is being shown as clear).

Findings

This analysis illustrates changes in the ocean bottom over time before and after dredging activities had taken place on the shoal. Bathymetric maps produced for all years available (1999, 2002, 2003, and 2008) show the shoal as a readily identifiable bathymetric feature with a defined crest. The shoal in each year is oriented SW/NE.

Between 1999 and 2003, as well as 1999 to 2008, the shoal crest appears to have remained generally constant in depth below the surface, although with both local increases and decreases. The maximum change seems to have been a local loss of about 5 feet.

Change within the borrow area from 1999 to 2003 presumably was driven primarily by the dredging action. The SW portion of the 2002 borrow area on the SE side of the shoal showed a pattern of continued loss of elevation through 2008. While this would be the work of natural processes, the dredging of this area may have created local conditions favoring increased scour. Conversely, the SW corner of the borrow area shows a gain in elevation from 1999 to 2003 with this trend continuing to 2008. This presumably reflects net SW movement of the shoal consistent with the pattern for offshore shoals south of the inlet (Pendleton et al., 2017), with the movement rate and direction impacted by the borrow action in 2002. Future bathymetric monitoring of the shoal would contribute to verifying whether modeling of dredging impacts by MMS (2010) and BOEM (2015) match patterns of change at Great Gull Bank.

References

BOEM. 2015. Use of Morphological Models to Predict Physical Processes and Assess Impacts in Support of Dredging Operations on the U.S. Outer Continental Shelf

Ramsey, J.S., G. Simmons, R. Quan, F. Shi, G. Vittori, J. Zyserman, J. Kirby. OCS Study BOEM 2015-046. http://www.data.boem.gov/PI/PDFImages/ESPIS/5/5575.pdf

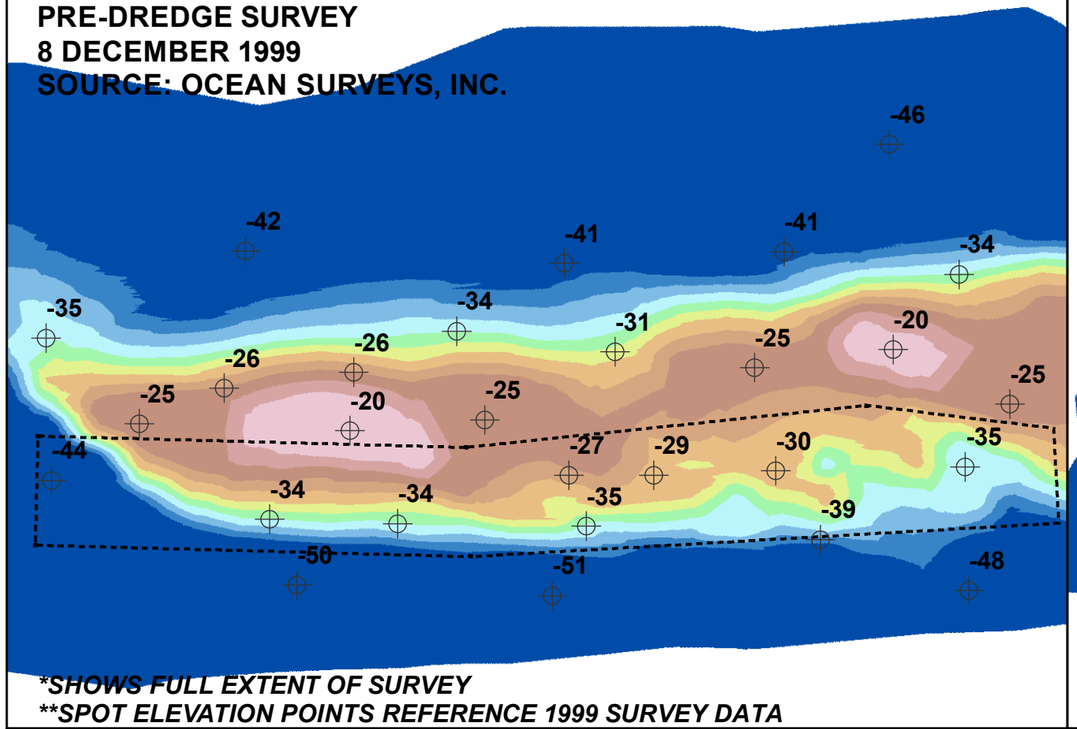
Minerals Management Service (MMS). 2010. Analysis of Potential Biological and Physical Impacts of Dredging on Offshore Ridge and Shoal Features. Final Report. OCS Study MMS 2010-010. 160 pp plus appendices.

Pendleton, E.A., L.L. Brothers, E.R. Thieler, and E.M. Sweeney. 2017. Sand ridge morphology and bedform migration patterns derived from bathymetry and backscatter on the inner-continental shelf offshore of Assateague Island, USA. Continental Shelf Research, 144: 80-97. http://dx.doi.org/10.1016/j.csr.2017.06.021

U.S. Army Corps of Engineers (USACE). 2001. Assateague Island Short-Term Restoration. Worcester County, MD. Essential Fish Habitat Impacts Analysis. Baltimore District. May 2001. 43 pp. + figures and annexes.

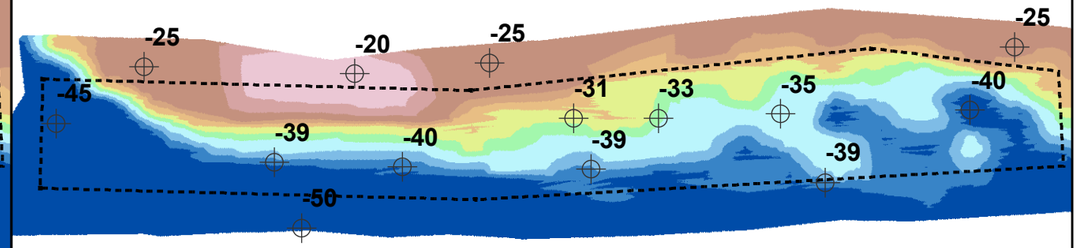
U.S. Army Corps of Engineers (USACE). 2008. Atlantic Coast of Maryland Shoreline Protection Project Final Supplemental Environmental Impact Statement General Reevaluation Study: Borrow Sites for 2010 – 2044. U.S. Army Corps of Engineers, Baltimore District, Baltimore, MD. 125 pp. + apps.

PRE-DREDGE SURVEY
8 DECEMBER 1999
SOURCE: OCEAN SURVEYS, INC.



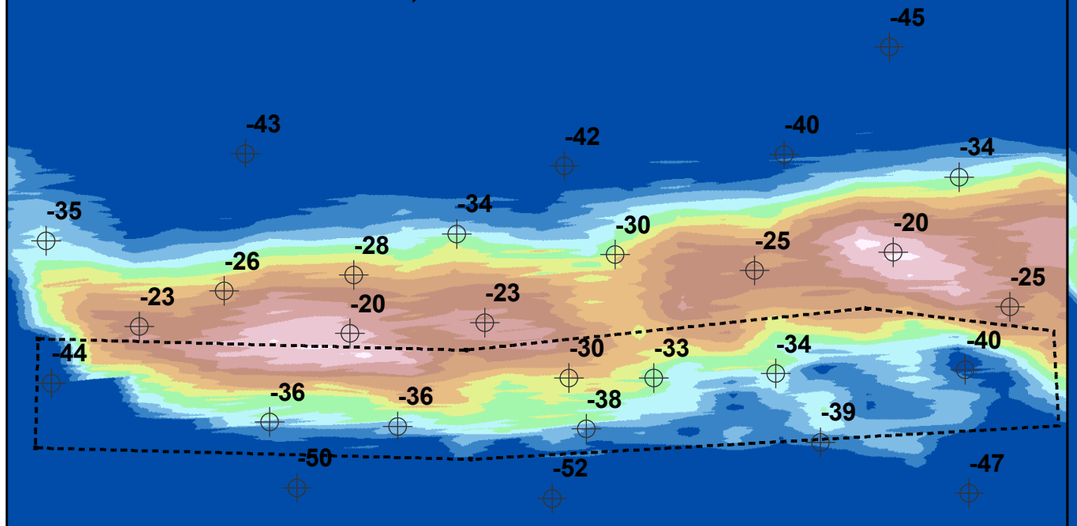
*SHOWS FULL EXTENT OF SURVEY
**SPOT ELEVATION POINTS REFERENCE 1999 SURVEY DATA

IMMEDIATE POST-DREDGE SURVEY
31 DECEMBER 2002
SOURCE: WEEKS MARINE, INC.



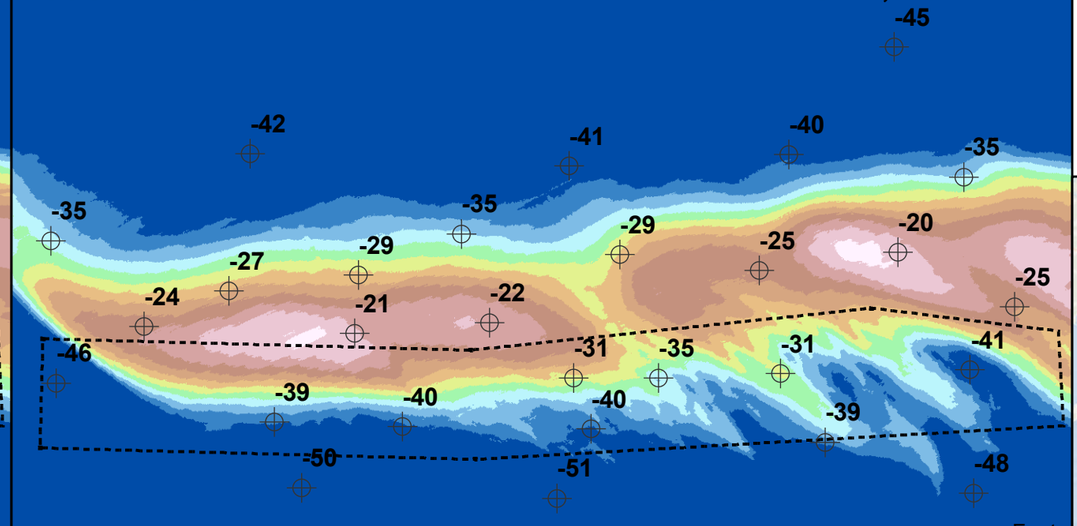
*SHOWS FULL EXTENT OF SURVEY
**SPOT ELEVATION POINTS REFERENCE 2002 SURVEY DATA

POST-DREDGE SURVEY, YEAR 1
21 FEBRUARY 2003
SOURCE: WEEKS MARINE, INC.



*SHOWS FULL EXTENT OF SURVEY
**SPOT ELEVATION POINTS REFERENCE 2003 SURVEY DATA

POST-DREDGE SURVEY, YEAR 6
16 JULY 2008 TO 19 DECEMBER 2008
SOURCE: SCIENCE APPLICATIONS INTERNATIONAL CORP., NOAA



*SURVEY CLIPPED TO FOCUS AREA FOR COMPARISON
**SPOT ELEVATION POINTS REFERENCE 2008 SURVEY DATA

GREAT GULL BANK

COMPARISON OF GEOMORPHOLOGY CHANGES OVER TIME IN RELATION TO DREDGING ACTIVITY

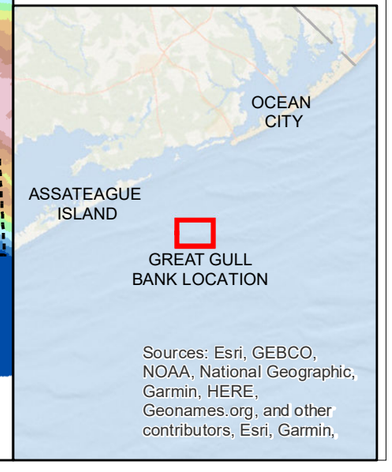
Legend

- SPOT ELEVATION POINTS (IN FEET)
- FOCUS AREA - DREDGING EXTENT IN 2002

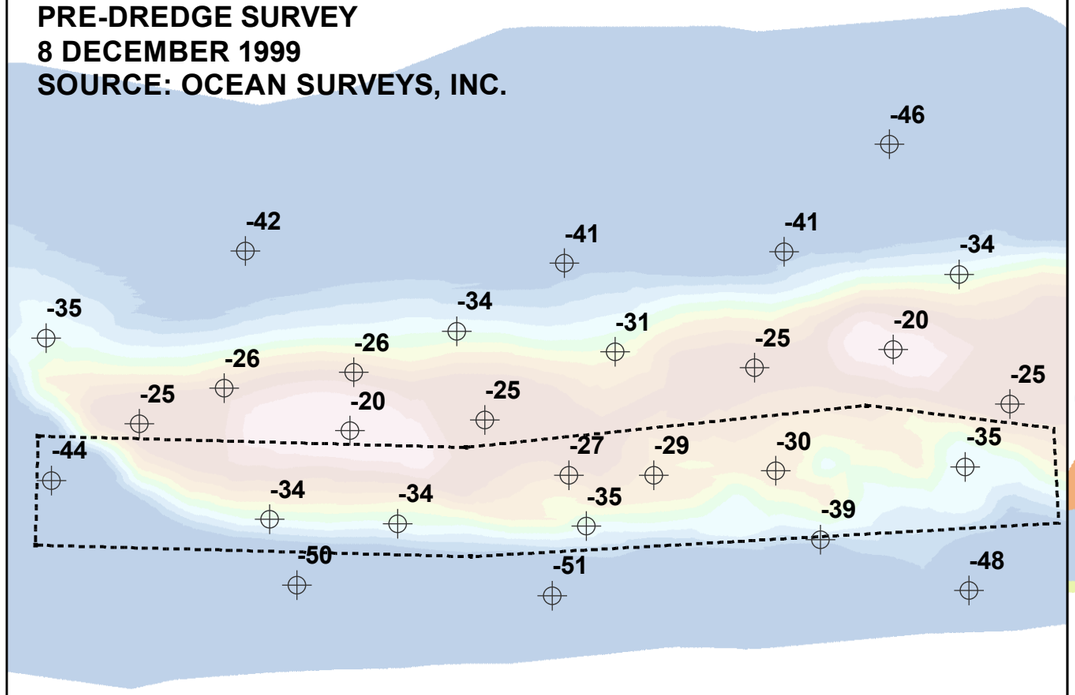
ELEVATION RANGE (IN FEET)

- -55 - -40
- -39 - -38
- -37 - -36
- -35 - -34
- -33 - -32
- -31 - -30
- -29 - -28
- -27 - -26
- -25 - -24
- -23 - -22
- -21 - -20
- -19 - -18

ELEVATIONS REFERENCE MEAN LOWER LOW WATER (MLLW) AT THE OCEAN CITY TIDAL GAGE.

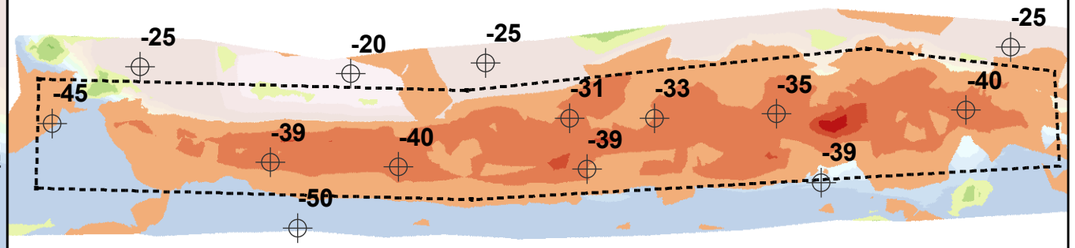


PRE-DREDGE SURVEY
8 DECEMBER 1999
SOURCE: OCEAN SURVEYS, INC.



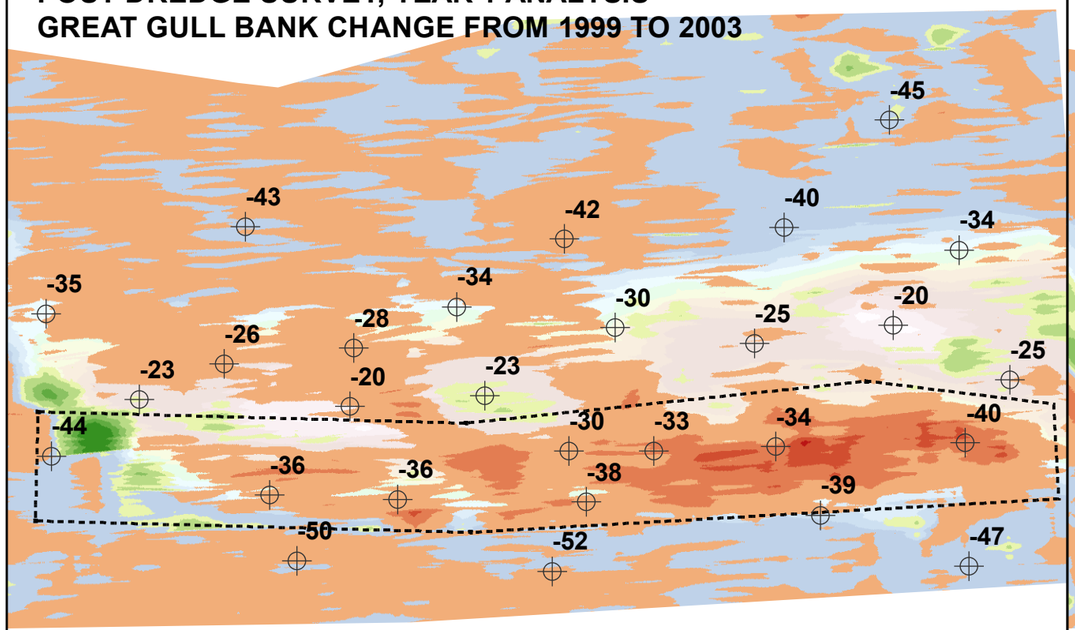
**SPOT ELEVATION POINTS REFERENCE 1999 SURVEY DATA*

IMMEDIATE POST-DREDGE ANALYSIS
GREAT GULL BANK CHANGE FROM 1999 TO 2002



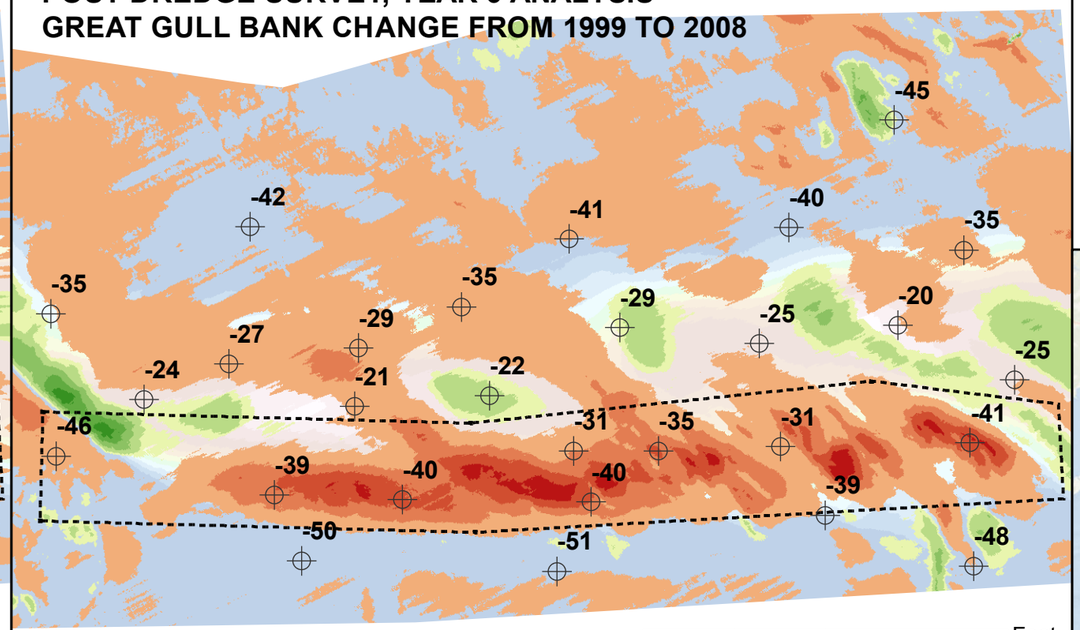
**SPOT ELEVATION POINTS REFERENCE 2002 SURVEY DATA*

POST-DREDGE SURVEY, YEAR 1 ANALYSIS
GREAT GULL BANK CHANGE FROM 1999 TO 2003



**SPOT ELEVATION POINTS REFERENCE 2003 SURVEY DATA*

POST-DREDGE SURVEY, YEAR 6 ANALYSIS
GREAT GULL BANK CHANGE FROM 1999 TO 2008



Feet
0 1,000 2,000 3,000 4,000

**SPOT ELEVATION POINTS REFERENCE 2008 SURVEY DATA*

GREAT GULL BANK

COMPARISON OF GEOMORPHOLOGY CHANGES OVER TIME IN RELATION TO DREDGING ACTIVITY

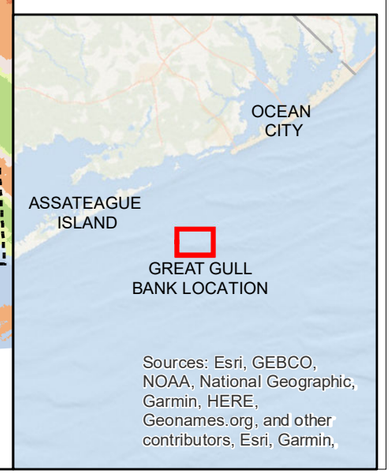
Legend

- SPOT ELEVATION POINTS (IN FEET)
- FOCUS AREA - DREDGING EXTENT IN 2002

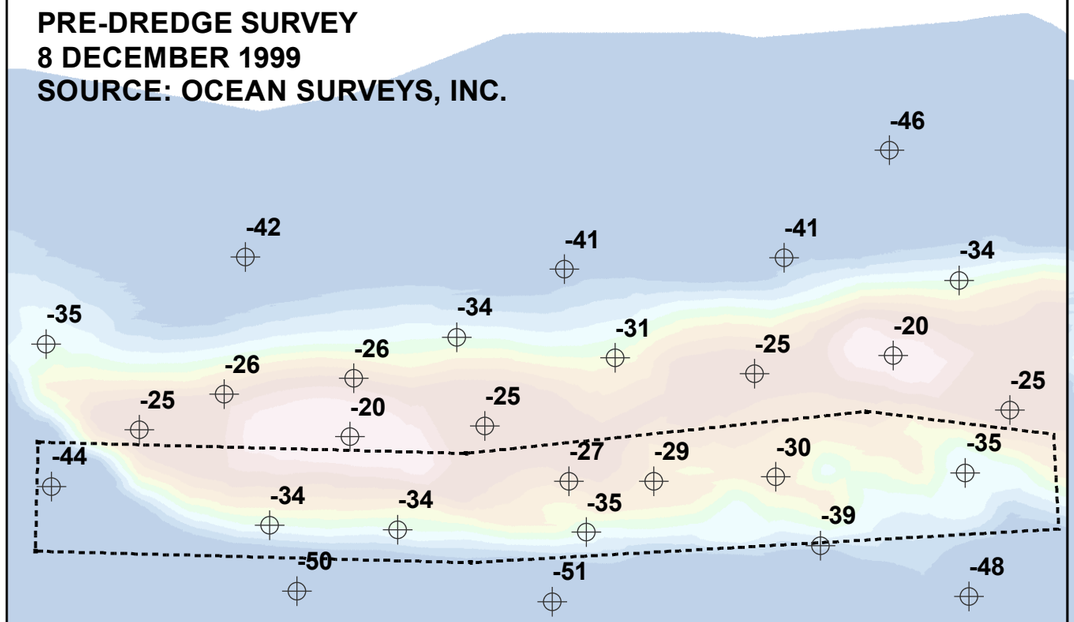
ELEVATION COMPARISON (IN FEET)

- -10 - -8
- -7.9 - -6
- -5.9 - -4
- -3.9 - -1
- -0.9 - 1
- 1.1 - 2
- 2.1 - 4
- 4.1 - 6
- 6.1 - 8
- 8.1 - 10

ELEVATIONS REFERENCE MEAN LOWER LOW WATER (MLLW) AT THE OCEAN CITY TIDAL GAGE.

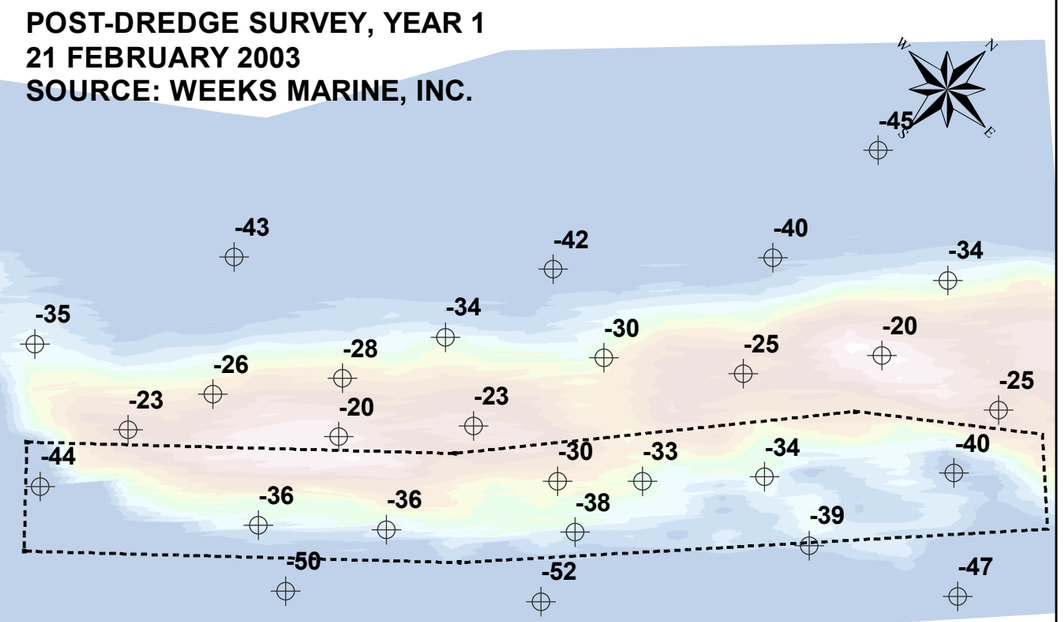


PRE-DREDGE SURVEY
8 DECEMBER 1999
SOURCE: OCEAN SURVEYS, INC.



**SPOT ELEVATION POINTS REFERENCE 1999 SURVEY DATA.*

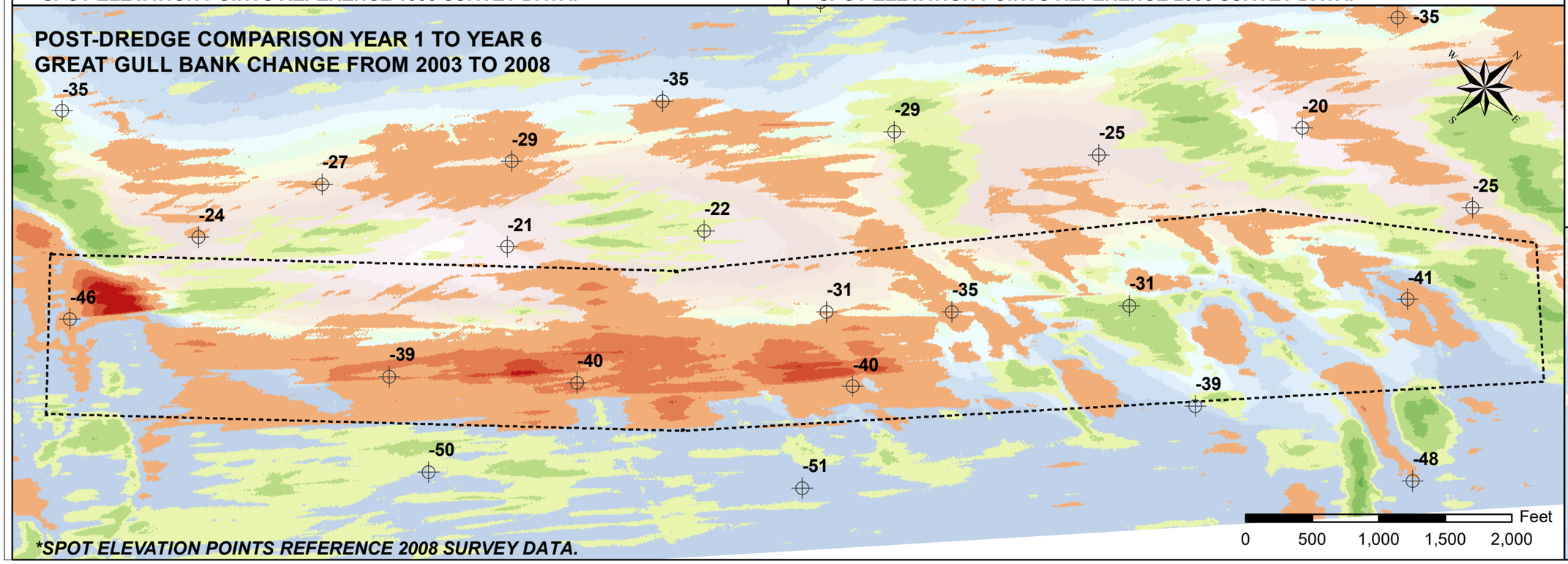
POST-DREDGE SURVEY, YEAR 1
21 FEBRUARY 2003
SOURCE: WEEKS MARINE, INC.



Feet
0 1,000 2,000 3,000 4,000

**SPOT ELEVATION POINTS REFERENCE 2003 SURVEY DATA.*

POST-DREDGE COMPARISON YEAR 1 TO YEAR 6
GREAT GULL BANK CHANGE FROM 2003 TO 2008



Feet
0 500 1,000 1,500 2,000

**SPOT ELEVATION POINTS REFERENCE 2008 SURVEY DATA.*

GREAT GULL BANK

COMPARISON OF GEOMORPHOLOGY CHANGES OVER TIME IN RELATION TO DREDGING ACTIVITY

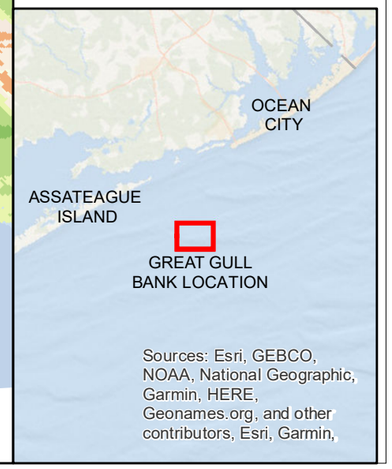
Legend

- SPOT ELEVATION POINTS (IN FEET)
- FOCUS AREA - DREDGING EXTENT IN 2002

ELEVATION CHANGE POST DREDGE (IN FEET)

- -11.6 - -8
- -7.9 - -6
- -5.9 - -4
- -3.9 - -1
- -0.9 - 1
- 1.1 - 2
- 2.1 - 4
- 4.1 - 6
- 6.1 - 8
- 8.1 - 10

ELEVATIONS REFERENCE MEAN LOWER LOW WATER (MLLW) AT THE OCEAN CITY TIDAL GAGE.



Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors, Esri, Garmin,

Annex B

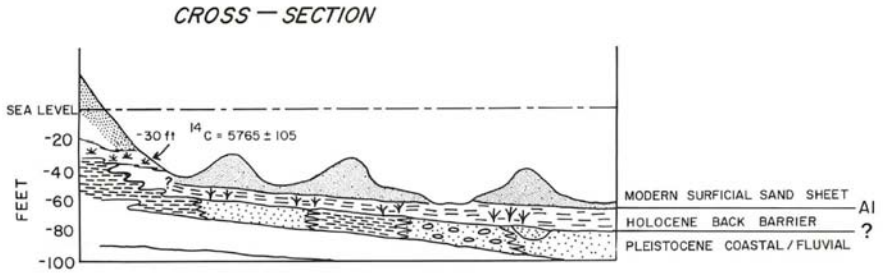


Figure: General pattern of offshore shoals overlying other mixed sedimentary deposits on the Continental Shelf (Toscano, 1989).

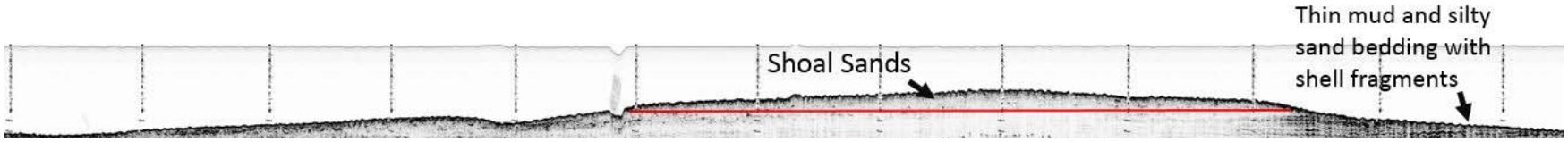


Figure: Seismic line taken from west to east over a shoal body lying approximately 5 miles offshore from Assateague Island. Marked to denote the shoal sand deposits versus underlying deposits that crop out to the east. Provided by MGS.

Air Quality Impacts – Emissions Estimate

Introduction

A portion of the Atlantic Coast Project involving beach renourishment lies within Sussex County, Delaware, which is designated as being in marginal non-attainment for 8-hour ozone. Vessels would not operate within one mile of the Delaware state boundary, and therefore were not included in the emissions assessment. (The majority of project beach renourishment activities would occur within Worcester County which is not in nonattainment of that ozone standard).

Methods

1 Compile equipment list and operating details in Sussex County.

Renourishment actions to maintain the Atlantic Coast of Maryland project will not exceed 95,000 cubic yards within Delaware, for any given event (typical renourishment actions in Delaware, for this project, are less than half this amount). To estimate emissions, production rates for past beach nourishment actions over the life of this project were used. That rate is 20,000 cubic yards per 12-hour workday, thus a maximum effort would be 5 workdays, or 60 work-hours (20,000 c.y. x 5 = c. 95,000 c.y.). The following detailed list of equipment and total hours of operation for this work was estimated based upon contracting information from prior beach nourishment efforts at the project site:

- 3 Caterpillar D7E Dozers, each dozer operating full-time for a total of 60 hours in Sussex County. Diesel.
- 3 Caterpillar 966K Wheel Loaders, each loader operating full-time for a total of 60 hours in Sussex County. Diesel.
- 1 Caterpillar 336E or 336F Excavator, operating full-time for a total of 60 hours in Sussex County. Diesel
- 1 Amphibious Survey Vehicle (a.k.a. the CRAB), operating part-time for a total of 30 hours in Sussex County. This vehicle is powered by a 3054 CAT diesel engine.
- 1 Generac MLT4200 Mobile Light Tower, operating part-time for a total of 30 hours in Sussex County. Diesel.
- 1 Ford F-250 XLT 6.7L V8 Diesel 4WD Crew Cab Long Box, operating part-time for a total of 30 hours in Sussex County.

2 Identify emissions estimate model. At the suggestion of DNREC, the California Air Resources Board's "CARB" spreadsheet calculator (v.7) was used to estimate emissions, based upon engine type, power, age and hours of operation. The calculator can be found at:
https://www.arb.ca.gov/msei/ordiesel/ordas_ef_fcf_2017_v7.xlsx

The following conservative (worst-case) assumptions were used in this assessment:

- Model Year - 2008 (10 years old)
- Accumulated hours on equipment - 10,000; per constructionequipment.com, this is the median life expectancy for dozers, loaders and excavators in the >20,000 lb class, such as these

- Load Factor - 0.5; this value is comparable, if conservative, with the recommended values listed in the CARB worksheet for the applicable offroad construction equipment, such as “rubber tired loaders” (0.36), “crawler tractors” (0.43), and “excavators” (0.38))

If more reasonable assumptions are made about the equipment (i.e. Five years old with only 5,000 engine-hours, and using actual load factors of 0.36-0.43), the resultant emissions estimates drop by more than half.

Results

The following details the spreadsheet output values, based on engine brake horsepower and other factors, for all project equipment and resulting total values for NOx & THC:

7 x Cat(r) C9.3 ACERT diesels (3 dozers, 3 wheel loaders, 1 excavator), each @400 BHP, for 60 total hours
NOx = 7 x 33.1 kg = 231.7 kg
THC = 7 x 3.8 kg = 26.6 kg

1 x 3054 CAT diesel @ 130 BHP for 30 hours
NOx = 5.8 kg
THC = 0.6 kg

1 Isuzu 4LE2TAGV-03 diesel @40 BHP for 30 hours
NOx = 3.1 kg
THC = 0.3 kg

1 Ford 6.7L V8 diesel @450 BHP for 30 hours
NOx = 18.6 kg
THC = 2.1 kg

GRAND TOTALS FOR ALL POWERPLANTS FOR ENTIRE PROJECT:
NOx = 259.2 kg (570 lbs)
THC = 29.6 kg (65 lbs)

Discussion

Based upon the above assessment, the anticipated emissions of ozone precursors from construction equipment for the entire Sussex portion of the project will be **no more than 570 lbs of NOx and 65 lbs of THC (VOCs)**. So even with extreme “worst case” assumptions, the estimated emissions are orders of magnitude below the thresholds for requiring a General Conformity determination (i.e. roughly 0.29% of the 100-ton annual threshold for NOx, and 0.07% of the 50-ton annual threshold for VOC). Therefore, a General Conformity determination is not required.

Annex C

Essential Fish Habitat (EFH) Impacts Assessment – 2018 Addendum to the 2008 Analysis

TABLE OF CONTENTS

Section Title **Page**

0 Preface....1
I Identification of Species of Concern....1
II Description of the Proposed Action....2
III Evaluation of Effects of the Proposed Action....2
A Bony Finfish....3
B Cartilaginous Finfish....6
C Molluscs....13
IV Proposed Mitigation Measures....14
V Federal Agency's Views Regarding the Proposed Action....15
VI References....16

Tables

Table C-1: NMFS list of bony finfish species by life history stage to analyze, 2018
Table C-2: NMFS list of cartilaginous finfish species by life history stage to analyze, 2018
Table C-3: NMFS list of mollusc species by life history stage to analyze, 2018
Table C-4: Bony finfish habitat preferences
Table C-5: Occurrence of skate juveniles and adults in the Mid-Atlantic

0 Preface

This essential fish habitat (EFH) impacts assessment is an annex of the document entitled "Atlantic Coast of Maryland, Shoreline Protection Project, Offshore Shoals in Federal Waters as Sand Sources for Ocean City, Supplementary Environmental Assessment (EA)." The EA is being prepared in 2018 to update and evaluate the potential effects of dredging offshore shoals located in the Outer Continental Shelf (OCS) for the Atlantic Coast of MD Project. US Army Corps of Engineers (USACE) and Bureau of Ocean Energy Management (BOEM) prepared an environmental impact statement (EIS) in 2008 recommending four offshore shoals on the OCS as future sand sources for the Atlantic Coast of MD Project. The 2008 EIS contained a thorough EFH impacts assessment. This 2018 EFH impacts assessment updates the 2008 EFH impacts assessment, and serves as an addendum to that document. The 2008 EFH impacts assessment was contained in Annex D of the 2008 EIS. The 2008 EFH impacts assessment is incorporated by reference into this 2018 document. This 2018 addendum utilizes the structure of the 2008 assessment to allow for ready comparison to the 2008 document.

I Identification of Species of Concern

The 2008 EFH impacts assessment and various National Marine Fisheries Service (NMFS) online information documents and maps were reviewed in 2018 to generate a preliminary list of species and life history stages for which the OCS area of interest may constitute EFH in 2018. This preliminary list was provided to NMFS staff for review. NMFS staff made some changes to the list and determined that the EFH impacts assessment for the supplementary 2018 EA should consider a total of 34 species (19 bony fish species, 13 cartilaginous fish species, and 2 mollusc species). Life history stages varied from one to multiple depending on species. Project impacts to EFH for many of these species had been previously considered in the 2008 EFH impacts assessment (Tables C1 - C3).

In coordination with NMFS in 2018, it was determined that the EFH impacts assessment addendum for the supplementary EA should initially re-consider all the species that had been previously assessed in the 2008 EFH impacts assessment. However, if conditions and effects had not changed for any previously assessed species, then the 2018 addendum need not provide a new detailed impacts assessment for those individual previously assessed species. The 2018 EFH document would need to assess impacts for all species and or life history stages not evaluated in 2008.

NMFS in their list of species to be assessed in 2018 deleted several species that had been included in the 2008 assessment: Atlantic cod, winter flounder, and scalloped hammerhead. Deletion of those species from the 2008 assessment would not change overall findings or management implications. Additionally, NMFS staff noted that surf clam populations offshore of Delmarva have declined as regional ocean temperatures have warmed. However, NMFS recommended retaining surf clam on the list of species for 2018.

Atlantic Coast Project physical activities[1] as described in the 2018 EA that would impact EFH are consistent with the 2008 assessment, although the 2008 assessment did not specify that Weaver Shoal would be the first OCS shoal to be dredged by 2022. Since 2008, there has been a substantial increase in knowledge of the OCS. Species ranges and density distributions have changed in some cases, and EFH designations have changed. The 2018 supplementary EA is structured to provide a brief summary of the state of knowledge from 2008 followed by a summary of new information with changes identified by topic. The general picture that emerges is that while minor change in physical and biological conditions have occurred, implications of this information to the proposed action (which strives to meet the sand needs of Ocean City while maintaining offshore shoal habitats) is still consistent with the content and findings of the 2008 EFH impacts assessment. No changes were identified in 2018 which would invalidate the findings for any individual species of the 2008 EFH impacts assessment that are also on the 2018 species list recommended by NMFS.

Generally, fisheries management has become more sustainable and populations have become more stable (previously many species were overfished and fishing was unsustainable) (NOAA, 2017). While this improvement in fishery management means the implications of habitat impacts are more important, no management decisions were made in 2008 based on any populations being in an overfished condition at that time. Instead, dredging guidelines and constraints were made with a long-term perspective presuming that shoal habitats were important and would remain important.

Accordingly, it was determined that the previous 2008 impacts assessment adequately assessed project impacts for all species and their life history stages it considered that are also on the 2018 NMFS species list. Based on the rationale above, this 2018 impacts assessment provides detailed consideration only of new species and or life history stages for which impacts of the proposed action were not assessed in 2008. Other species and life history stages previously evaluated are not re-evaluated.

II Description of the Proposed Action

A description of the proposed action is provided in Section 2 of the EA.

III Evaluation of Effects of the Proposed Action

Analysis of project effects upon species of concern requires a consideration of species natural history, environmental conditions that impact population, and the broad range of potential human activities that impact the population. Tables C1-C3 provide each species scientific name and geographic management group. Because information needed to analyze impacts to these species is generally summarized in gray literature (which summarizes findings from primary literature), those gray literature summary documents are generally referenced in this assessment.

[1] Quantification of project volume to be dredged has been revised, however the impacts envisioned do not differ from those reported in 2008 EIS.

A Bony Finfish

Bluefin, Yellowfin, Albacore, and Skipjack Tuna

These tunas are highly-migratory pelagic species, which share similar habits and ecology, although they may differ in seasonal geographic distribution, migration and habitat preferences for given life stages. Large adult tunas are fast, powerful cruisers, able to make rapid, long-distance migrations. Befitting their high activity levels, they are opportunistic predators and generally prefer warm surface waters with abundant dissolved oxygen concentrations. Aggregations of tunas are composed of similarly sized individuals, which may include multiple tuna species, with groups comprised of the largest individuals making the longest journeys. Tuna frequently prey upon smaller baitfishes and squid, but generally exhibit opportunistic, size-dependent feeding behavior, with little reliance on specific prey items. Common predators of juvenile and adult tuna include toothed whales, swordfish, sharks and other tuna (NMFS, 2006; NMFS, 2009).

More specific information, including anticipated project impacts, on each of these species and the relevant life stages is provided below.

Albacore Tuna (juveniles)

Background Information

Albacore tuna is a circumglobal oceanic species. In the western Atlantic, albacore range from 45°N to 40°S. Albacore undergo extensive horizontal movements (NMFS, 2006). Table C4 presents habitat preference and fishery status information.

Proposed Action Effects

The proposed action is located within NMFS-designated, mapped EFH for juvenile Atlantic albacore (NMFS, 2009). However, because juvenile albacore prefer waters deeper than the proposed borrow areas, as well as the species' pelagic and opportunistic feeding habits, the proposed action is unlikely to have a significant impact on juvenile Atlantic albacore individuals. Juvenile albacore are not demersal or known to associate with any particular substrate, therefore temporary disturbance of the substrate and localized suspension of sandy sediments during dredging is unlikely to cause significant impacts to their EFH.

Atlantic Bluefin Tuna (juveniles)

Background Information

Atlantic bluefin tuna range from 0° to 55° N in the West Atlantic (Brazil to Labrador). Young-of-the-year begin movements from the Gulf of Mexico and Florida Straits in schools to juvenile habitats thought to be located over the continental shelf between 34° N and 41° W, in the summer and further offshore in the winter (NMFS, 2006, 2009). Table C4 presents habitat preference and fishery status information.

Proposed Action Effects

The proposed action is located within EFH for juvenile Atlantic bluefin tuna, which includes waters off North Carolina, south of Cape Hatteras, to Cape Cod (NMFS, 2009). Due to the juveniles' pelagic and opportunistic feeding habits and the ability of the larger size classes of juveniles to easily avoid project activities, the project is unlikely to have a significant impact on juvenile Atlantic bluefin tuna individuals. Juvenile Atlantic bluefin are not demersal or known to

associate with any particular substrate, therefore temporary disturbance of the substrate and localized suspension of sandy sediments during dredging is unlikely to cause significant impacts to their EFH.

Skipjack Tuna (juveniles and adults)

Background Information

Skipjack tuna are circumglobal in tropical and warm-temperate waters. In the western Atlantic skipjack range as far north as Newfoundland and as far south as Brazil. Skipjack tuna are an epipelagic and oceanic species and may dive to a depth of 260 m during the day. Skipjack tuna is also a schooling species, forming aggregations associated with hydrographic fronts. Adult skipjack tuna EFH in the Atlantic includes pelagic waters of North Carolina from Cape Lookout to Cape Hatteras, and New England from Connecticut to the mid-coast of Maine. Juvenile skipjack tuna EFH in the Atlantic includes areas off of Georgia, South Carolina, and North Carolina to Maryland, and from Delaware to Cape Cod and the southern east coast of Florida through the Florida Keys (NMFS, 2006, 2009). Table C4 presents habitat preference and fishery status information.

Proposed Action Effects

The proposed dredging action is within designated EFH for adult skipjack tuna. The proposed action is outside, but within approximately 20 miles, of mapped juvenile EFH (NMFS 2009). Due to their pelagic and opportunistic habits and strong swimming ability, the project is unlikely to have any significant impact on adult or large juvenile skipjack tuna individuals. Adult skipjack tuna are not demersal or known to associate with any particular substrate, therefore temporary disturbance of the substrate and localized suspension of sandy sediments during dredging is unlikely to cause significant impacts to their EFH. The proposed action, including temporary secondary effects such as localized turbidity, will not occur within or affect juvenile skipjack EFH.

Yellowfin Tuna (juveniles)

Background Information

Atlantic yellowfin tuna are circumglobal in tropical and temperate waters. In the western Atlantic they range from 45°N to 40°S. Yellowfin tuna is an epipelagic, oceanic species, found in water temperatures between 18° and 31°C. It is a schooling species, with juveniles found in schools at the surface, mixing with skipjack and bigeye tuna. Larger fish are found in deeper water and also extend their ranges into higher latitudes. Juveniles are found nearer to shore than are adults. Juvenile yellowfin tuna EFH on the Atlantic coast extends from the mid-east coast of Florida and Georgia to Cape Cod (NMFS 2006, 2009).

Proposed Action Effects

The proposed dredging action is within designated EFH for juvenile yellowfin tuna (NMFS 2009). However, due to the juveniles' pelagic and opportunistic habits and the ability of older age classes of juveniles to easily avoid project activities, the project is unlikely to have a significant impact on juvenile yellowfin tuna. Juvenile yellowfin are not demersal or known to associate with any particular substrate, therefore temporary disturbance of the substrate and localized suspension of sandy sediments during dredging is unlikely to cause significant impacts to their EFH.

Atlantic Mackerel (eggs, juveniles)

Background Information

The 2008 EIS provided background information on Atlantic mackerel adults. That information is generally applicable to juveniles. Table C4 presents information on fishery status and egg and juvenile occurrence. Northeast Fisheries Science Center's MARMAP program collected ichthyoplanton tow survey data from April through August, 1977-1987. The greatest regional abundance of eggs, by far, occurs from May to June, north of the project area, from New Jersey to New England (Studholme, et al., 1999).

Proposed Action Effects

The proposed action is located within the spawning range of Atlantic mackerel and within geographic proximity to areas that may be defined as EFH for mackerel eggs, according to NOAA's online EFH Mapper (NOAA, 2018) and MAFMC and NFMS (2011). While some Atlantic mackerel eggs may become entrained if dredging is conducted in spring, eggs are unlikely to be concentrated in project area bottom waters because eggs generally occur at greater depths (Table C-4). Furthermore, the project area appears comprise only a minor proportion of the regional Atlantic mackerel egg population, and direct impacts to eggs are anticipated to be minor. Only minor, temporary turbidity is anticipated to be generated during dredging because the offshore shoals contain minimal silts or clays, and suspended sands will rapidly settle from the water column. Accordingly, indirect impacts that could result to eggs from turbidity are also anticipated to be minimal.

The proposed action is located within areas that may be defined as EFH for juvenile mackerel (MAFMC and NFMS 2011). While juvenile mackerel may be present year-round, juvenile abundance during the fall, winter and early spring is greatest further offshore, in depths greater than those of the proposed borrow areas. Due to the limited temporal and spatial overlap of the project with juvenile habitats, as well as juveniles' pelagic habits, the project is unlikely to have a significant impact on juvenile mackerel individuals. Because all life stages of mackerel are pelagic water column feeders, and the proposed dredging would impact primarily bottom organisms, the proposed dredging is unlikely to have a significant effect on Atlantic mackerel prey availability. Juvenile Atlantic mackerel are not demersal or known to associate with any particular substrate, therefore temporary disturbance of the substrate and localized suspension of sandy sediments during dredging is unlikely to cause significant impacts to their EFH.

Yellowtail Flounder (eggs)

Background Information

The 2008 EFH impacts assessment provided general background information on yellowtail flounder. USACE previously assessed impacts to larval yellowtail flounder in the 2008 EFH impacts assessment, and that assessment has not changed.

Data show that the southern New England fish make limited migrations eastward during the spring and summer and westward during the fall and winter because of seasonal changes in temperature. Spawning occurs from March through August at temperatures of 5-12 °C. By March and April, eggs appear on the continental shelf off New Jersey and Long Island, on Georges Bank, northwest of Cape Cod, and on Browns Bank off Nova Scotia. The distribution and abundance of eggs expanded in southern New England in May (Johnson, et al., 1999). Table 4 presents fishery status and habitat preference information.

Proposed Action Effects
Effects on eggs differ somewhat from those presented in the 2008 EFH impacts assessment for larvae because eggs appear less likely to be present than larvae. While some yellowtail flounder eggs may be entrained if dredging is conducted in spring, eggs are unlikely to be concentrated in project area bottom waters because eggs generally occur at greater depths (Table C4) and the project activities would occur near the southern limit of the yellowtail flounder's range. Thus, minimal numbers of eggs would be anticipated to be entrained. Only minor turbidity is anticipated to be generated during dredging because the offshore shoals contain clean sand with minimal silts or clays. Accordingly, indirect impacts that could result to eggs from turbidity are also anticipated to be minimal. Long-term water quality conditions would not be impacted. Impacts to prey are irrelevant to eggs. In summary, minimal direct or indirect impacts to yellowtail flounder eggs or habitat are anticipated.

B. Cartilaginous Finfish

The 2008 EFH impacts assessment noted that there are many aspects of shark life history and habitat associations that are unknown. That status of knowledge is generally still applicable today.

Common Thresher Shark (all life history stages)
Background Information
The common thresher shark is cosmopolitan in warm and temperate waters. It is found in both coastal and oceanic waters, but is more abundant near land. Thresher sharks are livebearers, giving birth to litters of four to six pups, which measure 137 to 155 cm total length at birth. The thresher shark is capable of regional endothermy thus providing a physiological advantage over ectothermic prey species. Thresher sharks, regardless of life stage, are pelagic predators that hunt swimming prey in the water column. It feeds on invertebrates such as squid and pelagic crabs as well as small fishes such as anchovy, sardines, hakes, and small mackerels. Common thresher shark EFH designation for all life stages are combined and are considered the same. In the Atlantic, this includes localized areas off the mid-east coast of Florida, Georgia, South Carolina, and the Gulf of Maine, and from North Carolina through Cape Cod (NMFS, 2009).

Proposed Action Effects
The proposed dredging activity is within designated EFH for all life stages of the species (NMFS, 2009). However, due to the pelagic habits and relatively large size and strong swimming ability of thresher sharks at all life stages, they can easily avoid the project area and the project is unlikely to have any significant impact on the species. They are not demersal or known to associate with any particular substrate, therefore temporary disturbance of the substrate and localized suspension of sandy sediments during dredging is unlikely to cause significant impacts to their EFH.

Dusky Shark (juveniles/adults)
Background Information
The 2008 EFH impacts assessment assessed impacts to neonates/early juveniles. The 2008 EFH impacts assessment provided background information that is also applicable to juveniles/adults.

Only limited life history information applicable to the stage of juvenile/adult is available. Young dusky sharks and juveniles use Continental Shelf waters off Virginia and Massachusetts (NMFS, 2009).

Two separate EFH areas are designated for neonates (young-of-year) and juveniles/adults, and the proposed dredging would occur within both designated EFH areas. In 2009 NMFS revised the designated EFH areas, and also revised the life stage designations (increasing the cutoff between neonates and juveniles to 121cm total length).

Proposed Action Effects
The findings presented in the 2008 EFH impacts assessment for neonates/early juveniles are applicable to juveniles/adults. Dusky shark may be present during dredging on the offshore shoals that takes place during warmer months and into the fall, however juveniles because of their ready mobility should easily be able to avoid any direct negative impacts. Because the species moves out of the Maryland coastal ocean during colder months, it is unlikely that any dusky shark would be present during dredging taking place during colder months. No detrimental indirect impacts to the dusky shark population are expected because of the relatively small area to be impacted compared to the range of the species and the ready availability of comparable habitat on the mid-Atlantic bight continental shelf, and because any impacts to the foodweb are expected to be insignificant and temporary. The proposed action would essentially have no effect on project area waters, and thus no impact on dusky shark habitat.

Smooth Dogfish (all life history stages)
Background Information
Smooth dogfish are one of a complex of three smooth dogfish species that are difficult to differentiate. They are demersal, occurring in at or near the bottom of bays and nearshore coastal waters. They frequently occur at depths less than 60 ft, but are encountered down to 660 ft or deeper (NOAA, 2018). Smooth dogfish are migratory in response to changes in water temperature. They primarily congregate between southern North Carolina and the Chesapeake Bay in the winter. In the spring, they move along the coast when bottom water warms up to at least 6 to 7 °C, and returning to their offshore wintering areas as temperatures drop. Smooth dogfish can tolerate a range of temperatures from 6 to 27 °C.

Smooth dogfish are viviparous, bearing litters of 4 to 20 pups, which are roughly 34 to 39 cm when born. In Great Bay and Little Egg Inlet, New Jersey, newborn young-of-year smooth dogfish predominantly occur from May through June, but may continue to occur throughout the summer. Subadults and adults were rare in inshore waters. Estuaries and tidal tributaries are believed to be critically important summer nursery habitats for young-of-year smooth dogfish within the Mid-Atlantic Bight (Rountree and Able 1996).

In New Jersey, young-of-year smooth dogfish fed primarily on shrimp, polychaetes and small crabs (Rountree and Able 1996). Adult and subadult smooth dogfish primarily feed on large crustaceans, consisting mostly of crabs, but also rely heavily on American lobsters. In the New England waters during the spring, smooth dogfish feed on small bony fish, including menhaden, stickleback, wrasses, porgies, sculpins, and puffers. In Delaware Bay, young smooth dogfish fed on invertebrates with larger sharks shifting to large crabs and teleosts (NOAA, 2017, 2018).

Specific EFH areas have not been designated for any individual life stage of smooth dogfish.

Proposed Action Effects
Based on the species life history, the project will not affect neonate smooth dogfish, which prefer inshore, estuarine nursery waters. Later life stage may occur within the project area. Because smooth dogfish is demersal, direct and indirect impacts could be of concern. Juveniles and adults should be sufficiently mobile to avoid direct impacts. Individuals could be more vulnerable to direct impacts of dredging during cold water conditions when they are sluggish. However, because smooth dogfish tend to move offshore during these conditions, it is unlikely that substantial numbers of individuals would be present. The project will result in the temporary elimination of benthic and infaunal organisms within the immediate dredge footprint, some of which would likely be prey items for adult and larger juvenile smooth dogfish. However, because comparable habitats and prey are abundant on the Outer Continental Shelf (OCS), smooth dogfish individuals would be expected to shift to other suitable foraging habitats and should not be adversely impacted by the project. Bottom habitat in the dredged area, although remaining sandy, would otherwise differ from pre-dredge conditions in having greater local bathymetric relief of up to several feet in dredge furrows versus the pre-project flat surface. The surface would become flat again in character over time as waves and currents rework the substrate and fill in furrows. This local bathymetric relief change would not be anticipated to impact smooth dogfish.

<u>Spiny Dogfish (juvenile, adult)</u>
Background Information
Spiny Dogfish is a coastal shark with a circumboreal distribution. There are populations of spiny dogfish on the continental shelves of northern and southern temperate zones throughout the world. They move northward in the spring and summer and southward in the fall and winter, with a preferred temperature range from 7.2°C to 12.8°C. In the winter and spring, Atlantic spiny dogfish are located primarily in mid-Atlantic waters, but also extend onto southern Georges Bank on the shelf break. In the summer, they are located further north in Canadian waters and move inshore into bays and estuaries. By autumn, dogfish have migrated with high concentrations in Southern New England, on Georges Bank and in the Gulf of Maine. With the exception of large mature females, spiny dogfish school by size, and are rarely seen alone, nearly always occurring in groups. Although they are a relatively large fish, spiny dogfish are considered relatively weak swimmers (NMFS, 2007).

In surveys, juveniles have been captured between depths of 11-500 m, with the majority found below 50 m, while adults have been found from 1-500 m. During fall surveys, the depth range for juveniles was from 11-400 m, with most found below 40 m, and the range for adults was from 11-400 m (NOAA, 2018). Seasonal inshore-offshore movements and coastal migrations are thermally induced. Spiny dogfish prefer full salinity seawater and do not ascend estuaries. They are typically demersal, but can occur throughout the water column, from nearshore shallows to offshore shelf waters. Spiny dogfish are ovoviviparous. Most young are born on offshore wintering grounds from November to January, but newborn pups are sometimes taken in the Gulf of Maine or southern New England in early summer.

Spiny dogfish in the western Atlantic are voracious feeders, with a diet composed (by weight) of fish (54%) of their diet and mollusks (27%), albeit with a high degree of variability. Schooling

pelagic fishes such as herring, sand lance, mackerel, and menhaden are heavily consumed, but benthic species are also eaten as are squid, jellyfish and ctenophores (Burgess 2002). Spiny dogfish migrate vertically in the water column, feeding on forage fish that move toward the surface at night and on prey organisms near or on the bottom during the day. Juveniles (<36 cm) feed more heavily on squids and euphausiids than sub-adult (36-79 cm) dogfish, which consume more fish. The largest (>80 cm) animals are primarily piscivorous. Their diet appears broadly related to abundance trends in some of their major prey items (e.g., herrings, Atlantic mackerel, codfishes, hakes, and squid). They show preference for soft substrates suitable for epifaunal and infaunal prey (MAFMC and NFMS 2014).

Northeast Fisheries Science Center (NEFSC) spring trawl survey data indicate relatively low abundance of both juveniles and adults within the project area, with far greater numbers occurring near the outer shelf. The winter trawl survey data only indicates presence/absence, although the concentration of positive trawls appears sparse within the proposed dredge area, and greater further offshore, implying greater abundance out on the shelf (NMFS, 2007). BOEM (2017) reports that NEFSC bottom trawl surveys in the MD Wind Energy Area (WEA) caught spiny dogfish in the spring when it was the seventh most common species captured.

Specific EFH areas have not been designated for spiny dogfish life history stages.

Proposed Action Effects

Because spiny dogfish is demersal, potential impacts warrant scrutiny. Based on NEFSC trawl data, juvenile and adult spiny dogfish are unlikely to occur within the proposed dredge areas except during the winter and spring. Because they are weak swimmers, it is possible that dredging could result in direct impact (mortality) of some juvenile and/or adult spiny dogfish, particularly during the winter and early spring when spiny dogfish would most likely be present and water temperatures cold and the fish sluggish. The project will result in the elimination for several years of benthic and infaunal organisms within the immediate dredge footprint, some of which may be potential prey items for spiny dogfish. However, given the very broad range of potential prey and availability of other suitable foraging habitats, it is anticipated that spiny dogfish would forage in adjacent non-impacted areas. While the project has the potential to directly impact spiny dogfish individuals and indirectly impact their prey base, the project is not expected to significantly impact spiny dogfish population, habitat, or prey availability. Available data suggest that the project area supports only a relatively small proportion of the population, seasonally. Bottom habitat in the dredged area, although remaining sandy, would otherwise differ from pre-dredge conditions in having greater local bathymetric relief of up to several feet in dredge furrows versus the pre-project flat surface. The surface would become flat again in character over time as waves and currents rework the substrate and fill in furrows. This local bathymetric relief change would not be anticipated to impact spiny dogfish.

Clearnose, Winter and Little Skates

Background Information

These three species are relatively small (less than 1m total length) with benthic habits. They do not school and are generally solitary. Some species are more migratory than others. All three species occurs on soft bottoms along the continental shelf, but also on rocky or gravelly bottoms. They feed on infaunal, epibenthic and demersal prey. The New England Fishery Management Council (2018) determined that none of the skate species of interest to this EFH impacts assessment are overfished nor is overfishing occurring.

BOEM (2017) reports that while skates occurred in photographic survey imagery, these three species of skate could not be reliably distinguished from other skates or each other on photographic surveys in the MD WEA.

NMFS has provided EFH source documents for all three, in NOAA Technical Memoranda NMFS-NE-174, -175 and -179, all prepared by Packer, et al. (2003), and referenced herein. These memoranda were used to provide more specific information, including anticipated project impacts, on each of these species and the relevant life stages, as detailed below.

Clearnose Skate (juvenile, adult)

Background Information

The clearnose skate is the most abundant inshore skate in the mid-Atlantic inshore waters from late spring to early fall (Robins et al., 1986). North of Cape Hatteras, it moves inshore and northward along the continental shelf during the spring and early summer, and offshore and southward during autumn and early winter when water temperatures cool to 13-16℃. During winter, the densest concentrations of juveniles and adults occurred on the continental shelf out to the 200 m depth contour, with juveniles concentrated from Cape Hatteras to the Delmarva Peninsula, and adults overlapping, but extending north up to the Hudson Canyon, with the heaviest concentrations from Delaware Bay to Cape Hatteras. In spring juveniles were concentrated inshore from the Delmarva Peninsula to south of Cape Hatteras, with scattered numbers on the continental shelf, out to the 200 m contour. In summer, small concentrations were found mostly inshore from Cape May to Cape Hatteras. Small numbers of adult clearnose skate were concentrated inshore from Long Island to Cape Hatteras in the fall (Packer et al., 2003).

The clearnose skate feeds on prey including polychaetes, amphipods, shrimp, crabs, bivalves, squids, and small fish such as soles, weakfish, butterfish, and scup. It is regularly preyed upon by sharks, such as the sand tiger (Packer et al., 2003).

NEFSC seasonal trawl survey data show juvenile clearnose skate only present within the proposed dredge areas in large numbers during the summer and fall. Adults may be within the project area year-round, but tend to concentrate further offshore during the winter (Packer et al., 2003).

Proposed Action Effects

Juvenile clearnose skate do not appear to be present within the OCS in the project vicinity in significant numbers during winter or spring. Juvenile and adult skates are good swimmers and can easily avoid disturbance from dredging activities when water temperatures are warm. Juveniles are prevalent during the fall, although water temperatures are likely to remain high enough during this time to allow effective avoidance. When bottom water temperatures are cold, individuals may

be sluggish and more vulnerable to direct impact (injury or mortality). Consequently, if dredging occurs during the late winter or early spring, direct impacts to adult clearnose skate may occur, as they may be present and have somewhat reduced ability to evade the dredge. That said, the project area does not appear to be of critical importance to the species, or support large concentrations of individuals. The project is therefore not expected to significantly directly impact the species.

The project will result in the temporary destruction of benthic and infaunal organisms within the immediate dredge footprint, including various potential prey items for skate species. However, the sandy shoals of the proposed dredge area are not believed to be particularly valuable foraging areas for skates, and skates are expected to shift to other suitable foraging habitats during dredging activities and until the time that benthos recolonize, and should not be adversely impacted by the project.

Being adapted for benthic life, they are tolerant of sedimentation and often partially bury themselves as a means of concealment from predators. As such, they are not expected to be vulnerable to indirect effects from incidental turbidity or sedimentation within the project vicinity, either at the dredge or beach nourishment sites.

Bottom habitat in the dredged area, although remaining sandy, would otherwise differ from pre-dredge conditions in having greater local bathymetric relief of up to several feet in dredge furrows versus the pre-project flat surface. The surface would become flat again in character over time as waves and currents rework the substrate and fill in furrows. This local bathymetric relief change would not be anticipated to impact skates.

<u>Winter Skate (juvenile)</u>
Background Information
Winter skate is common inshore south of Cape Cod along the US Atlantic coast during the winter (Robins et al., 1986). Winter skate appear to undertake seasonal movements, especially in the southern part of its range, moving shoreward in autumn and offshore in summer. In winter, juveniles were found from Georges Bank to Cape Hatteras, out to the 200 m depth contour. In spring they were also found from Georges Bank to Cape Hatteras, and were concentrated nearshore throughout the Mid-Atlantic Bight and southern New England. Comparatively few were present in summer, with concentrations on Georges Bank and around Cape Cod. Winter skate abundances in the fall were not as high as in the spring. In the fall they were collected from Georges Bank to the Delmarva Peninsula and were again concentrated along Long Island, southern New England, around Cape Cod, and on Georges Bank. Winter skate generally ranges from the shoreline to 371 m, although it is most abundant at depths less than 111 m. NEFSC seasonal trawl surveys captured juvenile winter skate within the proposed dredge areas in large numbers only during the winter and spring (Packer et al., 2003).

Winter skate prey includes polychaetes, amphipods, decapods (crabs, shrimp), isopods, bivalves, and fishes. Fish are especially important in larger winter skate, and other items include razor clams, smaller skates, eels, alewives, blueback herring, menhaden, smelt, sand lance, chub mackerel, butterfish, cunners, sculpins, silver hake, and tomcod. Winter skate is preyed upon by sharks, other skates, gray seals, and gulls (Packer et al., 2003).

Proposed Action Effects
If dredging occurs during the late winter or early spring, direct impacts to juvenile winter skate may occur, as they are more likely to be present and may have somewhat reduced ability to evade the dredge. Juvenile and adult skates are good swimmers and can easily avoid disturbance from dredging activities when water temperatures are warm. However, when bottom water temperatures are cold, individuals may be sluggish and more vulnerable to direct impact (mortality).

Being adapted for benthic life, they are tolerant of sedimentation and often partially bury themselves as a means of concealment from predators. As such, they are not expected to be vulnerable to indirect effects from incidental turbidity or sedimentation within the project vicinity, either at the dredge or beach nourishment sites.

The project will result in the temporary destruction of benthic and infaunal organisms within the immediate dredge footprint, including various potential prey items for skate species. However, the sandy shoals of the proposed dredge area are not believed to be particularly valuable foraging areas for skates, and skates are expected to shift to other suitable foraging habitats during dredging activities and until benthos recolonize the area, and should not be adversely impacted by the project.

Bottom habitat in the dredged area, although remaining sandy, would otherwise differ from pre-dredge conditions in having greater local bathymetric relief of up to several feet in dredge furrows versus the pre-project flat surface. The surface would become flat again in character over time as waves and currents rework the substrate and fill in furrows. This local bathymetric relief change would not be anticipated to impact skates.

<u>Little Skate (juvenile)</u>
Background Information
Little skate occurs from Nova Scotia to Cape Hatteras and is one of the dominant members of the demersal fish community of the northwest Atlantic. It occurs year-round over almost the entire range of temperatures recorded for this area. Little skate make no extensive migrations, although it moves onshore and offshore seasonally with temperature changes. It also moves north and south with seasonal temperature changes along the southern fringe of its range (Packer et al., 2003).

Generally the most important prey for little skate are invertebrates such as decapod crustaceans (including crabs, shrimp), amphipods, and polychaetes. Isopods, bivalves, hydroids, and fishes are also eaten. Fishes that are eaten include sand lance, alewives, herring, cunners, silversides, tomcod, and silver hake. Juveniles and adults are preyed upon by sharks, other skates (including winter skates), bony fishes (including cod, goosefish, sea raven, longhorn sculpin, bluefish, summer flounder), gray seals, and rock crabs (Packer et al., 2003).

NMFS-NE-175, (Packer et al., 2003) includes detailed information regarding NEFSC seasonal trawl survey data for little skate. Based on those trawl data, juvenile little skate are present within the proposed dredge areas year-round. However, they appear to occur in greatest numbers, by far, during the spring. Trawl data indicate that they tend to migrate north of the project area during the summer and fall, and further offshore during the winter.

BOEM (2017) reports that Little Skate was one of the seven most abundant species captured in the MD WEA in NEFSC bottom trawl surveys in Spring. These captures presumably included juveniles.

Proposed Action Effects
Juvenile and adult skates are good swimmers and can easily avoid disturbance from dredging activities when water temperatures are warm. However, when bottom water temperatures are cold, individuals may be sluggish and more vulnerable to direct impact (mortality). If dredging occurs during the late winter or early spring, direct impacts to juvenile little skate may occur, as they are more likely to be present and may have somewhat reduced ability to evade the dredge.

The project will result in the temporary destruction of benthic and infaunal organisms within the immediate dredge footprint, including various potential prey items for skate species. However, the sandy shoals of the proposed dredge area are not believed to be particularly valuable foraging areas for skates, and skates are expected to shift to other suitable foraging habitats during dredging and until benthos recolonize the area, and should not be adversely impacted by the project.

Being adapted for benthic life, they are tolerant of sedimentation and often partially bury themselves as a means of concealment from predators. As such, they are not expected to be vulnerable to indirect effects from incidental turbidity or sedimentation within the project vicinity, either at the dredge or beach nourishment sites.

Bottom habitat in the dredged area, although remaining sandy, would otherwise differ from pre-dredge conditions in having greater local bathymetric relief of up to several feet in dredge furrows versus the pre-project flat surface. The surface would become flat again in character over time as waves and currents rework the substrate and fill in furrows. This local bathymetric relief change would not be anticipated to impact skates.

C. Molluscs

<u>Longfin Inshore Squid (eggs).</u>
Background Information
Longfin inshore squid (longfin squid) is a schooling species, and is 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. The 2008 EFH impacts assessment assessed impacts to juvenile and adult longfin squid, and the finding of that assessment has not changed. The scope of this assessment is limited only to longfin squid eggs – a life stage that was not previously assessed.

Longfin squid spawn from late spring to early summer in the Middle Atlantic. Longfin squid eggs are laid on hard bottom substrates in 50-60 cm wide clusters composed of hundreds of capsules. Egg masses are commonly attached to rocks and small boulders on sandy/muddy bottom and on macroalga and seaweeds. The eggs are demersal, are generally laid in waters less 50 m deep, and are found at temperatures of 10-23°C. Females may lay multiple clutches over a period of a few weeks. Development time varies from 10.7 to 26.7 days, depending on water temperature. Most

eggs are spawned in May, and hatching occurs in July. Larvae that hatch from the eggs are then planktonic and pelagic near the surface(Jacobson, 2005).

Interestingly, although the proposed action area is now designated EFH for that species life history stage (MAFMC and NMFS, 2011), BOEM (2017) did not find these egg masses to be in OCS waters of the MD WEA, but did find them offshore in OCS waters of NY and VA

NMFS has provided an EFH source documents in NOAA Technical Memorandum NMFS-NE-193, prepared by Jacobson (2005), and referenced herein as such. Based on information in that document, the project is unlikely to overlap with longfin squid spawning and egg-laying activity, spatially or temporally. Literature indicates that longfin squid eggs require firm substrate, which should not be significantly present in the relatively homogenous, sandy shoal areas. Likewise, dredging is not likely to significantly overlap with squid spawning season. However, Jacobson (2005) points out that egg and larval stages need additional study, stating "*Human impacts may be significant on sandy bottom habitats used by inshore longfin squid for their eggs. However, little information is available on egg habitat locations, seasonal occurrence, sediment characteristics, and depth or water chemistry."*

Proposed Action Effects
In the event that dredging were to extend into late May, so as to coincide with the initiation of squid spawning, and that suitable substrate was actually present within the project vicinity, it is possible that impacts to longfin squid eggs could occur. It was not determined in preparing this assessment whether the absence of longfin squid eggs for the MD WEA documented by BOEM (2017) characterizes the area in most years or was result of sampling during an unusual time. If substantial numbers of squid eggs did occur in the shoal vicinity on adjacent live bottom materials off the shoal, then smothering of egg masses via incidental sedimentation could occur locally.

Bottom habitat in the dredged area, although remaining sandy, would otherwise differ from pre-dredge conditions in having greater local bathymetric relief of up to several feet in dredge furrows versus the pre-project flat surface. The surface would become flat again in character over time as waves and currents rework the substrate and fill in furrows. This local bathymetric relief change would not be anticipated to impact longfin squid.

IV Proposed Mitigation Measures

Dredging will be conducted utilizing constraints that would mitigate impacts to offshore shoal geomorphic integrity, and thus maintain shoal long-term habitat value (EA, Table 2-1). Shoal bathymetry will be monitored over time and shoal geomorphic response to dredging evaluated. Fishery and ecological values of shoals will be periodically reassessed, and the dredging plan reformulated (shoal selection, dredging constraints) if there is substantial change.

NMFS, in coordination with USACE conducted during preparation of the EA, suggested considering a time-of-year (TOY) restriction on dredging during Summer and Fall. (Instead, preferentially dredging in in Winter and early Spring). NMFS made this suggestion because the Mid-Atlantic Fishery Management Council (MAFMC) recommends winter/early spring as an optimal time for dredging from an environmental and fisheries perspective as productivity of

benthic infauna is at a yearly minimum, and spring migrants have not yet arrived from southerly and offshore waters. (Winter diversity is somewhat lower, comprised of limited year-round resident species plus some northerly species that have migrated south into the area). However, because the area to be dredged in this project and elsewhere in the region constitutes a small portion of comparable OCS habitats, it is not clear that this would meaningfully reduce cumulative threats to aquatic life. BOEM (2013), in a review of dredging impacts, found that benthos largely recover within several years to pre-project conditions on sandy substrates. Dredging in Winter is limited by rough seas and hazardous conditions. Dredging in Winter and early Spring could potentially pose greater risk of physically destroying demersal fish that are sluggish due to cold water temperatures.

V Federal Agency's Views Regarding the Proposed Action

The updated EFH impacts reaches the same finding as the assessment conducted in 2008. The proposed action will adversely impact EFH for benthic invertebrates and demersal fish species for which the impact area constitutes EFH. However, the project incorporates appropriate mitigation measures focused on maintaining the offshore shoals as habitat over the long-term. Accordingly, in light of this balance between meeting sand needs of Ocean City and conducting dredging utilizing long-term habitat maintenance constraints, the project complies with the provisions of the Magnuson-Stevens Act, as amended.

Impacts upon EFH for those species and their life history stages previously assessed in 2008 remain the same in 2018. The additional new species and life history stages assessed in this addendum lead to the same management implications already included as dredging constraints that would serve to mitigate impacts to offshore shoal habitat.

Because stress of fishing on populations is currently better managed than in 2008, importance of habitat as factor controlling species population health has increased compared to 2008. However, the dredging constraints presented in 2008 were not founded on fishery status of any of the species considered, but were instead focused on long-term maintenance of shoal habitat. Accordingly, the vision of the 2008 EFH impacts assessment which strove to maintain offshore shoal habitats while also providing sand for Ocean City is maintained.

BOEM (2018) identifies species of concern for bottom impacts that have require relatively rare types of habitats for one or more life stages and those with limited mobility during one or more life stages. Biggest potential concern of this updated assessment is that there are benthic and demersal species and life history stages identified in 2018 for which the project area was not identified to be of particular concern in 2008. A possible major concern would also be if any new species or life history stage strongly dependent upon shoals (such as for forage or congregation/migration). While investigations completed since the 2008 EFH impacts assessment continue to support considering the shoals to be important Continental Shelf habitats, no new information has been identified that indicates any of the EFH analyzed species are strongly dependent upon offshore shoals. Conversely, species that are pelagic, highly migratory, and derive their food over a broad region were anticipated to be of little concern in 2008, and that conclusion remains in 2018. The offshore shoals lack highly structured habitats, other than for the

artificial reef at Shoal B. Concerns of impacts to such habitats which could be stock limiting for structure-oriented species thus do not apply to the proposed action.

Impacts of greatest concern would be upon the additional benthic and demersal species life history stages assessed in this document. Neither of the new bony fish species for which new life stages were considered (Atlantic mackerel eggs and yellowtail flounder eggs) are demersal. The four species of tuna assessed in this document that were not assessed in 2008 are pelagic and impacts are likely to be negligible. Of the six species of cartilaginous fish newly assessed, five are demersal (smooth dogfish, spiny dogfish, clearnose skate, little skate, winter skate). While direct impacts to individuals of these species may occur, it is not anticipated that there would be concentrated numbers of individuals present. While dredging would eliminate benthic foraging opportunities following dredging for several years, there is abundant comparable foraging opportunity available elsewhere on the OCS.

Perhaps the biggest concern would be if longfin squid egg masses were present in substantial numbers because they are of limited mobility. While the area is designated EFH, sampling has not recorded these being present (BOEM, 2017). And time of year of dredging (between Labor and Memorial Days) would tend to minimize impacts.

Impacts to Atlantic albacore juveniles were assessed in accordance with direction from NMFS to consider this species. However, it is unlikely that the project area should be considered EFH for this species juvenile life history stage based on its general occurrence at greater depth.

VI References

BOEM (Bureau of Ocean Energy Management). 2013. Review of Biological and Biophysical Impacts from Dredging and Handling of Offshore Sand. J. Michel, A.C. Bejarano, C.H. Peterson, and C. Voss. BOEM 2013-0119. https://www.boem.gov/ESPIS/5/5268.pdf

GMFMC (Gulf of Mexico Fishery Management Council)/SAFMC (South Atlantic Fishery Management Council). 2011. Amendment 18 to the fishery management plan for coastal migratory pelagic resources in the Gulf of Mexico and Atlantic regions including environmental assessment, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council, Tampa, Florida, and South Atlantic Fishery Management Council, North Charleston, South Carolina. Available at: http://safmc.net/Library/pdf/Final_CMP_Amend18.pdf.

GMFMC/SAFMC. 2014. Amendment 20B to the fishery management plan for coastal migratory pelagic resources in the Gulf of Mexico and Atlantic regions including environmental assessment, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council, Tampa, Florida, and South Atlantic Fishery Management Council, North Charleston, South Carolina. Available at: http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_sa/cmp/2014/am20b/documents/pdfs/cmp_a20b_ea.pdf.

Jacobson, L.D. 2005. Essential Fish Habitat Source Document: Longfin Inshore Squid, *Loligo pealeii*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-193. 42 pages plus publication submission instructions. Online edition: http://www.nefsc.noaa.gov/nefsc/publications/tm/tm193/

Johnson, D.L., W.M. Wallace, P.L. Berrien, and J.J. Vitaliano. 1999. *Essential Fish Habitat Source Document:* Yellowtail Flounder, *Limanda ferruginea*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-140. 29 numbered pages.

Mid-Atlantic Fishery Management Council. 2000. 2000 Atlantic mackerel, Loligo, Illex, and butterfish specifications. Final Environmental Assessment Regulatory Impact Review Final Regulatory Flexibility Analysis. Dover, Del. Online edition: http://www.nero.nmfs.gov/ro/doc/y2ksmbspfr.pdf.

Mid-Atlantic Fishery Management Council. 2006. Atlantic mackerel, squid and butterfish FMP. http://www.mafmc.org/mid-atlantic/fmp/fmp.htm

Mid-Atlantic Fishery Management Council (MAFMC) and NMFS. 2011. Amendment 11 to the Atlantic mackerel, squid, and butterfish (MSB) fishery management plan (FMP). MAFMC [Dover, DE]. 559 p + appendices.
Accessed July 2018: http://www.mafmc.org/fisheries/fmp/msb

MAFMC and NMFS. 2014. Amendment 3 to the Spiny Dogfish Fishery Management Plan. Includes Environmental Assessment (EA). May 27, 2014. 112 pages.

NMFS. No Date. Climate change vulnerability assessment, Longfin Inshore Squid. https://www.st.nmfs.noaa.gov/Assets/ecosystems/climate/images/species-results/pdfs/Longfin_Inshore_Squid.pdff

National Oceanic and Atmospheric Administration (NOAA). 2009. Amendment 1 to the Consolidated Highly Migratory Species Fishery Management Plan. June 2009. http://www.nmfs.noaa.gov/sfa/hms/documents/fmp/am1/feis/feis_amendment_1_chapter5.pdf#page=31

NMFS. 2006. Final Consolidated Atlantic Highly Migratory Species Fishery Management Plan. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document. pp. 1600. https://www.fisheries.noaa.gov/management-plan/consolidated-atlantic-highly-migratory-species-management-plan

NMFS. 2009. Final Amendment 1 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan, Essential Fish Habitat. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document. pp. 395. https://www.fisheries.noaa.gov/action/amendment-1-2006-consolidated-hms-fishery-management-plan-essential-fish-habitat

National Oceanic and Atmospheric Administration. 2010. Amendment 3 to the 2006 Consolidated HMS Fishery Management Plan: Atlantic Shark Management Measures. Chapter 11.0 Life History Accounts and Essential Fish Habitat Descriptions. http://www.nmfs.noaa.gov/sfa/hms/documents/fmp/am3/index.html

NMFS. 2010. Final Amendment 3 to the Consolidated Atlantic Highly Migratory Species Fishery Management Plan. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document. pp. 632.

NMFS. 2007. Essential Fish Habitat Source Document: Spiny Dogfish, Squalus acanthias, Life History and Habitat Characteristics, 2nd ed. NMFS Technical Memorandum 203. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Northeast Fisheries Science Center, Woods Hole, MA. December 2007.

NOAA. 2017. Final Amendment 10 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan: Essential Fish Habitat. September 1, 2017.

NOAA. 2018. Essential Fish Habitat Mapper. NOAA Fisheries. Last updated by Office of Habitat Conservation 04122018. https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper

NOAA. 2018. Habitat Conservation in the Greater Atlantic Region. https://www.greateratlantic.fisheries.noaa.gov/habitat/index.html

NOAA. 2018. Find a Species. NOAA Fisheries. Accessed July 2018. https://www.fisheries.noaa.gov/find-species

NOAA. 2018. Smooth Dogfish. Fisheries Service. Accessed July 2018. https://www.nefsc.noaa.gov/nefsc/Narragansett/sharks/smooth-dogfish.html

NOAA. 2018. Spiny Dogfish. Fisheries. Accessed July 2018. https://www.greateratlantic.fisheries.noaa.gov/sustainable/species/sdogfish/index.html

NOAA. 2018. Managed Species. NOAA Fisheries. Greater Atlantic Regional Fisheries Office. Accessed July 2018. https://www.greateratlantic.fisheries.noaa.gov/sustainable/index.html

New England Fishery Management Council. 2018. Skates. https://www.nefmc.org/management-plans/skates

New England Fishery Management Council and NMFS. 2017. Final Omnibus Essential Fish Habitat Amendment 2. Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts. Updated October 25, 2017.

NOAA. 2017. Status of Stocks 2017. Fisheries. https://www.fisheries.noaa.gov/feature-story/status-stocks-2017

Offshore & Coastal Technologies, Inc. 2011. Geomorphic and sediment budget analysis of Fenwick and Assateague Islands, MD. Final Report. April 30, 2011.

Packer, D.B., C.A. Zetlin, and J.J. Vitaliano. 2003. Essential Fish Habitat Source Document: Clearnose Skate, *Raja eglanteria*. Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-174. 50 pages. http://www.nefsc.noaa.gov/nefsc/habitat/efh/

Packer, D.B., C.A. Zetlin, and J.J. Vitaliano. 2003. Essential Fish Habitat Source Document: Winter Skate, *Leucoraja ocellata*. Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-174. 57 pages. http://www.nefsc.noaa.gov/nefsc/habitat/efh/

Packer, D.B., C.A. Zetlin, and J.J. Vitaliano. 2003. Essential Fish Habitat Source Document: Little Skate, *Raja erinacea*. Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-174. 66 pages. http://www.nefsc.noaa.gov/nefsc/habitat/efh/

Robins, C.R., G.C. Ray, J. Douglas, and R. Freud. 1986. Atlantic coast fishes. Peterson Field Guides 32. Houghton Mifflin Company, N.Y. 354 p.

Rountree, R.A., and , K.W. Able. 1996. Seasonal abundance, growth, and foraging habits of juvenile smooth dogfish, *Mustelus canis*, in a New Jersey estuary. Fishery Bulletin (94(3)): 522–534. http://www.fishbiology.org/cv/Rountree%20and%20Able%201996.pdf

Smith, E. R., J. C. Reed, and I. L. Delwiche. 2016. The Atlantic Coast of Maryland, sediment budget update: Tier 2, Assateague Island and Ocean City Inlet. ERDC/CHL CHETN-XIV-48. Vicksburg, MS: U.S. Army Engineer Research and Development Center. 11 pages.

South Atlantic Marine Fishery Council. 2018. Fishery Ecosystem Plan II (Online Living Document). http://safmc.net/fishery-ecosystem-plan-ii-introduction/

South Atlantic Marine Fishery Council. 2018. SAFMC Habitat and Ecosystem ATLAS. http://ocean.floridamarine.org/safmc_atlas/

Studholme, A.L., D.B. Packer, P.L. Berrien, D.L. Johnson, C.A. Zetlin, and W.W. Morse. 1999. Essential Fish Habitat Source Document: Atlantic Mackerel, *Scomber scombrus*, Life History and Habitat Characteristics. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. Woods Hole, Massachusetts. September 1999. NOAA Technical Memorandum NMFS-NE-141. 35 pages plus publishing instructions. Online edition: http://www.nefsc.noaa.gov/nefsc/publications/tm/tm141/

The Nature Conservancy. 2010. The Northwest Atlantic Marine Ecoregional Assessment: Species, Habitats and Ecosystems. Phase One. The Nature Conservancy, Eastern U.S. Division, Boston, MA. Accessed May 2018. https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/reportsdata/marine/namera/namera/Pages/default.aspx

Table C-1: NMFS list of bony finfish species by life history stage to analyze, 2018										
Tally	**Species common name**	**Scientific name**	**Geographic Management Group**	**Eggs**	**Larvae**	**Juve-niles**	**Adults**			
1	Albacore Tuna	*Thunnus alalunga*	Atlantic Highly Migratory, Mid-Atlantic			X				
2	Atlantic butterfish	*Peprilus triacanthus*	Greater Atlantic Region, Mid-Atlantic Species	X		X	X			
3	Atlantic mackerel	*Scomber scombrus*	Greater Atlantic Region, Mid-Atlantic Species	X		X	X			
4	Atlantic sea herring	*Clupea harengus*	New England			X	X			
5	black sea bass	*Centropristus striata*	Greater Atlantic Region, Mid-Atlantic Species		X	X	X			
6	bluefin tuna	*Thunnus thynnus*	Atlantic Highly Migratory, Mid-Atlantic			X				
7	bluefish	*Pomatomus saltatrix*	Greater Atlantic Region, Mid-Atlantic Species		X	X	X			
8	cobia	*Rachycentron canadum*	State	X	X	X	X			
9	king mackerel	*Scomberomorus cavalla*	South-Atlantic	X	X	X	X			
10	monkfish	*Lophius americanus*	New England & Mid-Atlantic	X	X					
11	red hake	*Urophycis chuss*	New England	X	X	X				
12	scup	*Stenotomus chrysops*	Greater Atlantic Region, Mid-Atlantic Species			X	X			
13	skipjack tuna	*Katsuwonus pelamis*	Atlantic Highly Migratory, Mid-Atlantic			X	X			
14	Spanish mackerel	*Scomberomorus maculatus*	South-Atlantic	X	X	X	X			
15	summer flounder	*Paralicthys dentatus*	Greater Atlantic Region, Mid-Atlantic Species	X	X	X	X			
16	windowpane flounder	*Scopthalmus aquosus*	New England	X	X	X	X			
17	witch flounder	*Glyptocephalus cynoglossus*	New England	X	X					
18	yellowfin tuna	*Thunnus albacares*	Atlantic Highly Migratory, Mid-Atlantic			X				
19	yellowtail flounder	*Pleuronectes ferruginea*	New England	X	X					
Orange = new spp for area since 2008 assessment										
Yellow = new life history stage for area since 2008 assessment										
Pink = new designation since 2008										

Table C-2: NMFS list of cartilaginous finfish species by life history stage to analyze, 2018										
Tally	**Species common name**	***Scientific name***	**Geographic Management Group**	**Eggs**	**Neonate**	**Neonate / Juvenile**	**Juvenile**	**Juvenile / Adults**	**Adults**	**All**
1	Atlantic angel shark	*Squatina dumerili*	Atlantic Highly Migratory Species, Shark							X
2	Atlantic sharpnose shark	*Rhizoprionodon terraenovae*	Atlantic Highly Migratory Species, Shark						X	
3	common thresher shark	*Alopias vulpinus*	Atlantic Highly Migratory Species, Shark							X
4	dusky shark	*Charcharinus obscurus*	Atlantic Highly Migratory Species, Shark		X			X		
5	sand tiger shark	*Odontaspis taurus*	Atlantic Highly Migratory Species, Shark			X			X	
6	sandbar shark	*Charcharinus plumbeus*	Atlantic Highly Migratory Species, Shark		X		X		X	
7	tiger shark	*Galeocerdo cuvieri*	Atlantic Highly Migratory Species, Shark					X		
8	smooth dogfish*	*Mustelus canis*	Atlantic Highly Migratory Species, Shark							X
9	spiny dogfish	*Squalus acanthias*	Mid-Atlantic Fishery Management Council				X**		X**	
10	clearnose skate	*Raja eglanteria*	New England				X		X	
11	winter skate	*Leucoraja ocellata*	New England				X			
12	little skate	*Leucoraja erinacea*	New England				X			

Orange = new spp for area since 2008 assessment

Yellow = new life history stage for area since 2008 assessment

*Smoothhound shark complex, Atlantic stock

**Further divided into male and female subcategories

Table C-3: NMFS list of mollusc speciesby life history stage to analyze, 2018							
Tally	**Common name**	***Scientific name***	**Geographic Management Group**	**Eggs**	**Larvae**	**Juveniles**	**Adults**
1	Longfin inshore squid	*Loligo pealei**	Greater Atlantic Region, Mid-Atlantic Species	X		X	X
2	Atlantic surf clam	*Spisula solidissima*	Greater Atlantic Region, Mid-Atlantic Species			X	X
Yellow = new spp or life history stage for area since 2008 assessment							
*(Former name *Loligo pealeii* ; revised name *Doryteuthis pealeii*)							

Table C-4: Bony fish habitat preferences										
Species Common Name	**Fishery status**	**Regulated EFH Life History Stage**	**Habitat**	**Substrate**	**Depth m**	**Depth ft**	**Water Temperature C**	**Water Temperature F**	**Reported Months/ Seasonality of Occurrence**	**References**
Albacore tuna	Not overfished, not subject to overfishing (2016)	Juveniles	Pelagic	N/A (pelagic cruisers)	Surface waters between 50 and 2000m isobaths	Surface waters between 160 and 6,600ft isobaths	Between 15.6 and 19.4C	between 60 and 67F		NOAA, 2009
Bluefin tuna	Overfishing status unknown; not subject to overfishing (2017)	Juveniles	Pelagic	N/A (pelagic cruisers)	Surface waters between the 25 and 200 m isobaths	Surface waters between the 80 and 660ft isobaths	Warmer than 12C	warmer than 54F	YOY recruit late June to August	NOAA, 2009
Skipjack tuna	Not overfished, not subject to overfishing (2014)	Juveniles	Pelagic	N/A (pelagic cruisers)	no info	no info	no info (same as adults?)	no info (same as adults?)	YOY recruit in mid-Atlantic in late summer (approx?)	NOAA, 2009
		Adults	Pelagic; associate w/ convergences, hydrographic discontinuities	N/A (pelagic cruisers); associate w/birds, sargassum and drifting objects, whales, sharks and other tunas	no info	no info	Range from 20 to 31C; optimum 27C	Range from 60 to 88F; optimum 81F	temperature-dependent (>15C)	NOAA, 2009
Yellowfin tuna		Juveniles	Pelagic	N/A (pelagic cruisers)	Surface waters	Surface waters				NOAA, 2009
Yellowtail flounder	Overfished; subject to overfishing (2017)	Eggs	Pelagic, near surface, along continental shelf waters	N/A (planktonic)	Range 10-750 m (most 30-90 m)	Range 30-2,500 ft (most 100 -300 ft)	Range 2.0-15C	Range 36-59F	Mid-March to July, peaks in April to June in southern New England	Johnson, et al. 1999; NMFS-NE-140
Atlantic mackerel	Overfished; subject to overfishing (2018)	Eggs	Pelagic	N/A (planktonic)	Range: 10-325 m, most from 30-70 m; depth varies w/season, egg diameter, thermocline	Range 30-1,100 ft (Most from 100-230 ft)	Collected at 5-23C, highest abundance from ~ 7-16C with range related to season	Collected at 41-73F, highest abundance 45 - 61F	Highest abundances in May, June in - Mid-Atlantic region.	Studholme, et al. 1999; NMFS-NE-141
		Juveniles	Pelagic; shift from planktonic to swimming and schooling @ ~ 30-50mm; reach 50-80 mm in ~ 2 months in mid-Atlantic; 20 cm after 1 yr	N/A (pelagic cruisers)	Varies seasonally. Fall: offshore, most abundant ~ 20-40 m (range: 0-320 m); Winter: 50-70 m; Spring: dispersed in water column, but concentrated 30-90 m;. Summer: most 20-50 m, (range from 0-210 m).	Most abundant by season -Fall: 65-130 ft; Winter: 165-230 ft; Spring: concentrated 100-300 ft; Summer: 65-165	Found from 4-22C, most at 10C. Offshore distribution changes seasonally as average temperature ranges increase	Found 41-73F, most at 50F	Year-round; Larvae transition to juveniles in Jun-Aug (c. 2 mos. of age)	Studholme, et al. 1999; NMFS-NE-141

Table C-5: Occurrence of skate juveniles and adults in Mid-Atlantic.						
Information presented pertinent to estuarine and coastal ocean waters.						
Common Name	**Depth (m)**	**Depth (ft)**	**Water Temper-ature C**	**Water Temper-ature F**	**Salinity**	**References**
Clearnose	1-33 m, most 7-15 m	3-110 ft, most 20-50 ft	8-20C	46-68F	Range > 12 ppt, most at >22 ppt.	Packer et al., 2003
Little	Greatest abundance in Spring<9 m depth, Summer and Fall greatest abundance >9 m	Greatest abundance in Spring<30 ft depth, greatest abundance Spring-Fall> 30 ft	2-15C	36-59F	Range >15 ppt, mean 32 ppt	Packer et al., 2003
Winter	Most abundant 0-110 m, Winter 33-113 m	Most abundant 0-360 ft, Winter 110-370 ft	-1 to 19 C	30 to 66F	Range 15-35 ppt	Packer et al., 2003