EFH ASSESSMENT WORKSHEET

General Project Information

Date Submitted: September 3, 2020

Project/Application Number:

Project Name: Hudson River Habitat Restoration - Moodna Creek

Project Sponsor/Applicant: U. S. Army Corps of Engineers - New York District (District)

Federal Action Agency (if state agency acting as delegated):

Fast-41 or One Federal Decision Project: ☐ Yes ☑ No

Action Agency Contact Name: Matthew Voisine

Contact Phone: 917.790.8718 Contact Email: matthew.voisine@usace.army.mil

Latitude: see attachment 1 Longitude: see attachment 1

Address, City/Town, State:

Cornwall, New York

Body of Water: Mooda Creek

Project Purpose:

Improve ecological resources in the Hudson River basin from the Districts navigation mission.

Project Description:

See attachment 1

Anticipated Duration of In-Water Work or Start/End Dates:

2035/2036

Habitat Description

EFH includes the biological, chemical, and physical components of the habitat. This includes the substrate and associated biological resources (e.g., benthic organisms, submerged aquatic vegetation, shellfish beds, salt marsh wetlands), the water column, and prey species.

Is the project in designated EFH[2]? ☑ Yes ☐ No

Is the project in designated HAPC[2]? ☐ Yes ☑ No

Is this coordination under FWCA only? ☐ Yes ☑ No

Total area of impact to EFH (indicate sq ft or acres): AOP1: 1.0 ac AOP2: 1.0 ac AOP3: 1.2 ac

Total area of impact to HAPC (indicate sq ft or acres): AOP1: 0 ac AOP2: 0 ac AOP3: 0 ac

Current water depths: 3ft, 6ft, 6ft Salinity: fresh Water temperature range: 5.5 -8.5°C

Sediment characteristics[3]: AOP1&3 coarse-grained compact AOP2 coarse sand small gravel

What habitat types are in or adjacent to the project area and will they be permanently impacted? Select all that apply. Indicate if impacts will be temporary, if site will be restored, or if permanent conversion of habitat will occur. A project may occur in overlapping habitat types.

	Habitat Type	**Total impact (sq ft/acres)**	**Impacts are temporary**	**Restored to pre-existing conditions**	**Permanent conversion of all or part of habitat**
☐	Marine				
☐	Estuarine				
☐	Riverine (tidal)				
☑	Riverine (non-tidal)	AOP1: 1 ac, AOP2: 1ac, AOP3:1.2 ac	no all 3 AOPs	no all 3 AOPs	yes all 3 AOPs
☐	Intertidal				
☐	Subtidal				
☐	Water column				
☐	Salt marsh/ Wetland (tidal)				
☑	Wetland (non-tidal)	0 ac all AOPs			

[2] Use the tables on pages 7-9 to list species with designated EFH or the type of designated HAPC present.
[3] The level of detail is dependent on your project – e.g., a grain size analysis may be necessary for dredging.

	Habitat Type	Total impact (sq ft/acres)	Impacts are temporary	Restored to pre-existing conditions	Permanent conversion of all or part of habitat
☑	Rocky/hard bottom[4]:	AOP1: 1ac AOP2: 1ac AOP3:1.2ac			
☐	Sand				
☐	Shellfish beds or oyster reefs				
☐	Mudflats				
☐	Submerged aquatic vegetation (SAV)[5], macroalgae, epifauna				
☐	Diadromous fish (migratory or spawning habitat)				

Indicate type(s) of rocky/hard bottom habitat (pebble, cobble, boulder, bedrock outcrop/ledge) and species of SAV:

Boulders and cobble in a ll 3 AOPs

Project Effects

Select all that apply	Project Type/Category
☐	Hatchery or Aquaculture
☐	Agriculture
☐	Forestry
☐	Military (e.g., acoustic testing, training exercises)
☐	Mining (e.g., sand, gravel)
☑	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, beach renourishment, mitigation bank/ILF creation)

[4] Indicate type(s). The type(s) of rocky habitat will help you determine if the area is cod HAPC.
[5] Indicate species. Provide a copy of the SAV report and survey conducted at the site, if applicable.

Select all that apply	Project Type/Category
☐	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port)
☐	Energy development/use
☐	Water quality (e.g., TMDL, wastewater, sediment remediation)
☑	Dredging/excavation and disposal
☐	Piers, ramps, floats, and other structures
☐	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
☐	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
☑	Other Barrier removal for all three AOP's

Select all that apply	Potential Stressors Caused by the Activity	Select all that apply and if temporary or permanent		Habitat alterations caused by the activity
		Temp	Perm	
☐	Underwater noise			
☑	Water quality/turbidity/ contaminant release	☐	☑	Water depth change
☐	Vessel traffic/barge grounding	☐	☐	Tidal flow change
☐	Impingement/entrainment[6]	☐	☐	Fill
☐	Prevent fish passage/spawning	☐	☐	Habitat type conversion
☐	Benthic community disturbance	☑	☐	Other: Turbidity
☐	Impacts to prey species	☑	☐	Other: Turbidity

[6] Entrainment is the voluntary or involuntary movement of aquatic organisms from a water body into a surface diversion or through, under, or around screens and results in the loss of the organisms from the population. Impingement is the involuntary contact and entrapment of aquatic organisms on the surface of intake screens caused when the approach velocity exceeds the swimming capability of the organism.

Details: project impacts and mitigation

The level of detail that you provide should be commensurate with the magnitude of impacts associated with the proposed project. Attach supplemental information if necessary.

Describe how the project would impact each of the habitat types selected above. Include temporary and permanent impact descriptions and direct and indirect impacts.

In the short-term, implementing the Plan would result in negligible adverse impacts on water quality due to increases in turbidity during the construction phase of the project. No adverse permanent impacts are anticipated. Permanent surface water elevations behind AOP2 & 3 are anticipated to drop to pre-dam conditions.

What specific measures will be used to avoid impacts, including project design, turbidity controls, acoustic controls, and time of year restrictions? If impacts cannot be avoided, why not?

The District will follow NYSDEC guidance for In-Water and Riparian Management of Sedi

What specific measures will be used to minimize impacts?

Erosion and sediment control practices would be implemented to minimize the deposition

Is compensatory mitigation proposed? ☐ Yes ☑ No

If no, why not? If yes, describe plans for mitigation and how this will offset impacts to EFH. Include a conceptual compensatory mitigation and monitoring plan, if applicable.

Mitigation is not necessary because impacts are anticipated to be beneficial and adverse

Federal Action Agency's EFH determination (select one)	
☐	There is no adverse effect[7] on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA-only request.
☑	The adverse effect[7] on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
☐	The adverse effect[7] on EFH is substantial. This is a request for an expanded EFH consultation. We will provide more detailed information, including an alternatives analysis and NEPA document, if applicable.

EFH and HAPC designations[8]

Use the EFH mapper to determine if EFH may be present in the project area and enter all species and lifestages that have designated EFH. Optionally, you may review the EFH text descriptions linked to each species in the EFH mapper and use them to determine if the described habitat is present. We recommend this for larger projects to help you determine what your impacts are.

Species	EFH is designated/mapped for:				Habitat present based on text description (optional)
	EFH: eggs	EFH: larvae	EFH: juvenile	EFH: adults/ spawning adults	
Winter Flounder	☑	☑	☑	☑	☐
Little Skate	☐	☐	☑	☑	☐
Atlantic Herring	☐	☑	☑	☑	☐
Red Hake	☑	☑	☑	☑	☐

[7] An **adverse effect** is any impact that reduces the quality and/or quantity of EFH. Adverse effects 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 ecosystem components. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

[8] Within the Greater Atlantic Region, EFH has been designated by the New England, Mid-Atlantic, and South Atlantic Fisheries Management Councils and NOAA Fisheries.

Species	EFH is designated/mapped for:				Habitat present based on text description (optional)
	EFH: eggs	EFH: larvae	EFH: juvenile	EFH: adults/ spawning adults	
Windowpane Flounder	✔	✔	✔	✔	☐
Winter Skate	☐	☐	✔	✔	☐
Clearnose Skate	☐	☐	✔	✔	☐
Longfin Inshore Squid	✔	☐	☐	☐	☐
Bluefish	☐	☐	✔	✔	☐
Atlantic Butterfish	☐	✔	☐	☐	☐
Summer Flounder	☐	✔	✔	✔	☐
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HAPCs

Select all that are in your action area.

☐	Summer flounder: SAV[9]	☐	Alvin & Atlantis Canyons
☐	Sandbar shark	☐	Baltimore Canyon
☐	Sand Tiger Shark (Delaware Bay)	☐	Bear Seamount
☐	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)	☐	Heezen Canyon
☐	Inshore 20m Juvenile Cod	☐	Hudson Canyon
☐	Great South Channel Juvenile Cod	☐	Hydrographer Canyon
☐	Northern Edge Juvenile Cod	☐	Jeffreys & Stellwagen
☐	Lydonia Canyon	☐	Lydonia, Gilbert & Oceanographer Canyons
☐	Norfolk Canyon (Mid-Atlantic)	☐	Norfolk Canyon (New England)
☐	Oceanographer Canyon	☐	Retriever Seamount
☐	Veatch Canyon (Mid-Atlantic)	☐	Toms, Middle Toms & Hendrickson Canyons
☐	Veatch Canyon (New England)	☐	Washington Canyon
☐	Cashes Ledge	☐	Wilmington Canyon

[9] Summer flounder HAPC is defined as all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH. In locations where native species have been eliminated from an area, then exotic species are included. Use local information to determine the locations of HAPC.

Moodna Creek Project Description:

AOP 1 - Utility Removal Longitude: 41.454759 Latitude: -74.041927

For AOP 1, the sewer utility line in New Windsor, the recommended plan (Figure 1) entails decommissioning the dormant utility line and removing the section that crosses Moodna Creek. This removal would result in the reconnection of 1.2 miles of river habitat. The sanitary sewer line is an 18-inch ductile iron pipe (DIP); an approximately 100-foot-long section spans the channel and is contained in a concrete encasement approximately five feet wide and five feet deep. The recommended approach to decommissioning the line includes accessing the existing manhole on the floodplain to the northwest (i.e. river left bank), and sealing-off the incoming sanitary line with concrete or similar means. On the river right bank, where the utility descends steeply from the inactive railroad bed at the top of the slope, the recommended approach to decommissioning this sewer line is to break the existing line at the base of the slope and mechanically plug and cap the line with a concrete thrust block. The sewer line at the upslope manhole will also be mechanically plugged.

A total of 175 feet of sewer line (100-foot concrete encased section and the 75-foot section under floodplain soils leading to the existing manhole) would be excavated and disposed of offsite. Full removal of the utility line at the channel crossing is proposed as it is the alternative that most effectively restores fish passage through the site, and also eliminates the structure that is currently exposed, undermined by subsurface flow, and at risk for damage or rupture. Preliminary hydraulic modeling for the proposed conditions of the recommended plan indicates that removal of the sewer utility line would lower water surface elevations by 0.8 feet in the 1% Annual Chance Flood (or a storm similar in scale to Irene or Lee), 1.0 feet in the bankfull flow (or a precipitation event of moderate size), and 1.6 feet in the median annual flow, which is more typical of everyday conditions.

Moodna Creek AOP 2 - Dam Removal Longitude: 41.441834 Latitude: -74.052698

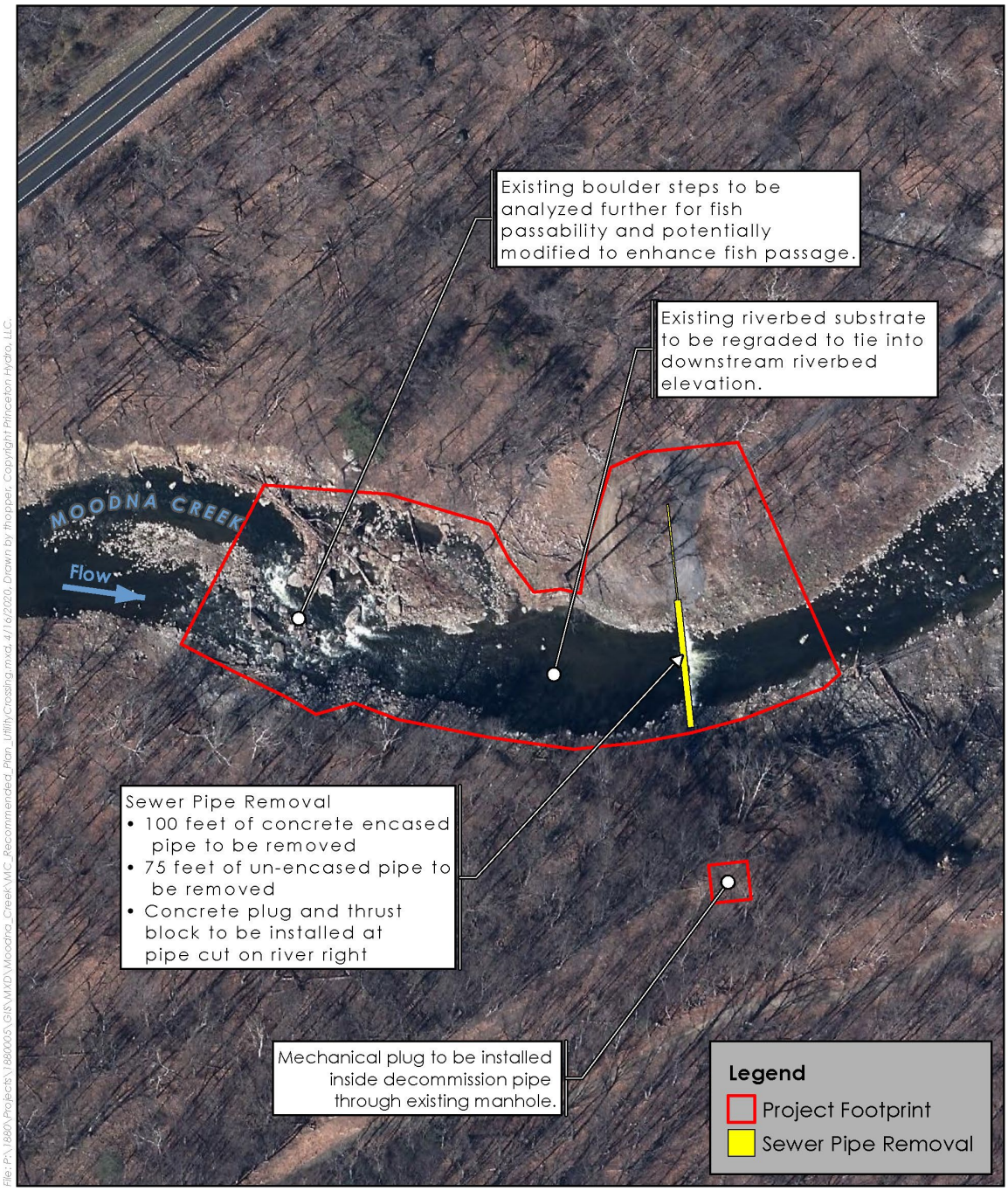
For AOP 2, Firth Cliff Dam, the recommended plan (Figure 2) entails demolition and removal of the approximately 9-foot high, 180-foot wide, concrete spillway to the full vertical extent. This removal would result in the reconnection of 0.6 miles of river habitat. Concrete debris would be broken up and re-used on-site for channel and bank stabilization. The abutments attached to the valley wall on river left and the building foundations on river right may be left in place pending observations from a more detailed site investigation. Approximately 1,300 feet upstream of the dam, a pronounced boulder riffle indicates the upstream limit of the impoundment and would serve as a natural grade control that would limit the upstream extent of any channel adjustment in the event of dam removal. The well-vegetated banks and narrow valley walls indicate little potential for lateral channel adjustment or meandering.

AOP 3 - Dam Breach Longitude: 41.433025 Latitude: -74.054576

For AOP 3, Orr's Mill Dam, the recommended plan (Figure 3) entails breaking through the approximately 10-foot high, 100-foot wide spillway concrete crest and underlying cobble/boulder-filled timber crib structure, removing the vertical extent of a central portion of the spillway, and leaving the side portions in place. This removal would result in the reconnection of 6 miles of river habitat. Concrete debris would be broken up and re-used on-site for channel and bank stabilization. The ends of the spillway could be stabilized at their base with placed boulders, while the upper portions could be left open for visibility of the spillway's interior construction. This plan effectively removes the dam, but retains a portion of the spillway in place as a physical marker of the former dam; however, similar to current conditions, the remaining spillway would be subject to slow deterioration due to weathering and river conditions (freeze/thaw, ice floes, scour, abrasion, debris impact, etc.).

The pronounced accumulation of boulders behind the dam, which may shift in position during construction and after dam breach, has the potential to form a steep (5% slope) boulder cascade or reveal natural bedrock falls (although no historic record of a natural waterfall has been identified). However, the more likely, and conservative, estimate for a potential post-dam breach equilibrium slope extends approximately 325 feet upstream of the spillway crest at 1.6 percent resulting in a cobble-boulder riffle. Approximately 900 feet upstream of the dam, a large boulder riffle exists that would likely serve as grade control if channel adjustment extends to that point.

The re-formation of a cobble-boulder riffle would likely restore passage to a range of fish and other aquatic organisms in Moodna Creek. However, the emergence of a bedrock falls or formation of a steep boulder cascade may not provide full passage for fish; and in this case, some active re-grading and re-positioning of boulders may be recommended to facilitate fish passage while maintaining grade control. If in situ boulders are insufficient to maintain a stable grade change and/or fish passage conditions, the recommended plan also includes supplementing this reach with large boulders. The small cobble dominated tributary which flows under a residence and joins Moodna Creek approximately 250 feet upstream of the dam, may require grade control to prevent undermining of the over-lying house.



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NOTES:
1. 2016 orthoimagery obtained from the New York State GIS Clearinghouse: gis.ny.gov

0 50 100 Feet

Map Projection: NAD 1983 StatePlane New York East FIPS 3101 Feet

RECOMMENDED PLAN

HUDSON RIVER HABITAT RESTORATION
MOODNA CREEK - AOP 1: UTILITY CROSSING
TOWN OF NEW WINDSOR
ORANGE COUNTY, NEW YORK

US Army Corps of Engineers®
New York District

Figure 1: Recommended Plan at Moodna Creek, AOP 1 – Utility Crossing in New Windsor, NY.

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NOTES:
1. 2016 orthoimagery obtained from the New York State GIS Clearinghouse: gis.ny.gov

0 50 100 Feet

Map Projection: NAD 1983 StatePlane New York East FIPS 3101 Feet

RECOMMENDED PLAN

HUDSON RIVER HABITAT RESTORATION
MOODNA CREEK - AOP 2: FIRTH CLIFF DAM
TOWN OF CORNWALL
ORANGE COUNTY, NEW YORK

US Army Corps of Engineers®
New York District

Figure 2: Recommended Plan at Moodna Creek, AOP 2 - Firth Cliff Dam in Cornwall,

NY.

NOTES:
1. 2016 orthoimagery obtained from the New York State GIS Clearinghouse: gis.ny.gov

0 60 120 Feet

Map Projection: NAD 1983 StatePlane New York East FIPS 3101 Feet

RECOMMENDED PLAN

HUDSON RIVER HABITAT RESTORATION
MOODNA CREEK - AOP 3: ORR'S MILL DAM
TOWN OF CORNWALL
ORANGE COUNTY, NEW YORK

US Army Corps of Engineers®
New York District

Figure 3: Recommended Plan at Moodna Creek, AOP 3 – Orr's Mill Dam in Cornwall, NY.

Federal Interagency Comment Form

PROJECT: U. S. Army Corps of Engineers New York District
Hudson River Habitat Restoration, Moodna Creek

APPL. NUMBER: N/A

Commenting Agency: NOAA Fisheries HCD

Project Manager: Matthew Voisine

Waterway: Moodna Creek, tributary of the Hudson River

Activity: Removal of a sewer line utility crossing, removal of Firth Cliff Dam spillway, and breach of Orr's Mill Dam spillway to restore fish passage.

ESSENTIAL FISH HABITAT (EFH)

We fully support the Hudson River Habitat Restoration Ecosystem Restoration Plan, which includes the removal of fish barriers on Moodna Creek to reconnect habitat to the Hudson River and restore water depths to pre-dam conditions. We provide the following EFH conservation recommendations for activities that may adversely affect EFH.

ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS: (Note: EFH CRs require a response from the federal action agency within 30 days of receipt or 10 days before a permit is issued if CRs are not included as a special condition of the permit. In addition, a distinct and further EFH consultation must be reinitiated pursuant to 50 CRF 600.920 (j) if new information becomes available, or if the project is revised in such a manner that affects the basis for the above EFH determination or EFH conservation recommendations.)

1. Avoid in-water activities between March 1 and June 30 to minimize adverse effects to anadromous fish migration.

Depending on the sequencing of project activities (i.e., upstream to downstream or vice versa), this EFH CR may be modified following coordination with us.

FISH AND WILDLIFE COORDINATION ACT COMMENTS

See comments above.

ENDANGERED SPECIES

Threatened or endangered species under the jurisdiction of NMFS may be present in the project area. The federal action agency will be responsible for determining whether the proposed action may affect listed species. If they determine that the proposed action may affect a listed species, they should submit their determination of effects, along with justification and a request for concurrence to the attention of the Section 7 Coordinator, NMFS, Greater Atlantic Regional Fisheries Office, Protected Resources Division, 55 Great Republic Drive, Gloucester, MA 01930 or nmfs.gar.esa.section7@noaa.gov. If you have any questions regarding these comments, please contact Peter Johnsen (978-282-8416; Peter.B.Johnsen@noaa.gov).

Other

Provide a copy of permit when issued.

SIGNATURE: _____ DATE: 10/1/20