Draft Compatibility Determination

Title

Draft Compatibility Determination for Recreational Shellfishing at Congressman Lester Wolff Oyster Bay National Wildlife Refuge

Refuge Use Category

Fishing

Refuge Use Type(s)

Shellfishing (non-commercial)

Refuge

Congressman Lester Wolff Oyster Bay National Wildlife Refuge

Refuge Purpose(s) and Establishing and Acquisition Authority

"…for use as an inviolate sanctuary, or for a for migratory birds…" (Migratory Bird Conservation Act, as amended [16 U.S.C. 715-715d, 715e, 715f-715r]).

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (Pub. L. 105-57; 111 Stat. 1252).

Description of Use

Is this an existing use?

Yes, recreational shellfishing has been conducted in Oyster Bay and Cold Spring Harbor estuary complex (estuary) prior to and since the establishment of the Congressman Lester Wolff Oyster Bay National Wildlife Refuge (refuge) in 1968. Recreational shellfishing occurred after the establishment of the refuge, as the Town of Oyster Bay (Town) reserved the rights to shellfish-related activities at the time of donation (see "Why is this use being reevaluated" for details).

The U.S. Fish and Wildlife Service (FWS) is reevaluating its 1994 compatibility determination (CD) for *Aquaculture/Shellfish Harvest* and replacing it with two CDs for the refuge. This CD evaluates recreational shellfishing. A separate CD evaluates commercial shellfishing and aquaculture.

This use is being reevaluated pursuant to the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee; Refuge Administration Act), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Refuge Improvement Act) (Public Law 105-57) (which mandates that FWS reevaluate each existing priority public use at least every fifteen years), FWS regulations and policy, and as a result of a legal settlement in *North Oyster Bay Baymen's Ass'n v. U.S. Fish and Wildlife Service, et al.*, C.A. No. CV-23-3155 (E.D.N.Y.) See 16 U.S.C. § 668dd(d)(3)(B)(vii); 50 C.F.R. § 26.41(a)(15).

Furthermore, the reevaluation of recreational shellfishing aligns with Secretarial Order (S.O.) 3347, Conservation Stewardship and Outdoor Recreation, S.O. 3447, Expanding Hunting and Fishing Access, Removing Unnecessary Barriers, and Ensuring Consistency Across the Department of Interior Lands and Waters, and S.O. 3356, Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories.

The 1994 CD concluded shellfishing was compatible since it was considered outside the FWS' jurisdiction based on deed language from the Town of Oyster Bay (Town). The recent legal settlement involved a lawsuit by the North Oyster Bay Baymen's Association and Center for Food Safety on April 26, 2023, which alleged that FWS violated the Refuge Administration Act by failing to reevaluate the compatibility of shellfishing in the refuge and failing to require special use permits for commercial activities in the refuge. The lawsuit was settled on April 29, 2024, requiring that FWS "issue a final CD evaluating whether use of refuge lands and waters for shellfish harvesting, including via hydraulic and mechanical dredging, is compatible with the refuge's purposes, as defined by federal law and in the Deed" from the Town. The FWS is reevaluating shellfishing by distinguishing it as two separate uses—recreational and commercial (including aquaculture)—due to differences in harvest methods, tools, environmental impacts, locations, and seasonal timing. Recreational shellfishing is considered a wildlife-dependent, priority public use of the refuge, whereas commercial shellfishing is not. As a result, each use is subject to a different evaluation standard (50 CFR 25 and 29).

What is the use?

This CD evaluates the priority public use of recreational shellfish harvesting within the refuge boundary. This CD specifically addresses recreational harvesting of shellfish, as defined by New York State (6 CRR-NY 47.1), comprised of bivalves regulated by the Town and New York State (State) that may occur in the refuge: hard clams or quahogs (*Mercenaria mercenaria*), soft shell clams or steamers (*Mya arenaria*), Eastern oysters (*Crassostrea virginica*), blue mussels (*Mytilus edulis*), bank or ribbed mussels (*Geukensia demissa*), and bay scallops (*Argopecten irradians*). All shellfishing activities must comply with applicable Town, State and federal regulations, codes, and requirements and any additional requirements or stipulations that are deemed necessary by FWS for the use to be compatible.

Recreational fishing is a priority public use of the National Wildlife Refuge System under the Refuge Administration Act, as amended by the Refuge Improvement Act. The FWS considers recreational shellfishing, as traditionally practiced in coastal areas, to be a type of recreational fishing and, therefore, a wildlife-dependent priority public use.

Is the use a priority public use?

Yes

Where would the use be conducted?

In the following paragraphs, we provide a description of areas where shellfishing is allowed or restricted by NYDEC and the Town.

In New York, NYDEC classifies shellfish harvest areas based on water quality sampling to determine whether shellfish harvest can occur safely for human consumption. Certified waters are those deemed to be safe for shellfish harvesting for human consumption, whereas shellfish harvesting is prohibited in uncertified waters. Within the refuge, NYDEC has classified areas as uncertified waters, seasonally closed waters, and certified waters. These areas are updated annually and can be viewed on the NYDEC's website (https://dec.ny.gov/things-to-do/shellfishing/closures).

The estuary spans approximately 6,000 acres. The refuge boundary encompasses more than 3,000 acres of bay bottom and surface waters up to the mean high tide line within the estuary. The Town and the NYDEC regulate shellfishing activities and determine where shellfishing may occur within the estuary. Recreational shellfishing areas on the refuge are identified as those areas within certified waters that are not otherwise restricted.

The Town has designated management areas that are defined in the Town Code (196-4) as "an area designated or set aside by the Town Board for the conservation, preservation, protection, seeding, rehabilitation and/or growth of shellfish, or to promote the health, safety, and welfare of the residents…" The Town established 557 acres of management areas within the estuary, designated as either a Shellfish Sanctuary Area (SSA, 185 acres) or Marine Management Area (MMA, 372 acres). Within the refuge, an estimated 151 acres of SSAs and 342 acres of MMAs overlay with the refuge. These areas are summarized in Table 1. Marine Management Areas could allow for eventual harvest when stocks are deemed sufficient as prescribed in the management and monitoring program developed by the Town in collaboration with FWS, provided they are located within a certified water body, whereas the Town would prohibit harvest in SSAs. Most of the refuge (approximately 2,740 acres) does not overlay with one of these Town MMAs or SSAs.

Table 1. Summary of the Town of Oyster Bay's Marine Management Areas and Shellfish Sanctuary Areas within the Refuge as of January 2026 (acreages are

approximate and may change with Town regulatory changes and shifting habitat)

Town of Oyster Bay Designated Areas	Description	Harvest Status	Approximate Total Acres within Refuge
Marine Management Areas	Areas set aside for resource management activities including seeding clams and oysters, planting of adult shellfish and other restoration actions.	Harvest Prohibited, Potential to consider future harvesting	342
Shellfish Sanctuary Areas	Sanctuary areas where shellfish can thrive and spawn without harvesting or other disturbance	Harvest Prohibited	151
Waters not designated as MMA or SSA	Remaining acres of waters in the refuge that do not fall in Town-designated management/sanctuary areas	230 acres open to harvest 2,394 acres open water acres, not accessible for recreational harvest by Town-authorized fishing methods	2,624

Recreational shellfishing takes place on tidal flats or in shallow water outside of salt marsh habitats. The Town does not allow recreational shellfishing by boat. Harvest of shellfish can occur in certified waters that are not otherwise restricted with an MMA or SSA designation. Accounting for the management areas and uncertified waters, FWS estimates that approximately 230 acres of the refuge's more than 3,000 acres could be available for recreational shellfish harvesting. Twenty of these acres are subject to seasonal closures as determined by the NYDEC. The areas open to harvest may change as the Town adjusts its management areas or opens MMAs for harvest, or the NYDEC adjusts closure areas. Additionally, FWS will collaborate with the Town to determine if additional spatial or seasonal restrictions should be implemented for the protection of shellfish, migratory birds, or other species.

When would the use be conducted?

As of January 2026, the Town allows harvest of shellfish year-round between sunrise and sunset only. Harvest season durations and extents are reevaluated periodically and year-round harvest may not be allowed every year across refuge waters. Current information on harvest season length and duration is found on the Town's website and within Town Code. The refuge will allow the use in coordination with the Town and in alignment with the Town designated seasons and daily hours.

How would the use be conducted?

The FWS will collaborate with the Town to inform management of shellfishing, including but not limited to coordination and sharing of information about harvest areas, landings, species targeted, enforcement and time of year.

Under Section 196-7 of the Town's Code on Shellfishing, recreational harvesters must be residents of the Town who have secured a personal shellfish harvest permit from the Town Clerk. Shellfish permits are valid from July 1 of the year of issuance to the last day of June of the following year. The Town Code does not establish a limit on the number of personal permits that can be issued annually; the Town issued 313 in the 2023-2024 permit year, 337 in the 2024-2025 permit year, and as of October 2025, 302 permits for the 2025-2026 permit year. These permits are for the entirety of Town waters and as such, the number of permittees harvesting within the refuge may be fewer.

Personal permits allow a maximum harvest of ¼ standard bushel per day of combined shellfish species. Bushels are a unit of volume and could contain variable numbers of shellfish based on the size of each individual shellfish. For example, ¼ bushel of littleneck sized hard clams (~2" wide) is approximately 100 clams, while chowder sized hard clams (~4") would be approximately 50 clams. Harvest limits apply to the totality of Town waters for all species of shellfish, not just those waters within the refuge.

Recreational harvesting can include the use of hands, knives, tongs, rakes, forks, hoes and shovels. Methods of harvest vary based on target species and may be influenced by depth of water and bottom substrates. Harvest gear is restricted to use of hands and hand tool harvest techniques without the use of power. The Town stipulates gear restrictions according to species and the refuge will align with those restrictions. Gear restrictions are set forth in section 196-19 of the Town's Code concerning Shellfishing and Marine Life.

Why is this use being proposed or reevaluated?

In the 1968 deed that established the refuge by donation from the Town, the Town reserved the right to issue leases, agreements and permits for shellfishing. The deed states that "the conveyance of such lands shall be subject to existing leases and agreements including without limiting leases for piers and shellfish, renewals of leases and agreements covering same, permits for taking shellfish or other products

therefrom… provided that…such leases, agreements, renewals, and permits are not incompatible with the use of such lands for a migratory bird refuge, and fish and wildlife purposes." In 1994, FWS issued a single CD for the uses of aquaculture and commercial and recreational shellfishing. These uses were determined to be compatible, with the justification that the agency lacked jurisdiction to regulate the shellfish program, citing deed language that reserved shellfish-related rights to the Town.

As reviewed in a previous section, this CD is being issued pursuant to a 2024 settlement agreement for a lawsuit filed against FWS in 2023. The settlement requires that FWS issue a final CD evaluating whether use of refuge lands and waters for shellfish harvesting, including via hydraulic and mechanical dredging, is compatible with the refuge's purposes, as defined by federal law and in the Deed. To satisfy the settlement agreement, FWS is evaluating shellfishing in two separate CDs: recreational shellfishing in this document and commercial shellfishing and aquaculture in a separate CD.

Availability of Resources

To comply with the Refuge Recreation Act (Public Law 87-714), the Refuge Manager must determine whether sufficient resources—financial, staffing, facilities, or other infrastructure—are available to support the proposed use without materially interfering with the refuge purpose(s) or the mission of the National Wildlife Refuge System. This determination should be informed by a review of current capacity and, where applicable, the refuge's Comprehensive Conservation Plan (CCP).

Assessment of current resources and capacity

Table 2. Costs to Administer and Manage Recreational Shellfishing

Category and Itemization	One-time Cost	Recurring Annual Expenses
Coordination with Town and partners (staff time to coordinate on management and monitoring program); produce maps; respond to public requests	$14,750	$2,775
Supplies, equipment, gas	$2,500	$1,500
Monitoring of potential impacts to migratory birds (breeding and migrating) and habitats (staff time and supplies)	$5,700	$3,000

Total expenses	**$20,700**	**$7,275**

Refuge support of recreational shellfishing occurs through the use of existing refuge staff, funding, equipment, and facilities (Table 2). Refuge staff are needed to administer activities such as coordination with the Town, as well as to ensure that the stipulations are met, and to monitor and evaluate impacts of the use. We estimate that these activities require 248 hours for two refuge employees during the initial phase and 72 hours recurring annually. The estimates in Table 2 were developed using current (FY 2026) salary costs along with anticipated time commitments for the Refuge Manager and the biologist to calculate the totals. Costs are anticipated to increase over time and the annual recurring costs may change.

The Town is responsible for administering nearly all aspects of the recreational shellfishing program that occurs in refuge waters, in compliance with NYDEC requirements and in accordance with refuge stipulations described below, which include coordination with refuge staff. Should the Town fail to have sufficient funds or staff to administer the recreational shellfish program, the refuge does not have the means to administer the program. The Town's responsibilities include:

- Administration of the personal shellfishing permit program.
- Determining where shellfishing is allowed.
- Determining allowable times for shellfishing.
- Determining harvest limits in coordination with FWS.
- Enforcing State and Town shellfishing regulations.
- Monitoring compliance and shellfishing impacts.

Refuge resources are required to ensure that the Town administers the use in a way that will not materially interfere with or detract from fulfillment of the refuge purpose and the National Wildlife Refuge System mission. The resources needed to administer this use are currently available. Recurring refuge staff time can be expected to include the following:

- Annual consultation with the Town and review of annual reports about the recreational shellfishing program.
- Cooperative effort to work with the Town, and potentially other partners, on conducting monitoring that can inform assessment of impacts to wildlife and ecosystems from shellfishing. This may involve shellfish monitoring; monitoring of migratory birds; and monitoring of potential impacts to habitats and other resources.
- Review of harvest impacts on refuge resources.

Impacts of changes to resources and capacity

The availability of resources and the level of use is subject to change. Resources able to be provided may vary based on current staffing, partner support, funding, or infrastructure conditions. Costs may increase over time including changes in the costs for equipment, salaries, and maintaining facilities. A substantial increase to the number of requests may also create the need for additional resources to administer the use. The Refuge Manager will use sound professional judgment in evaluating whether the refuge or its partners can develop, operate, and maintain the use in a compatible manner.

If resource conditions shift such that the refuge can no longer sustain the use in a compatible manner, the Refuge Manager may modify or suspend the use pursuant to 50 C.F.R. § 25.21(E). If it becomes apparent that insufficient resources will be sustained into the long-term, the Refuge Manager may reevaluate the compatibility of the use and discontinue the use if necessary. The public will be notified of any changes to refuge uses, including modification or suspension, reevaluation of compatibility and/or discontinuing of refuge uses.

Refuge staff will consult and communicate with the Town in the event that resource conditions are compromising the ability of the refuge to sustain compatible recreational shellfishing.

Anticipated Impacts of the Use

Historical and Ecological Context

This section provides a historical and ecological setting of the estuary, emphasizing the importance of the site to those living nearby and to the species and habitats found within the estuary. This section also examines ongoing conservation challenges within the watershed and highlights local efforts aimed at improving conditions for fish, wildlife, habitats, and human use. This section provides an overview of persistent conservation challenges within the watershed and examines ongoing management responses aimed at enhancing ecological integrity and resilience. These efforts are intended to improve habitat quality and ecosystem function for fish and wildlife, while also supporting sustainable human use, such as recreational and commercial shellfishing and aquaculture.

History of Land Use

The estuary has a long history of shellfish harvesting dating back to the indigenous communities that called this area home before the area was settled by Europeans between 1653 and 1665 (Fuss & O'Neill 2009). Shellfish harvest was achieved in shallow water using short rakes and with modifications to gear over time with the development of hand tongs, basket rakes, bull rakes, mechanical tongs, and finally hydraulic/suction dredges resulting in increased harvest landings (MacKenzie et al. 2002). Prior to World War II, boats used for harvesting were propelled by oars or sails, which were eventually replaced with gas-powered motors.

Ecological Designations

Several designations highlight the importance of the estuary for fish, birds and wildlife.

Through its Coastal Management Program, the State of New York considers Oyster Bay to be a Significant Coastal Fish and Wildlife Habitat (New York State Department of State (NYSDOS) 2005a, 2005b). The estuary is considered an important waterfowl wintering area from November through March for greater (*Aythya marila*) and lesser scaup (*Aythya affinis*), American black duck (*Anas rubripes*), canvasback (*Aythya valisineria*), common goldeneye (*Bucephala clangula*), and a number of other waterfowl species based on mid-winter aerial surveys conducted from 1986 to 1996 and 1998 to 1999 (NYSDOS 2005b). The estuary is an important area for marine finfish and shellfish, including several species that are identified by the National Oceanic and Atmospheric Administration (NOAA) Fisheries Essential Fish Habitat (EFH) Mapper. Oyster Bay, including Mill Neck Creek, is a recognized EFH that serves as a nursery and habitat for 29 species including scup (*Stenotomus chrysops*), bluefish (*Pomatomus saltatrix*), Atlantic silverside (*Menidia menidia*), Atlantic menhaden (*Brevoortia tyrannus*), winter flounder, and blackfish (*Tautoga onitis*) (EFH Mapper).
Oyster Bay is also identified as a State Priority Important Bird Area (IBA) by the National Audubon Society (National Audubon Society 2025). The estuary is located within the Long Island Sound watershed, a designated "Estuary of National Significance." National estuaries are established to protect and restore water quality and ecological integrity.

Habitats and Wildlife

Benthic (bay bottom) communities perform important ecological functions including cycling of nutrients, providing structure and habitat for other organisms, supporting planktonic food web interactions, and creating prey for predators such as birds and bottom-dwelling fishes (Flanagan et al. 2019). Among the benthic organisms, oysters, clams and other bivalves are noteworthy in their ecological contributions. As reviewed in Coen et al. (2007), Gobler et al. (2022), and Long Island Sound Partnership (2018), bivalves serve as "ecosystem engineers" that provide several important ecosystem services. First, oyster reefs and clam beds serve as habitat (Coen et al. 2007), foraging grounds, and food for crabs and other invertebrates, fish, and birds (Long Island Sound Partnership 2018). Second, they perform substantial filtering of bay waters, removing suspended solids, nutrients, and phytoplankton from the water column (Gobler et al. 2022, Coen et al. 2007, Long Island Sound Partnership 2018). When present in sufficient numbers, they can thereby improve water quality and clarity. This can help in controlling harmful algal blooms and facilitate the growth of submerged aquatic vegetation (SAV) (Gobler et al. 2022). Third, oyster reefs can protect shorelines from storms, supporting the growth of tidal marsh and SAV (Long Island Sound Partnership 2018). Finally, they support substantial commercial and recreational fisheries (Long Island Sound Partnership 2018). Over the past 150 years,

bivalve populations have declined across the eastern seaboard including Long Island, and efforts have been underway to restore their populations.

Meadows of eelgrass (*Zostera marina*), historically the most abundant SAV in Long Island Sound, are also an important component of the estuarine systems that have undergone significant declines over the past century. The two historically mapped locations of eelgrass meadows within the estuary are no longer present (Long Island Sound Partnership 2003). Eelgrass meadows create structure, act as a nursery and settlement site for fish and shellfish, and are a food source to numerous estuarine and marine species including waterfowl (Carroll et al. 2008) and green sea turtles (*Chelonia mydas*).

Salt marshes are crucial habitats for fish, birds, aquatic species, and small mammals, providing shelter, food, and nursery grounds (Morgan et al. 2009). Several species of marsh-obligate birds like the saltmarsh sparrow (*Ammospiza caudacuta*), are dependent on salt marshes during the breeding season (Hartley and Weldon 2020). Salt marshes are dominated by salt marsh plants including salt marsh cordgrass (*Spartina alterniflora*), salt hay (*Spartina patens*), saltgrass (*Distichlis spicata*), black grass (*Juncus gerardii*) and saltmarsh bulrush (*Bolboschoenus maritimus*) among other species (USFWS 2006). The salt marshes around the estuary are primarily narrow fringing marshes that benefit the estuary by trapping sediment, reducing the height of waves and other ecological functions (Morgan et al. 2009).

Impact Analysis

The effects of the proposed use to refuge resources and refuge purposes, whether adverse or beneficial, are those that are reasonably foreseeable and have a reasonably close causal relationship to the proposed use of recreational shellfishing. This CD analyzes the environmental consequences on a resource or refuge purpose only when the impacts on that resource could be more than negligible and therefore considered an "affected resource." For example, considerations such as air quality or noise impacts, found to be negligible, are not analyzed in this CD. Impacts from the proposed uses may be negative or positive, depending on the resource or condition considered, be short or long term in duration, and either direct or indirect.

Few scientific studies have been published on the impact of non-mechanized shellfish harvesting on substrate and water quality. Additionally, there are few studies (Cashin Associates, P.C. 2023; 2025; Mueller 2023) on the impacts of shellfish harvesting within the refuge or the estuary complex. We use the best available information on impacts of shellfish harvesting studied and documented in similar habitat and ecosystem types to draw inferences on potential impacts within the refuge. The physical, chemical, and biological impacts of shellfish harvesting, and recreational harvesting specifically, are highly variable depending on many factors (Boese 2002; Heffernan 1999; Mercaldo-Allen and Goldberg 2011; Thrush and Dayton 2002). Impacts vary depending on the organisms considered; for example, some animals can

easily evade harvesting activities and recolonize following disturbance, whereas other, less mobile organisms may be much more sensitive. Impacts also vary depending on the frequency, duration, intensity (number of harvesters, areal extent and depth of harvesting activities), and efficiency of harvest effort; the physical nature of the substrate (bottom); and the types of tools used by the harvesters.

Recreational harvesting can include the use of hands, knives, tongs, rakes, forks, hoes and shovels. The type of implement used depends on the target species. Harvesting can include single events (low intensity) to repetitive (high intensity) excavation of the same location within a short (days to weeks) time period. The level of disturbance changes with the types of tools used by the harvester and the availability of target shellfish.

Shellfish stocks in the bay are low compared to historical conditions (Cashin Associates, P.C. 2023; 2025). If the Town's planned shellfish restoration program is successful and shellfish populations expand, it can be anticipated that recreational shellfishing may increase.

As an aid in understanding, we divide the analysis into different sections before providing an overall synthesis of how this use may affect the refuge's purpose and resources in section 4. Sections are organized as follows:

A. **Physical (section 1), chemical (section 2), and biological (section 3) impacts.** Physical characteristics include the physical structure of the bottom sediment and quantity of particles (turbidity) in the water column. Chemical characteristics include the quantities of nutrients and contaminants in the water column and sediment. Biological characteristics include abundance, condition, diversity, and interactions of fish, wildlife, and plants present within the refuge.

B. **Best available information.** We consider the best available information on impacts studied and documented in the refuge and similar habitat and ecosystem types to draw inferences on potential impacts within the refuge. This information is summarized in "literature review" sections. We then conclude sections 1, 2, and 3 with an analysis of potential impacts of recreational shellfishing within the refuge, drawing from Oyster Bay specific information where available.

C. **Direct vs. indirect impacts.** Direct effects refer to the initial, immediate impacts of a use. Direct effects can lead to chains of indirect effects interacting with each other, such as the effects that shellfish have on water quality (chemical effects) and their predators (biological effects), over both short- and long-time scales (which we distinguish where relevant). We include a separate section on indirect effects of recreational shellfishing, and synthesize both direct and indirect physical, chemical, and biological impacts within section 3.1. This section focuses on impacts most relevant to the purposes for which the refuge was established.

1. Physical Effects

1.1 Literature Review of Physical Effects

Sediment disturbance

A variety of factors including sediment grain size, current characteristics, and site geomorphology will affect the severity and impacts of the use on turbidity and sedimentation (Coen 1995; LaSalle 1990). The physical actions of shellfishing may loosen and turn over bottom sediment, causing turbidity. Given that oysters, mussels, and scallops live above the sediment surface and adult (harvestable) hard clams generally reside in the top two inches of sediment (Doering 1982), any sediment disturbance from recreational harvesting is expected to be shallow. Adult soft shell clams reside in the sediment up to depths of 30cm (Abraham and Dillon 1986). Sediment disturbance from harvesting of soft shell clams is expected to be greater than from harvest of the other species due to their typical residence depth. Depending on the extent and duration of the disturbance, suspended sediments may reduce dissolved oxygen, light penetration, and visibility, as well as interfere with respiration and filter-feeding, which collectively could adversely affect individual organisms and populations of phytoplankton, vegetation, fish (including eggs, larvae, juvenile and adult) and bottom-dwelling organisms (Coen 1995). Sedimentation occurs as suspended sediments or sediment plumes are transported by currents away from the area of disturbance and fall to the seafloor. Suspended sediments and accompanying sedimentation may smother or otherwise inhibit bottom-dwelling organisms, especially sensitive eggs and larvae (Nightingale and Simenstad 2001; Wilber and Clarke 2001) and stationary species.

Changes to physical structure of substrate

Abrasion and excavation of the seabed (including oyster beds, where present) may change the physical structure of the substrate, which constitutes habitat for a variety of organisms (Mercaldo-Allen and Goldberg 2011). Alteration of sediment and vertical structure may negatively impact organisms through the loss of suitable habitat for larval settlement, foraging habitat, and removal of fauna (Dernie et al. 2003). Additionally, short- and long-term impacts to soft bottom substrates can lead to disturbance of microbial and microalgal communities and resuspend sediments leading to mixing of sediment grain sizes (Dernie et al. 2003).

Trampling of the substrate by recreational harvesters may compact the sediment, altering its porosity and penetrability. Walking on intertidal mudflats can impact organisms by crushing or displacing them, resulting in competition and predation, and by destroying burrows and disrupting benthic biofilm (Rossi et al. 2007). On the other hand, harvesting activities on otherwise relatively homogenous tidal flats might create a more complex microtopography by providing structural diversity.

1.2 Analysis of Physical Impacts within the Refuge

Evaluation of uses for compatibility are largely dependent on the intensity of the use. For example, the activities of a single recreational harvester would be anticipated to have a minimal impact on the physical substrate, given the use of hand equipment in a localized area and low daily Town harvest limits, whereas a large number of harvesters could have a greater cumulative impact.

Although the Town of Oyster Bay issues around 300 recreational permits annually, the number of individuals who would potentially engage in recreational shellfishing within the refuge is anticipated to be much lower as those permits issued provide access to significantly more harvest areas owned by the Town outside of the refuge. The tidal areas available within the refuge are less than half of the total area within the estuary where recreational shellfishing could occur based on the available habitat and State and local regulations. During a 2023 field investigation (September-October), recreational harvesters were not observed using the refuge (Town of Oyster Bay, "Personal Communication" October 2, 2025, Email). The FWS has identified several limitations to access for recreational shellfishing within the refuge that are beyond FWS authority; these include limited public access points where private land abuts the refuge, limited habitat appropriate for shellfish harvesting, and areas located within uncertified waters (i.e., areas where the State prohibits shellfish harvest). As a result of these limits on public access within the refuge, FWS anticipates that the number of individuals who engage in recreational shellfishing on the refuge is relatively low and will have minimal impacts.

Organisms of the intertidal zone (and adjacent areas) are adapted to dynamic conditions and generally can tolerate some degree of disturbance (Hinchey et al. 2006, Kaiser et al. 2001). High energy systems are expected to recover more quickly from disturbance than low energy systems, recovering in a matter of days vs. months in the case of shellfish dredging (Mercaldo-Allen and Goldberg 2011). Oyster Bay is considered a low to moderate energy system (Mueller 2023). The FWS concludes based on currently available information that recreational shellfishing on the refuge likely will have minimal impacts (whether positive or negative) on the refuge's physical structure, if it is conducted according to the stipulations provided in this compatibility determination. If subsequent information indicates that recreational harvesting is having more than negligible impacts, the compatibility of this use may require reevaluation.

2. Chemical Effects

2.1 Literature Review of Chemical Effects

In addition to physical effects, sediment disturbance in estuarine environments can also be associated with chemical effects, including remobilization of nutrients from the bay bottom to the water column, increased local hypoxia (oxygen depletion) resulting from increased oxygen demand from algae utilizing elevated nutrients, and resuspension of contaminated sediments (Coen 1995; LaSalle 1990; Roberts 2012). In

normal estuarine and intertidal environments, wind, waves, boat traffic, channel dredging and storm events influence the resuspension of sediments (Stokesbury et al. 2011).

2.2 Analysis of Chemical Impacts within the Refuge

Based on the understanding of when and where the recreational shellfish harvesting will occur, additional disturbance in the intertidal zone is not anticipated to result in major sediment disturbance and nutrient cycling beyond those seen from the other natural and anthropogenic activities. Shellfishing is only permitted to occur within certified waters where we would anticipate few hydrocarbons, heavy metals or industrial chemicals to be present.

3. Biological Effects

3.1 Literature Review of Biological Effects

Shellfish harvesting may have short term, long term, direct and indirect effects on organisms. Indirect effects may be especially relevant for species of concern, such as wintering waterfowl, but are more difficult to assess because of the complexity of marine food webs and the variety of factors other than shellfishing that simultaneously affect marine organisms.

Direct biological effects – crushing, burying, trampling, or exposure of biota

Shellfish harvesting and associated human trampling can affect benthic communities by directly injuring or displacing organisms in the path of the gear and footsteps. Injuries or displacement, even if not fatal by themselves, may attract predators that can more easily access the affected prey (Logan 2005). Organisms that live within and on top of the sediment will be most vulnerable, especially less mobile and less robust species and life stages, including eggs. Munari et al. (2006) found that manual (non-mechanical) raking resulted in changes to the macrobenthic community (which consisted largely of polychaete worms) but benthic organisms were able to recolonize raked areas relatively rapidly. Use of rakes to harvest shellfish beds within eelgrass has been found to cause a loss in eelgrass biomass, with the severity depending on the type of rake used and potentially exacerbated by trampling (McLaughlin et al. 2007; Peterson et al. 1987). Recovery of eelgrass beds may take more than five years following commercial shellfish dredging (Cole 2016; Neckles et al. 2005; Peterson et al. 1987); it is not certain if recreational raking would have such long-term impacts. Trampling of mudflats has been found to adversely affect species such as adult bivalves (Rossi et al. 2007) and fiddler crabs (Park et al. 2024).

Direct biological effects – removal of targeted shellfish and non-targeted bycatch

Legal recreational shellfishing will result in a localized reduction in the population of large adult shellfish in the immediate area of harvesting. The significance and duration of such a reduction is complicated to assess, depending on several

important factors. One factor is the intensity of shellfishing pressure, as described previously. In situations where local shellfish density is high such that individual shellfish are competing with each other for space and resources, then removal of large shellfish could benefit remaining shellfish and future settling shellfish that can take advantage of the newly available resources (Mercaldo-Allen and Goldberg 2011). The ability of larval shellfish to recolonize an area also depends on factors such as predation pressure by crabs and other predators.

Bycatch refers to the unintentional capture of organisms during a harvest practice targeted at other species. Although bycatch may be significant for certain types of commercial shellfishing harvest, it is anticipated to be minor for recreational shellfishing that employs handheld rakes or other tools where bycatch can be easily returned to the bay. Fish and other mobile organisms should be able to easily evade hand tools, although more sessile and delicate organisms could be injured during the capture process (based on inference from impacts of shellfish dredging, reviewed by Mercaldo-Allen and Goldberg 2011).

Direct biological effects - disturbance of birds

Many shorebirds that nest, migrate, or overwinter in the United States are in decline and are of conservation concern due to threats and pressures they experience throughout their annual cycle. Since 1970, shorebird abundance across North America has declined by 37% (Rosenberg et al. 2019), and those declines are accelerating over time (Smith et al. 2023). Human disturbance has been identified as a major threat and a key mortality source for shorebirds, especially in the Northeastern U.S. (AFSI 2015; NABCI 2022). Disturbance can be defined as "a human activity that causes an individual or group of shorebirds to alter their normal behavior, leading to an additional energy expenditure by the birds. Disturbance disrupts, and can prevent, shorebirds from effectively using important habitats and from conducting the activities of their annual cycle that would occur in the absence of humans (Burger et al. 2004). Productivity and survival rates may also be reduced" (Mengak and Dayer 2020). Human disturbance can be caused by both intentional and unintentional actions, including recreational shellfishing activities, and disturbance can impact shorebirds throughout the entire annual cycle. During the breeding season, disturbance can affect how shorebirds use habitat, as well as their reproductive success and survival. Human disturbance has been found to exclude shorebirds from habitat they would otherwise use for nesting and to cause adults to incubate or attend their nests less frequently, which can result in reproductive failure when nests are left unprotected from temperature fluctuations or predators (Lafferty et al. 2006; Sabine et al. 2008). Additionally, human activity can cause direct mortality of adults, chicks and eggs, such as trampling (Melvin et al. 1994; Ruhlen et al. 2003; Schulte and Simons 2015).

Disturbance during the non-breeding season, which involves a period of migration,

can also have significant impacts on the survival and fitness of shorebirds. Migration is an energetically demanding activity that requires sufficient food resources and stopover sites where birds can rest and forage, and many such stopover sites occur in the Northeastern U.S. (Colwell 2010; Linscott and Senner 2021). Disturbance can cause shorebirds to fly away, displace them from important habitats, and reduce their foraging time and feeding rates (Burger et al. 2004; Burger and Gochfeld 1991; Burger and Niles 2014; Navedo et al. 2019; Pfister et al. 1992). The cumulative result of these impacts can be a severe energetic cost for individual birds, such as reduced body mass, and can lead to lower annual survival rates of individuals at disturbed sites (Gibson et al. 2018; Rogers et al. 2006). When extrinsic factors, such as disturbance, are experienced by shorebirds during the non-breeding season, their ability to reproduce during the breeding season can be influenced (Weithman et al. 2017).

Indirect biological effects of shellfishing

The direct physical, chemical, and biological impacts of recreational harvesting described previously – such as abrasion of sediments and removal, injury and disturbance of organisms – can lead to a complex cascade of indirect biological effects that may be adverse, neutral, or beneficial, depending on the species or ecological function considered. This section focuses on research and literature relevant to potential indirect biological impacts anticipated to affect refuge resources.

Turbidity, sedimentation, and alteration of vertical structure caused by recreational shellfish harvesting could render areas less hospitable for some benthic organisms including shellfish, crustaceans and other invertebrates, and bottom-dwelling fish. For example, Kaiser et al. (2001) found that, over the short-term, hand raking for the cockle (a European bivalve) increased damage rates to small cockles and adversely affected the benthic community. Communities recovered within a year, and the authors noted that recovery rates are highly variable depending on the sediment type and harvest practices evaluated. Logan (2005) found that the abundance of an amphipod (a type benthic invertebrate) was lower in plots subjected to clam digging than in undisturbed plots. However, hand-raking studies have not always identified significant biological effects. MacKenzie & Pikanowski (2004) did not find appreciable differences among five different invertebrate taxa between plots raked by hand for hard clams and unraked control plots in the shallow sandy substrate they studied.

Predators may be adversely or positively affected by shellfishing depending on the prey species, harvest methods, and timescale considered (Hinchey Malloy et al. 2006, Logan 2005). Shellfishing activities that disturb the sediment and injure or expose benthic organisms in the short-term may increase efficiency of predators such as fish, therefore having a positive effect on the predators. On the other hand, turbidity may have an adverse impact by impairing hunting efficiency of predators in addition to impeding respiration. If collective physical, chemical, and biological effects were significant enough to alter plant and prey populations over a wide area over the long

term, herbivore and predator populations and dynamics could be expected to be affected as well. Affected species could include waterfowl that feed on aquatic vegetation or shellfish, shorebirds that feed on invertebrates in the intertidal zone, fish-eating waterbirds, sea turtles, and predatory fish. In Europe, for example, overharvesting of shellfish has been associated with a decline in populations of the Eurasian oystercatcher, a species of shorebird (Verhulst et al. 2004). All of these changes might result in reduced biodiversity, altered community structure, and other ecosystem effects (Alves et al. 2003).

3.2 Analysis of Biological Impacts within the Refuge

Biological impacts from recreational shellfishing are variable. Within the context of the refuge system mission and conservation of wildlife and their habitats, the impacts from the proposed use are anticipated to be minor and both negative and positive. Additionally, the use is not expected to materially detract from the refuge purpose – providing wintering waterfowl habitat – given the minor effects on habitat and the seasonal timing of the use. Within Oyster Bay, several important factors were considered: the historical presence and gradual decline of shellfish populations; the cumulative impacts of development on the watershed; ongoing water quality issues, including elevated bacteria and nutrient levels; and the scope of permitted recreational shellfishing.

Shorebirds have not been detected breeding on adjacent lands in recent decades (Sophia Brown, “Personal Communication on NYDEC Annual Piping Plover Nesting Data,” August 20, 2025, Email) moderate numbers of shorebirds may migrate through in the spring and fall. As with most impacts, the magnitude of disturbance can be expected to depend on the number of recreational harvesters, the length of time they spend harvesting, and their proximity to shorebird habitat. Observations at Monomoy National Wildlife Refuge in Chatham, Massachusetts, indicated that clam harvesters posed less of a disturbance to shorebirds than others using the area; furthermore, shorebirds appeared to be attracted to areas where shellfish harvesting had recently occurred, potentially due to increased feeding opportunities on otherwise buried prey items (Koch 2010; Leavitt et al. 2010). (Note that these observations apply to harvesting of soft shell clams, a species typically buried deeper than hard clams). Current recreational shellfishing disturbance is likely negligible given the low numbers of shellfish harvested but should be monitored if shellfishing and shorebird numbers increase in the future.

Other bird species potentially could be disturbed by recreational shellfishing, but these species are less dependent on the shoreline for foraging than shorebirds and therefore may be less exposed to disturbance. Waterfowl and gulls are present year-round at Oyster Bay, but numbers peak from December to March (USFWS 2006), a time period when little recreational shellfishing occurs. Terns and osprey feed on fish in open waters during warmer months. Disturbance of these species by boating and other water activities likely dwarf any impacts from recreational shellfishing.

In general, a single recreational outing that adheres to Town regulations is unlikely to have lasting short- or long-term impacts on wildlife and habitats within Oyster Bay given the dynamic tides and currents that regularly impact the sediment and the adaptations of marine organisms to this dynamic environment. Based on the available literature, the impacts from recreational shellfishing would have only minor effects on shellfish populations across the refuge and in the estuary, given that such harvesting is primarily confined to shallow water with limited daily harvest allowance of ¼ standard bushel in any one day pursuant to Town regulations.

Moreover, some of the short-term impacts that do occur could be positive for some organisms such as migratory birds who forage in the intertidal and may have increased access to prey that are disturbed from harvest activities (Koch 2010; Leavitt et al. 2010). Additional positive benefits may be realized from the removal of older shellfish resulting in increased availability of habitat for shellfish recruitment (Mercaldo-Allen and Goldberg 2011). However, sustained recreational shellfishing pressure by a larger number of personal permit holders over a relatively small area would have greater impacts. The Town has indicated that recreational shellfishing activity currently is low, especially within the refuge. Currently, FWS lacks extensive data about participation for recreational shellfishing, and there is potential for shellfishing to increase if restoration efforts lead to denser populations of reproducing shellfish or improved public access. Therefore, the Town and FWS will conduct monitoring that can inform assessment of impacts to wildlife and ecosystems from recreational shellfishing. This may involve shellfish monitoring; monitoring of migratory birds; and monitoring of potential impacts to habitats and other resources.

4. Other Visitors and Users

Under the proposed use, the refuge would be open to several other priority public uses including wildlife observation, interpretation, and wildlife photography. Recreational shellfishing may occur within areas of the refuge where other priority uses occur, but FWS does not anticipate significant conflict between user groups. If conflicts arise among user groups, mitigation efforts (e.g., segregating users in space and time) can be implemented to ensure that the proposed action will not have significant impacts to other user groups. This use itself is another way that the refuge can be enjoyed and appreciated and can occur concurrent to other priority public uses, including wildlife observation and photography.

Public Review and Comment

The draft CD will be available for public review and comment for 30 days from April 20, 2026. The public will be made aware of this comment opportunity through the refuge website, refuge social media, the refuge visitor center, and letters to potentially interested parties and elected officials. The State, area Tribes, and Town have been asked to review and comment on the draft compatibility determination. A

hard copy of this document will be posted at the refuge headquarters located at 340 Smith Road, Shirley, NY 11967. It will be available electronically on the refuge website https://www.fws.gov/refuge/congressman-lester-wolff-oyster-bay. Please contact the Refuge Manager if you need the documents in an alternative format. Concerns expressed during the public comment period will be addressed in the final document.

Determination

Is the use compatible?

Yes

Stipulations Necessary to Ensure Compatibility

1. Recreational shellfishing shall align with and adhere to all applicable Town of Oyster Bay, State of New York and federal regulations, permitting, and licensure. The Town will be responsible for enforcing State and Town regulations and will report to the refuge on compliance by harvesters. These requirements include:
    - Recreational shellfish harvesters will obtain all necessary, or applicable, Town and State permits.
    - Method of harvest is restricted to hand and hand tool harvest techniques. The use of mechanical or powered methods is prohibited.
    - Non-target species or undersized shellfish, as defined by the Town, must be returned to the water immediately. Undersized shellfish must be reburied to limit predation and increase survival of shellfish.

2. If monitoring, evaluation, or observations indicate a negative impact on species such as nesting, migrating or overwintering birds, habitat, or ecological integrity, the Refuge Manager will evaluate and take appropriate action in close coordination with the Town to modify the use to ensure compatibility. These modifications may include, but are not limited to, reducing allowable harvest volumes, adjusting number of permits issued, limitations on access to, or use of, specific locations during specified times, designating increases in sanctuary areas or restoration activities, or reductions in or discontinuation of the use.

3. The Town of Oyster Bay will maintain sanctuary areas within the refuge that are restricted from harvesting and will also perform restoration activities which may include, but are not limited to, shellfish seeding and substrate placement. These areas and practices will provide for protected spawner populations and to facilitate positive population trajectories within the bay complex.

4. Recreational shellfishing may only take place on tidal flats or in shallow waters of the refuge in State certified areas and outside of Town designated sanctuary

and restricted harvest marine management areas. Although not anticipated and not appropriate habitat for recreational shellfishing, shellfishing and digging shall not occur in salt marsh habitats, which are sensitive to digging, disturbance, and harvest effort impacts.

Justification

In accordance with its policies, the literature cited above, and the professional judgment of the Refuge Manager, FWS concludes that this use is compatible with the purposes for which the refuge was established and the mission of the National Wildlife Refuge System. As a form of fishing, recreational shellfishing is a priority public use of the National Wildlife Refuge System and has been practiced within Congressman Lester Wolff Oyster Bay National Wildlife Refuge for decades. Recreational shellfishing, conducted in accordance with the stipulations provided here, would not materially interfere with or detract from refuge purposes or the National Wildlife Refuge System mission. Recreational shellfishing would provide Town residents with an opportunity to more thoroughly appreciate the wildlife and natural communities of Congressman Lester Wolff Oyster Bay National Wildlife Refuge. Furthermore, a successful recreational shellfishing program with well-regulated harvests could maintain public support for Town efforts to restore self-sustaining oyster and clam populations that provide numerous benefits to the ecosystems and wildlife of Oyster Bay. The benefits include serving as habitat, foraging grounds, and food for invertebrates, fish, and birds; improving water quality and clarity through filtering; controlling harmful algal blooms; facilitating the growth of submerged aquatic vegetation (SAV); and protecting shorelines from storms, which supports the growth of tidal marsh and SAV.

Signature of Determination

Refuge Manager, signature and date

Signature of Concurrence

Assistant Regional Director, signature and date

Mandatory Reevaluation Date

2041

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