OFFSHORE MUSSEL CULTURE OPERATIONS: CURRENT LEGAL FRAMEWORK AND REGULATORY AUTHORITIES

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At the request of the National Marine Fisheries Service Office of Aquaculture, the National Sea Grant Law Center conducted legal research and analysis to explore the potential permitting process for a hypothetical mussel culture operation in federal waters of the coast of New England. Like all emerging industries, offshore mussel culture raises a number of legal questions as it begins its transition from scientific research project to commercial endeavor. What will the permitting process for offshore mussel culture operations look like? Who are the key federal agencies and what roles will they play? What role do state governments have, if any, in permitting offshore mussel culture operations?

Under the current legal framework, the U.S. Army Corps of Engineers would have primary authority for permitting an offshore mussel culture operation in federal waters. The NOAA National Marine Fisheries Service (NMFS) would have a significant role because several federal laws require the Corps to consult with the agency. States would have the right to review the project pursuant to the federal consistency provisions of the Coastal Zone Management Act. The Environmental Protection Agency, however, would have a limited role as it is unlikely that Clean Water Act permits would be required. The attached information is intended as informative research only and does not constitute legal representation of the Office of Aquaculture or its constituents. It represents our interpretations of the relevant laws and regulations.

I. An Overview of Offshore Shellfish Aquaculture

Shellfish (oyster, clam, and mussel) culture currently dominates the U.S. marine aquaculture sector.[1] Commercial shellfish cultivation, using both on- and off-bottom culture methods, has traditionally been limited to marine and estuarine waters near shore. As domestic production does not meet the U.S. demand for shellfish, there are opportunities for industry growth. However, user conflicts, complex regulatory schemes, water quality concerns, and limited space are significant limiting factors to increasing shellfish production in traditional state water areas. Attention, therefore, has begun to turn offshore. One of the key priorities identified in NOAA's Marine Aquaculture Policy is to "support restoration and commercial shellfish aquaculture initiatives to restore shellfish populations that provide locally produced food and jobs, help improve water quality, and restore and conserve coastal habitat."[2]

Researchers in New England have been exploring the feasibility of growing blue mussels in deep water far from shore since the mid-1990s.[3] Researchers have conducted blue mussel experiments in federal waters ten miles southwest of Martha's Vineyard (Woods Hole Oceanographic Institute, 1998 pilot project) and in New Hampshire state waters near the Isle of Shoals (University of New Hampshire, 2000-2008). The UNH research led to the launch of the country's first commercial offshore mussel farm in 2007, which markets its product as "Isles of Shoals Supremes."[4] More recently, in 2008 the NOAA Marine Aquaculture Program funded a mussel culture

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[1] "Marine aquaculture is just 20% of U.S. production, consisting mostly of shellfish (e.g., oysters, clams and mussels)." NOAA Fisheries, Fish Watch – U.S. Seafood Facts, Aquaculture and Trade, http://www.nmfs.noaa.gov/fishwatch/trade_and_aquaculture.htm .

[2] NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, MARINE AQUACULTURE POLICY 7 (June 2011).

[3] Walter Paul, Woods Hole Oceanographic Institution: An Offshore Mussel Culture Experiment, May 1, 2000 *available at* http://www.whoi.edu/page.do?pid=12466&tid=282&cid=7301 .

[4] Press Release, University of New Hampshire, Sen. Judd Gregg Celebrates Nation's First Commercial Offshore Mussel Farm, Oct. 11, 2007.

project led by the Marine Biological Laboratory in Woods Hole, Massachusetts, which involved a collaboration between commercial fishermen, academia, aquaculture industry, and local governments at sites in Massachusetts and Rhode Island state waters.

Offshore shellfish culture most commonly utilizes submerged longline aquaculture systems.[5] "The submerged longline is a tensioned system maintained by the opposing forces of submerged flotation at the ends of a single horizontal backbone, connected by lines set at a 45° angle to seafloor anchors" that are spaced 100 to 200 meters apart.[6] Ropes of mussels are suspended from the backbone, which varies in length (70-130 m) and depth (3-15 m) depending on the configuration of the system.[7]

While all human activities have some environmental impact, there are minimal environmental concerns associated with mussel farms when properly sited and operated responsibly. As recently stated by the U.S. Army Corps of Engineers, "When properly sited, operated, and maintained, commercial shellfish aquaculture activities generally result in minimal adverse effects on the aquatic environment and in many cases provide environmental benefits by improving water quality and wildlife habitat, and providing nutrient cycling functions."[8] When grown in nutrient-rich offshore waters, farmed mussels filter their food directly from the water column eliminating the need to add food to the system and the currents generally prevent their wastes (feces and pseudofeces) from accumulating.[9] In addition, filter feeders provide environmental benefits by drawing nutrients from the surrounding water which can improve water quality. While some seabird and marine mammal interaction with the farm is possible, proper siting (both location and depth) and properly designed and maintained gear significantly reduces the risk of harm to marine life. To date, none of the existing offshore mussel culture facilities have had any known interactions with marine mammals.[10]

II. Federal Authorities

A. Army Corps of Engineers: Lead Federal Permitting Agency

1. §10 Permit (Rivers and Harbors Act)

The lead federal permitting agency for offshore mussel culture operations is the U.S. Army Corps of Engineers (Corps). The Rivers and Harbors Act (RHA) provides the Corps with the authority to issue permits for obstructions "to the navigable capacity of any of the waters of the United States."[11] Corps' regulations state that "the navigable waters of the United States over which Corps of Engineers' regulatory jurisdiction

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[5] Daniel Cheney, et al., *Shellfish Culture in the Open Ocean: Lessons Learned from Offshore Expansion*, MARINE TECHNOLOGY SOCIETY JOURNAL 44:3, 55-67 (May/June 2010).
[6] *Id.*
[7] *Id.*
[8] Department of Army, Corps of Engineers, Reissuance of Nationwide Permits, 77 Fed. Reg. 10184, 10231 (Feb. 21, 2012) [hereinafter "Reissuance of Nationwide Permits"].
[9] Cheney, *supra* note 5.
[10] Personal Communication, David Alves, Northeast Region Aquaculture Coordinator, NOAA Aquaculture Office, National Marine Fisheries Service, Feb. 10, 2012.
[11] 33 U.S.C. § 403.

extends include all ocean and coastal waters within a zone three geographic (nautical) miles seaward from the baseline (the Territorial Seas)."[12]

In limited circumstances, the Corps' jurisdiction under the RHA extends beyond the territorial sea to the seaward limit of the outer continental shelf (200 nm). Section 4(e) of the Outer Continental Shelf Lands Act (OSCLA), states that "the authority of the Secretary of the Army to prevent obstruction to navigation in the navigable waters of the United States is extended to the artificial islands, installations, and other devices referred to in [§1333(a)]."[13] Navigable waters of the U.S. include the EEZ. Section 1333(a) extends federal jurisdiction to:

> all artificial islands, and all installations and other devices permanently or temporarily attached to the seabed, which may be erected thereon for the purpose of exploring for, developing, or producing resources therefrom, or any such installation or other device (other than a ship or vessel) for the purpose of transporting such resources.[14]

Pursuant to this authority, the Corps regulations require permits "for the construction of artificial islands, installations, and other devices on the seabed, to the seaward limit of the outer continental shelf."[15]

In 2002, for example, the Corps issued a § 10 RHA permit to Cape Wind Associates to erect a data tower on the OCS to assess the feasibility of constructing a wind farm. The data tower would be anchored on the seabed. The Alliance to Protect Nantucket Sound challenged the Corps' authority, arguing that § 4(e) grants the Corps jurisdiction only over structures erected for the purposes of extracting resources.[16] The district court concluded that the OSCLA extended the Corps § 10 authority "to all 'artificial islands, installations, and other devices located on the seabed, to the seaward limit of the [OCS],' including, but not limited to, those that 'may be' used to explore for, develop, or produce resources."[17] The First Circuit affirmed the district court's decision in 2005.[18] Based on the First Circuit's opinion, which is controlling law in Maine, Massachusetts and Rhode Island, mussel culture systems anchored to the seabed or structures built to support such operations in the EEZ would be an obstruction to navigation and a RHA § 10 permit would need to be obtained from the Corps.

2. § 404 Permit (Clean Water Act)

The Clean Water Act (CWA) aims "to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and the oceans"[19] by prohibiting the discharge of pollutants into these waters without a permit issued by Environmental Protection Agency (§ 402 NPDES Permits, discussed in more detail below), U.S. Army

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[12] 33 C.F.R. § 329.12(a).
[13] 43 U.S.C. § 1333(e).
[14] *Id.* § 1333(a).
[15] 33 C.F.R. § 322.3(d).
[16] *Alliance to Protect Nantucket Sound, Inc. v. U.S. Dept. of Army*, 288 F.Supp.2d 64, 74 (D. Mass. 2003).
[17] *Id.* at 75.
[18] *See Alliance to Protect Nantucket Sound, Inc. v. U.S. Dept. of Army*, 398 F.3d 105 (1st Cir. 2005).
[19] 33 U.S.C. § 1251(a)(6).

Corps of Engineers (§404 Dredge and Fill Permits), or an authorized state agency.[20] The act defines "discharge of a pollutant" as the "addition of any pollutant to navigable waters from any point source,"[21] such as a pipe, ditch, or other "discernible, confined and discrete conveyance"[22] and "any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft."[23]

The CWA defines navigable waters as "the waters of the United States, including the territorial seas."[24] The territorial seas are defined as "the belt of the seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of three miles."[25]

The ocean is defined as "any portion[s] of the high seas beyond the contiguous zone."[26] While that definition could theoretically apply to all the world's oceans, nations have limited rights under international law to regulate activities on the high seas, defined in Article 86 of UNCLOS as "all parts of the sea that are not included in the exclusive economic zone, in the territorial sea or in the internal waters of a State."[27] Although the U.S. has not ratified the treaty, the government does recognize the jurisdictional zones laid out in UNCLOS as customary international law.[28]

"The most logical construction [of the CWA] is that federal jurisdiction over point source discharges currently extends 200 nautical miles out to sea."[29] That construction is based on President Ronald Reagan's assertion of U.S. jurisdiction over a 200-mile Exclusive Economic Zone (EEZ) in 1983.[30] Pursuant to the plain language of the statute and U.S. assertions of ocean jurisdiction through presidential proclamations, the addition of a pollutant from a point source other than a vessel or other floating craft within 200 nm from shore is prohibited by the CWA.

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[20] *Id.* §§ 1311(a), 1342(a).
[21] *Id.* § 1362(12)(A).
[22] *Id.* § 1362(14).
[23] *Id.* § 1362(12)(B).
[24] *Id.* § 1362(7).
[25] *Id.* § 1362(8).
[26] 33 U.S.C. § 1362(10). There is some debate regarding whether navigable waters includes the contiguous zone (CZ). The CZ is defined as the "entire zone established or to be established by the United States under article 24 of the Convention of the Territorial Sea and the Contiguous Zone." Article 24 of the Convention of the Territorial Sea and the Contiguous Zone allows coastal nations to claim a twelve-mile CZ, as measured from the baseline or shore. Following the negotiation of the U.N. Convention on the Law of the Sea (UNCLOS), which allows nations to claim a 24-mile CZ, President Clinton extended the U.S. CZ to 24 nm by presidential proclamation. Although the CWA has not been amended to reflect this extension of jurisdiction, the disparity has no practical implications due to the CWA's definition of ocean.
[27] United Nations Convention on the Law of the Sea, Dec. 10, 1982, 21 I.L.M. 1261 (entered into force Nov. 16, 1994).
[28] *See* U.S. Oceans Policy, Statement by the President, Mar. 10, 1983, 19 Weekly Comp. Pres. Doc. 384 (1983). (recognizing that UNCLOS "contains provisions with respect to traditional uses of the oceans which generally confirm existing maritime law and practice and fairly balance the interests of all states.")
[29] Robin Kundis Craig, *Urban Runoff and Ocean Water Quality in Southern California: What Tools does the Clean Water Act Provide?*, 9 CHAPMAN L. REV. 313, 333 (2006).
[30] Exclusive Economic Zone of the United States of America, Presidential Proclamation 5030, 48 Fed. Reg. 10,605 (March 10, 1983).

Shellfish aquaculture activities require a § 404 permit from the U.S. Army Corps of Engineers, if they involve the discharge of dredged or fill material, a specific type of pollutant, into waters of the United States.[31] The placement of shellfish seed and/or suitable substrate used to increase shellfish production is considered the discharge of fill material, for instance.[32] Regulations issued by the Corps define dredged material as "material that is excavated or dredged from the waters of the United States"[33] and fill material as "material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a waterbody."[34]

When offshore mussel systems are constructed, no excavation of material from or placement of material onto the ocean floor occurs. To the contrary, each long line is secured on either end by an anchor taking the form of a concrete cube, a metal anchor, or a screw-in anchor. Concrete anchors may simply be placed along the ocean floor, and the long lines are attached to pieces of steel cast into each block. These types of anchors are heavier and more difficult to handle; for that reason, screw-in anchors are becoming more popular, considering that they are easier to handle, lighter, and provide the same holding power as the concrete variety. Screw-in anchors are actually fastened to the ocean floor by being screwed into the sediment, but newer anchor designs may be driven into the ocean floor using compressed air. None of these anchor designs require the removal or addition of material to the ocean floor, and no dredging or filling activities occur due to the placement of these anchors for offshore mussel systems. Even if some dredging occurred during the installation of the anchors, the slight amount of dredged material would likely be considered incidental fallback and qualify for an exemption to the permitting requirement.[35] Consequently, no permit would likely be required under § 404.

Nationwide Permit 48

On February 21, 2012, the U.S. Army Corps of Engineers reissued forty-eight nationwide permits to authorize certain activities that require permits under § 10 of the RHA ***and/or*** § 404 of the CWA. For the first time, new commercial shellfish aquaculture operations may be authorized through the nationwide permit process. Previously, the nationwide permit for commercial shellfish aquaculture was limited to existing operations.[36]

While a §404 permit may not be required for an offshore mussel culture operation, a § 10 permit will be. The nationwide permits recently issued by the Corps are applicable to ***both*** §10 and §404 permits. As such, applicants for § 10 permits for offshore mussel culture operations may be able to take advantage of the streamlined permit process offered by the nationwide permits, even if the project does not trigger § 404 permitting.

Beginning on March 19, 2012 (the effective date of the nationwide permits), commercial shellfish operations requiring § 10 and/or § 404 permits may be

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[31] 33 U.S.C. § 1344(a). *See also*, U.S. Army Corps of Engineers, Reissuance of Nationwide Permits, Final Notice, 72 Fed. Reg. 11,092, 11,122 (Mar. 12, 2007).

[32] Reissuance of Nationwide Permits, *supra* note 8, at 10,280-81.

[33] 33 C.F.R. § 323.2(c).

[34] *Id.* § 323.2(e).

[35] *See* 33 C.F.R. 323.2(d)(2)(iii).

[36] *See*, U.S. Army Corps of Engineers, Reissuance of Nationwide Permits, Final Notice, 72 Fed. Reg. 11092 (Mar. 12, 2007).

authorized under NWP 48. NWP 48 authorizes "commercial shellfish aquaculture activities in new project areas, provided the project proponent has obtained a valid authorization, such as a lease or permit issued by an appropriate state or local government agency, and those activities do not directly affect more than ½-acre of submerged aquatic vegetation beds."[37] For commercial shellfish aquaculture activities in federal waters, the "valid authorization" would presumably be the § 10 permit itself. The activities authorized under NWP 48 include:

> the installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures into navigable waters of the United States. This NWP also authorizes discharges of dredged or fill material into waters of the United States necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities. Rafts and other floating structures must be securely anchored and clearly marked. This NWP does not authorize:
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> (a) The cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody;
> (b) The cultivation of an aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Species and Control Act of 1990 and;
> (c) Attendant features such as docks, piers, boat ramps, stockpiles, or staging areas, or the deposition of shell material back into waters of the United States as waste.[38]

To prevent the introduction of aquatic nuisance species, NWP 48 prohibits the reuse of material taken from a different waterbody in the proposed project area, "unless it has been treated in accordance with the applicable regional aquatic nuisance species management plan."[39]

For activities occurring in new project areas, pre-construction notification (PCN) must be submitted to the relevant district engineer, such as the district engineer for the New England District.[40] "The pre-construction notification thresholds in this NWP focus on those activities that should be reviewed by district engineers to: (1) ensure that floating or suspended facilities do not cause more than minimal adverse effects on navigation or, (2) ensure that both cultivating species that have not been previously cultivated in the waterbody and dredge harvesting, tilling, or harrowing in areas of submerged aquatic vegetation do not cause more than minimal adverse effects on the aquatic environment."[41] In general, a project proponent may not proceed until notified in writing by the district engineer that the activity may proceed under the NWP, subject to any special conditions imposed by the district engineer.[42]

All PCNs must be in writing and include, among other things, a detailed description of the proposed project, identification of any endangered or threatened species or designated critical habitat that might be affected by or in the vicinity of the

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[37] Department of Army, Corps of Engineers, Reissuance of Nationwide Permits, 77 Fed. Reg. 10,184, 10,280-81 (Feb. 21, 2012) [hereinafter "Reissuance of Nationwide Permits"].
[38] *Id.* at 10,280.
[39] *Id.* at 10,281.
[40] *Id.*
[41] *Id.* at 10,230.
[42] *See*, General Condition 31. *Id.* at 10,286.

project, and identification of any historic property that may be in the area.[43] NWP 48 also requires that the PCN include the following additional information: (1) a map showing the boundaries of the project area, with latitude and longitude coordinates for each corner of the project area; (2) the name(s) of the cultivated species; and (3) whether canopy nets are being used.[44] PCNs are shared with all appropriate federal and state agencies to facilitate interagency consultations (see below) and provide opportunity for them to submit comments.

The district engineer reviews the PCN to "determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest."[45] With respect to a hypothetical mussel culture system, as long as the floating or suspended facilities will not cause more than minimal adverse effects on navigation (the focus of the § 10 permitting process), the project theoretically could be authorized under NWP 48. If, upon review, the district engineer determined that the effects would be more than minimal, the district engineer will notify the applicant that either: (1) the proposed activity does not qualify for authorization under the NWP and an individual permit would need to be sought; (2) the project is authorized under the NWP subject to submission of a mitigation plan; or (3) the project is authorized under the NWP with specific modifications or conditions imposed to ensure that the activity does not result in more than minimal adverse effects to the aquatic environment.[46]

B. Environmental Protection Agency (§402 NPDES Permits)

Because an offshore mussel aquaculture system would fall within the geographic scope of the CWA, as mentioned earlier, the operator may have to obtain a National Pollution Discharge Elimination System (NPDES) permit from the EPA. Whether a NPDES permit is required depends on (1) whether the byproducts of mussel operations are considered "pollutants" and (2) whether the mussel culture system is a point source.

Mussel Byproducts = Pollutant?

Pollutants, as defined under the Act, include "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water."[47] The most relevant category of pollutants into which mussel wastes and byproducts (feces and pseudofeces) could fall is that of "biological materials."[48] The

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[43] *Id.*
[44] *Id.* at 10,281.
[45] *Id.* at 10,287.
[46] *Id.* at 10,288.
[47] 33 U.S.C. § 1362(6).
[48] Pseudofeces is defined by the U.S. Army Corps of Engineers as "material rejected by suspension feeders or deposit feeders [including mussels] as potential food before entering the digestive tract." Md. Dep't of Natural Res. & Va. Marine Res. Comm'n, Draft Programmatic Environmental Impact Statement for Oyster Restoration in Chesapeake Bay Including the Use of a Native and/or Nonnative Oyster § 3-1, at xxii (2008), *cited in* Sarah Mollett, *The Chesapeake Bay's Oysters: Current Status and Strategies for Improvement*, 18 PENN. ST. ENVTL. L. REV. 257 (2010).

CWA does not directly define which substances constitute biological materials; however, within the last decade, federal circuit courts have addressed this issue.

In *National Cotton Council of America v. U.S. E.P.A.*, the Sixth Circuit determined that the "ordinary, contemporary, and common meaning" of the term *material* could be ascertained simply by considering the basic dictionary definition of the term.[49] In *Webster's Third New International Dictionary* (1993), material is defined as "of, relating to, or consisting of matter" and "the basic matter from which the whole or the great part of something is made."[50] Additionally, the *Oxford English Dictionary* defines material as "that which constitutes the substance of a thing (physical or nonphysical); a physical substance; a material thing."[51] Applying these definitions adopted by the Sixth Circuit to a hypothetical mussel culture operation, fecal and pseudo-fecal matter produced by mussels could be defined as material, meaning that such matter could qualify as a pollutant under the CWA. In 2002, the federal district court in Maine held that salmon urine and feces were pollutants under the Clean Water Act and could be classified as "biological materials" or "agricultural wastes."[52]

More recently, however, the Ninth Circuit has specifically indicated that "mussel byproduct[s] are not pollutants" under the Clean Water Act.[53] Claiming that the term "biological materials" is ambiguous, the Ninth Circuit, upon analyzing the list of pollutants outlined in 33 U.S.C. § 1362(6), reasoned that biological materials constitute wastes from human or industrial processes alone.[54] The court also considered the Congressional intent behind the CWA, noting that, because Congress declared one of its goals to be "protect[ing] and propagat[ing] ... shellfish," a declaration that shellfish populations are simultaneously protected and a pollutant would "contravene clear congressional intent, give unintended effect to the ambiguous language of the Act, and undermine the integrity of its prohibitions."[55]

The Ninth Circuit additionally noted that, based on the record, the mussels' presence in Puget Sound did not harm or cause any significant damage to the waters by producing waste products in the form of feces, pseudo-feces, and dissolved biological materials, including ammonium and inorganic phosphate.[56] To the contrary, the mussels appeared to improve the environment by filtering out excessive nutrients and waste materials. Generally, according to the Ninth Circuit, "mussels act as filters and are considered by many to enhance water quality by filtering excess nutrients or other matter in the water that can be destructive to marine environments."[57] This appears to have been the court's strongest argument that the mussels and their minimal waste emissions could not constitute a pollutant within the meaning contemplated by the Clean Water Act. Since the mussel aquaculture facilities were not contributing excessive levels of waste materials to the Sound and were actually beneficial to the aquatic environment, the Ninth Circuit determined that mussel culture operations could not be considered pollutants under the Clean Water Act.

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[49] 553 F.3d 927, 936 (6th Cir. 2009).
[50] *Id.* at 937.
[51] *Id.*
[52] U.S. Public Interest Research Group v. Atlantic Salmon of Maine, 215 F. Supp. 2d 239, 247 (D. Me., 2002).
[53] Ass'n to Protect Hammersley, Eld, & Totten Inlets v. Taylor Resources, 299 F.3d 1007, 1016 (9th Cir. 2002).
[54] *Id.* at 1016.
[55] *Id.*
[56] *Id.*
[57] *Id.* at 1010.

The court reasoned that, because the fecal and pseudo-fecal material emitted from the mussels are the direct result of natural biological processes, this material is not subject to regulation under the CWA, which only seeks to regulate waste products emitted as the result of transforming human processes.[58] Human transformation of biological material could occur during the processing of fish for human consumption, when scales, bones, and entrails are discarded into U.S. waters.[59] Therefore, the court indicated that "living shellfish and the natural chemicals and particulate biological matter emitted from them [could not] be considered pollutants," since such matter has not been transformed into a pollutant by human intervention.[60]

The *Taylor Resources* decision is only controlling law in the federal courts within the Ninth Circuit, which includes Washington, Oregon, and California; however, other federal courts may find it persuasive authority when faced with similar questions. If mussel byproducts and wastes are pollutants, the NPDES permit requirements could be triggered by an offshore mussel culture system.

Offshore Mussel Culture System = Point Source?

Even if the mussel byproducts are classified as pollutants, NPDES permits are only required for discharges of pollutants from a *point source*. Point sources are defined as "any discernable, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged."[61] Some aquaculture operations, known as "Concentrated Aquatic Animal Production Facilities," (CAAPF) are point sources which fall within the NPDES permitting program.[62]

EPA defines CAAPFs as "a hatchery, fish farm, or other facility which meets the criteria in Appendix C of [40 C.F.R. Part 122]" or is designated as such on a case-by-case basis.[63] Pursuant to Appendix C, a hatchery, fish farm, or other facility is a CAAPF for purposes of § 122.24 if it contains, grows, or holds cold water fish species or other aquatic animals "in ponds, raceways, or other similar structures which discharge at least 30 days per year," except:

1. Facilities which produce less than 9,090 harvest weight kilograms (approximately 20,000 pounds) of aquatic animals per year; and
2. Facilities which feed less than 2,272 kilograms (approximately 5,000 pounds) of food during the calendar month of maximum feeding.[64]

According to Appendix C to Part 122, cold water aquatic animals "include, but are not limited to, the Salmonidae family of fish; e.g., trout and salmon."[65] Although this definition does not refer to shellfish, it is a non-exclusive list which raises the

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[58] *Id.* at 1016.
[59] *Id.*
[60] *Id.*
[61] 33 U.S.C. § 1362(14).
[62] 40 C.F.R. 122.24(a).
[63] *Id.* § 122.24(b).
[64] 40 C.F.R. pt. 122, app. C at (a).
[65] 40 C.F.R. pt. 122, app. C.

possibility that EPA could regulate an offshore mussel culture operation as a CAAPF if it met the above criteria.

Although the Ninth Circuit in *Taylor Resources* directly held that mussel wastes and byproducts are not pollutants within the scope of the CWA, the Ninth Circuit also considered the issue of whether Taylor Resources' mussel aquaculture operation was a point source. The Ninth Circuit found while Taylor Resource's operation contained, grew or held "cold water fish species or other cold water aquatic animals in ponds, raceways, or other similar structures which discharge at least 30 days per year," it was not a CAAPF because Taylor Resources did not add feed to the waters surrounding the facilities. Therefore, "its facilities fall under the second exception to CAAPF classification."[66]

Unless a proposed offshore mussel culture operation produced more than 20,000 pounds of mussels per year and feed the mussels more than 5,000 pounds of food per year, it would be excluded from regulation as a CAAPF. However, even if the mussel operation does not meet the CAAPF production or feed criteria, the EPA has the discretion, on a case-by-case basis, to "designate any ... cold water aquatic animal production facility as a concentrated aquatic animal production facility upon determining that it is a significant contributor of pollution to waters of the United States."[67] If so designated, the offshore mussel culture operation would need a NPDES permit from EPA to operate.[68]

III. Environmental Reviews and Federal Interagency Consultations

A. National Environmental Policy Act (NEPA)

NEPA requires that federal agencies prepare an environmental impact statement for "major federal actions significantly affecting the quality of the human environment," which include issuances of permits.[69] The issuance of an individual § 10 RHA permit is a federal action; however, the determination of whether the permitting of an offshore mussel culture operation would "significantly affect the quality of the human environment" is project-specific. If the proposed offshore mussel culture project qualifies for authorization under NWP 48, NEPA would not be triggered because the Corps will have determined that the project will result in minimal adverse effects to the aquatic environment. However, if an individual § 10 permit is required, the Corps would need to evaluate whether an Environmental Impact Statement (EIS) would need to be prepared. Unless it is obvious that an EIS must be prepared, the Corps will likely prepare an Environmental Assessment (EA) to evaluate whether the proposed project will have a significant effect on the environment. Corps regulations state that "Most permits will normally require only an EA."[70] If following a thorough analysis of the possible environmental impacts, the Corps concludes that the issuance of the permit and the resulting project will have a significant effect, the Corps is required to prepare a more detailed EIS. If the Corps concludes an EIS is not required, the Corps will issue a FONSI (Finding of No Significant Impact).[71]

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[66] *Taylor Resources*, 299 F.3d 1007 at 1018.
[67] 40 C.F.R. 122.24(c).
[68] *Taylor Resources*, 299 F.3d 1007 at 1018, FN 11.
[69] 42 U.S.C. § 4332(C).
[70] 33 C.F.R § 230.7(a).
[71] *Id.* § 230.11.

B. Endangered Species Act (ESA)

Section 7 of the Endangered Species Act requires federal agencies to "insure that any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat."[72] If an agency's action may adversely affect a marine species protected under the ESA, the agency must consult with NMFS before taking action. Section 7 consultations may occur in conjunction with other environmental reviews, such as preparation of environmental reviews pursuant to NEPA. Nationwide Permit General Condition 18, for example, requires non-federal permittees to identify in the PCN if any listed species or designated critical habitat might be affected or is in the vicinity of the project to facilitate the § 7 Consultation process.[73]

Consultation under § 7 usually begins with informal consultation. If during informal consultation, the federal agency determines, with the written concurrence of NMFS, that the action is not likely to adversely affect listed species or critical habitat, no further action is necessary.[74] However, if the agency action is likely to adversely affect listed species or critical habitat, formal consultation with NMFS is required.[75]

During formal consultation, NMFS evaluates the potential effects of the action on listed species or critical habitat and details its findings in a Biological Opinion. If NMFS concludes that the proposed agency action is likely to result in "jeopardy" or "adverse modification of critical habitat," the Biological Opinion will identify "reasonable and prudent alternatives" the federal agency can implement to minimize the potential harm.[76] Following the issuance of a Biological Opinion, the federal agency determines how to proceed. If jeopardy or adverse modification is likely, the federal agency may decide to implement the "reasonable and prudent alternatives," modify the project, decline to proceed, or disagree with NMFS and apply for an exemption under other provisions of the ESA.

Because offshore mussel culture projects are being contemplated for waters frequented by the critically endangered Northern Atlantic right whale, § 7 Consultation will likely be triggered by an application for a § 10 RHA permit, pursuant to either NWP 48 or an individual permit. The extent of that consultation, however, will depend on the design of the project and its potential impact on right whales and other species protected by the ESA.

C. Magnuson-Stevens Fisheries Conservation and Management Act

The Magnuson-Stevens Fisheries Conservation and Management Act of 1976 asserted federal jurisdiction over wild fish stocks found within the U.S. EEZ[77] and established eight regional Fisheries Management Councils to develop fishery management plans, including annual catch limits, for fisheries under their respective

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[72] 16 U.S.C. § 1536(a)(2).
[73] Reissuance of Nationwide Permits, *supra* note 8, at 10,283.
[74] 50 C.F.R. § 402.13(a).
[75] *Id.* § 402.14(a).
[76] *Id.* § 402.14(h)(3).
[77] 18 U.S.C. § 1801(b)(1).

authority requiring conservation and management.[78] The New England Fishery Management Council has authority over the fisheries in the Atlantic Ocean seaward of the States of Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut.[79] While shellfish are subject to regulation under the Magnuson-Stevens Act, mussels are not currently managed by the New England Fishery Management Council. Mussel culture operations, therefore, would not be subject to any MSA permitting requirements.

However, in addition to consulting with NMFS on potential impacts to endangered species, federal agencies must consult with NMFS "with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat."[80] For example, consultation may be required for projects offshore of Rhode Island and Massachusetts since the New England Fishery Management Council has designated Essential Fish Habitat (EFH) for several species, including Yellowtail flounder and Atlantic cod, in those areas.

As with ESA § 7 consultation, EFH consultation can be combined with other environmental reviews. During consultation, Regional Fishery Management Councils may comment on and make recommendations to NMFS and any federal or state agency concerning an activity that may affect the essential fish habitat of a fishery resource under its authority.[81] If NMFS receives information from a Council, another agency, or determines from other sources that the action would adversely affect EFH, NMFS is required to recommend measures that can be taken by the federal agency to conserve the habitat in question.[82] Within 30 days of receiving a recommendation from NMFS, the agency must provide a detailed written response which includes "a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on such habitat. In the case of a response that is inconsistent with the recommendations of the Secretary [of Commerce], the Federal agency shall explain its reasons for not following the recommendations."[83]

D. National Historic Preservation Act

Section 106 of the National Historic Preservation Act requires federal agencies undertaking projects, including the issuance of permits, to "take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register [of Historic Places]."[84] In addition, federal agencies must provide the Advisory Council on Historic Preservation and other interested parties, such as State Historic Preservation Officers with the opportunity to comment.[85] Usually, the § 106 process is coordinated with other required agency reviews, such as the district engineer's review of a PCN submitted pursuant to NWP 48. Federal agencies are encouraged to insure that all NEPA documents include "appropriate scoping and identification of historic properties,

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[78] *Id.* § 1852.
[79] *Id.* §1852(a)(1)(A).
[80] *Id.* § 1855(b)(2).
[81] *Id.* § 1855(b)(3)(A).
[82] *Id.* § 1855(b)(4)(A).
[83] *Id.* § 1855(b)(4)(B).
[84] 16 U.S.C. § 470f.
[85] *Id.*

assessment of effects upon them, and consultation leading to resolution of any adverse effects."[86]

In very broad terms, the § 106 process works as follows. The federal agency proposing the action must identify historic property within the area of potential effects, if any, and the potential effects.[87] If the federal activity is a type that does not have the potential to adversely affect historic property, or if no historic property is present, no further actions are required under § 106 beyond providing documentation of the agency's findings to the Advisory Council and other consulting parties for review and comment.[88] However, if the undertaking would have adverse effects,[89] the consultation process continues and the agency must "develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties."[90] While the federal agency must take the consulting parties' and the Advisory Council's comments into account during the decision-making process, the final decision about whether to take action remains with the action agency.[91]

The permitting of a mussel culture operation in federal waters offshore of Rhode Island or Massachusetts might trigger § 106 consultation. The § 106 process, for example, occurred during the permitting process for the Cape Wind project in federal waters off the coast of Nantucket because there was a disagreement between the Mineral Management Service and the Massachusetts State Historic Preservation Officer and other entities regarding whether Nantucket Sound was eligible for listing in the National Register.[92]

E. U.S. Coast Guard

NWP General Condition 1 states "Any safety lights and signals proscribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States."[93] Because offshore mussel culture systems would require buoys, lights, beacons or other signals to mark its location, an application to establish and maintain a Private Aid to Navigation (PATON) must be submitted to the U.S. Coast Guard. Before establishing a structure in U.S. waters, which may interfere with or restrict marine navigation, the owner or operator shall apply for Coast Guard authorization to

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[86] 36 C.F.R. § 800.8(a)(3).
[87] *Id.* § 800.4(a).
[88] *Id.* § 800.3(a)(1).
[89] "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative." 36 C.F.R. 800.5(a)(1).
[90] *Id.* § 800.6(a)(1).
[91] *Id.* § 60.2(a).
[92] National Park Service, Determination of Eligibility Notification re: Nantucket Sound (January 2, 2010), *available at* http://www.nps.gov/nr/publications/guidance/NantucketSoundDOE.pdf .
[93] Reissuance of Nationwide Permits, *supra* note 8, at 10,282.

mark the structure with lights and other signals for the protection of navigation.[94] In determining whether an obstruction, such as a structure, is a hazard to navigation for the purposes of marking, the Coast Guard considers such things as the location of the obstruction in relation to the navigable channel and other navigational traffic patterns, the type of vessel traffic in the area, and the depth of water over the obstruction.[95] Private Aids to Navigation must adhere to the permitting requirements outlined by in regulations issued by the U.S. Coast Guard.[96]

IV. State Authority

A. Coastal Zone Management Act

The Corps' issuance of a § 10 RHA permit, under either NWP 48 or an individual permit, for an offshore mussel culture operation will likely trigger federal consistency review under the Coastal Zone Management Act (CZMA). The CZMA states that federal agency activities, including the issuance of permits, "within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs."[97] The CZMA, therefore, provides a mechanism for states to influence federal decisions with respect to aquaculture in federal waters. Aquaculture operations in federal waters, especially those occurring close to the boundary between federal and state waters (generally 3 nm from shore), have the potential to affect land or water uses or the natural resources of a state's coastal zone.

Section 307 of the CZMA requires applications for federal permits "to conduct an activity, in or outside of the coastal zone, affecting any land or water use or natural resource of the coastal zone of that state [to] provide in the application to the licensing or permitting agency a certification that the proposed activity complies with the enforceable policies of the state's approved program and that such activity will be conducted in a manner consistent with the program."[98] After receipt of its copy of the applicant's certification, states have six months to review the consistency certification and notify the responsible agency as to whether it concurs with or objects to the applicant's consistency certification.[99] States may also issue a "conditional concurrence."[100] In its concurrence letter to the federal agency, the state must explain "why the conditions are necessary to ensure consistency with specific enforceable policies of the management program."[101] If the federal agency and the applicant are unwilling to modify the application and project proposal pursuant to the state's conditions, the state's conditional concurrence is treated as an objection.[102]

States, therefore, effectively have a veto over federal permits. If the state objects, the federal agency may not issue the permit. Applicants may appeal a negative

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[94] 33 C.F.R § 64.21
[95] *Id.* § 64.31.
[96] *Id.* §§ 66.01-1 – 66.01-55.
[97] 16 U.S.C. § 1456(c)(1)(A).
[98] *Id.* § 1456(c)(1)(C)(3)(A).
[99] *Id.*
[100] *Id.*
[101] 15 C.F.R. § 930.4(a)(1).
[102] *Id.* § 930.4(b).

consistency determination to the Secretary of Commerce who may override the state's objection if he finds "that the activity is consistent with the objectives of [the CZMA] or is otherwise necessary in the interest of national security."[103] Because a state's objection to a consistency certification could prevent the project from moving forward completely, federal regulations direct federal agencies and applicants "to develop conditions that, if agreed to [by the State] during the State agency's consistency review period and included in a Federal agency's final decision ... would allow the State agency to concur with the federal action."[104]

As both Massachusetts and Rhode Island allow mussel culture in state waters, a properly designed and sited offshore mussel culture operation should be able to obtain a consistency determination from either state's Coastal Management Program. However, the operator will need to ensure that their project is consistent with the state coastal management plans. For example, the *Massachusetts Office of Coastal Zone Management Policy Guide – October 2011* states that when reviewing marine aquaculture projects, the Commonwealth will, among other things:

- Require the use of technologies and species that are compatible with local conditions and do not threaten the biological diversity of our marine waters.
- Require that predator species are controlled using non-lethal measures.
- Encourage the use of best management approaches as a means of avoiding the transmission of disease between cultured and wild populations or stressing cultured and wild species.
- Ensure that facility siting, design, and operation do not harm migratory birds, especially rare or declining shorebirds, and marine mammals.[105]

B. State Law

A nearby coastal state would have no decision-making authority with respect to an offshore mussel culture operation, except for its right to review the project to determine whether it is consistent with its coastal management plan. Mussel growers, however, would still need to comply with state laws governing the transport and sale of shellfish within their boundaries. For example, Rhode Island law requires "each resident and non-resident who has charge of a vessel carrying seafood products legally harvested outside Rhode Island waters [to] obtain a permit to land, sell or offer for sale seafood products in Rhode Island."[106] To land mussels harvested in federal waters in Rhode Island, the operator of an offshore mussel culture operation would need to obtain a shellfish landing permit from the Rhode Island Department of Environmental Management.[107]

In addition, a license is required from the Rhode Island Department of Public Health to operate a shellfish business within the state.[108] "Shellfish business" is defined as "processing, labeling, storing except in commercial warehouses, or

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[103] *Id.*

[104] *Id.* § 930.4(a).

[105] MASSACHUSETTS OFFICE OF COASTAL ZONE MANAGEMENT, MASSACHUSETTS OFFICE OF COASTAL ZONE MANAGEMENT POLICY GUIDE – OCTOBER 2011, *available at* http://www.mass.gov/czm/plan/docs/czm_policy_guide_october2011.pdf .

[106] RHODE ISLAND GEN. LAWS § 20-4-1.2(a).

[107] *Id.* § 20-4-1.2(a)(2).

[108] R.I. ADMIN. CODE 31-3-9:2.2.

transporting except by common carrier, shellfish which are to be offered for sale or sold."[109] Massachusetts has similar requirements. Massachusetts law prohibits any person, except certified interstate shellfish shippers, from transporting shellfish, which have been harvested outside the state, into the state for consumption as food.[110] These particular licensing and certification requirements are the result of the National Shellfish Sanitation Program (NSSP).

The NSSP is the federal/state cooperative program recognized by the FDA and the Interstate Shellfish Sanitation Conference for the sanitary control of shellfish produced and sold for human consumption. NSSP promotes and improves the sanitation of shellfish (oysters, clams, mussels and scallops) moving in interstate commerce through federal/state cooperation and uniformity of State shellfish programs. State agencies from shellfish producing and non-producing states, FDA, EPA, NOAA, and the shellfish industry itself all participate in the NSSP.[111] NSSP's Program Guide for the Control of Molluscan Shellfish is readily accessible online.[112] The Interstate Certified Shellfish Shippers List (ICSSL) is a monthly publication for use by food control officials, the seafood industry, and other interested persons.[113] The FDA distributes the publication under authority granted by the Public Health Service and Food, Drug, and Cosmetic Acts, in conjunction with the Office of Food Safety, Retail Food and Cooperative Programs Coordination Staff, and the Division of Seafood Safety.[114] Despite moving their operations into federal waters, operators of offshore mussel culture operations would need to continue to comply with relevant state and federal regulations implementing the NSSP.

V. Property Rights and Liability Issues

For aquaculture operations in state waters, a state may grant an operator property rights to a particular parcel of water bottom or water column through an aquaculture lease. Generally, a lease conveyance would grant the lessee exclusive cultivation and harvesting rights over any shellfish cultured under the lease. The shellfish cultured under the lease are the exclusive property of the lessee, who may limit public access to protect the aquaculture product.

Currently, there is no leasing process in place for aquaculture in offshore waters. Rather, an aquaculture operation would receive an RHA permit. An RHA permit, "does not convey any property rights, either in real estate or material, or any exclusive

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[109] *Id.* 31-3-9:1.19.

[110] MASS. GEN. LAWS, tit. 130 § 81

[111] U.S. Food and Drug Administration, National Shellfish Sanitation Program, http://www.fda.gov/Food/FoodSafety/Product-SpecificInformation/Seafood/FederalStatePrograms/NationalShellfishSanitationProgram/default.htm

[112] *See*, FDA, National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish 2009 Revision, *available at* http://www.fda.gov/Food/FoodSafety/Product-SpecificInformation/Seafood/FederalStatePrograms/NationalShellfishSanitationProgram/ucm046353.htm .

[113] FDA, Interstate Shellfish Shippers List, *available at* http://www.fda.gov/Food/FoodSafety/Product-SpecificInformation/Seafood/FederalStatePrograms/InterstateShellfishShippersList/default.htm

[114] *Id.*

privileges."[115] In fact, the Corps regulations require § 10 permit applications to be signed as an "affirmation that the applicant possesses or will possess the requisite property interest to undertake the activity proposed in the application."[116] However, at this time, there is no mechanism in place to grant property interest in offshore waters for aquaculture purposes.

A similar property rights issue arose in the Corps' grant of a permit for the construction of a data tower for the Cape Wind project. At the time, there was no program to grant leases for renewable energy projects on the Outer Continental Shelf. A group challenged the Corps' issuance of the permit on several grounds, one of which being that the Corps should not have granted the permit, as there was no mechanism in place to grant a property interest on the OCS for renewable energy projects.[117] The First Circuit upheld the district court's decision finding that the regulations only required the applicant to affirm that it would possess the necessary property interest and that the Corps lacked the authority to consider whether the applicant did in fact have the requisite property interest during its public interest review. [118] The Department of Interior has since established a framework to grant leases and other property interests for renewable energy projects on the OCS. At this point, an offshore shellfish aquaculture facility would lack the property interest required by Corps regulations; however, as illustrated in the Cape Wind case, this would not be a barrier for the Corps in issuing an RHA permit for an aquaculture operation.

While the recipient of an RHA permit may not have real property interest in the ocean space at issue, an owner of the aquaculture facility would maintain personal property rights over the oysters and aquaculture facilities. "Personal property" is defined as "everything that is the subject of ownership, not coming under denomination of real estate," while "real property" is defined as "land, and generally whatever is erected or growing upon or affixed to land."[119] Aquaculture shellfish would receive the same property rights protections available to other personal property. For example, if someone were to take the oysters or damage the aquaculture facilities, then he or she would be subject to private civil actions (lawsuits) and potentially criminal prosecution by appropriate authorities, most likely the federal government as the aquaculture lease would be on federally managed land. Presumably, an aquaculture operator could get insurance coverage to cover damage and/or theft. Insurance could also reduce an operator's exposure to liability for damage to other people's property caused by his aquaculture gear. However, as noted in the U.S. Commission on Ocean Policy Final Report, due to the mix of regulations and the lack of a guarantee of exclusive use of space in offshore areas, insurance coverage may be "difficult to obtain."[120]

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[115] 33 C.F.R. § 320.4(g)(6).
[116] *Id.* § 325.1(d)(7).
[117] *Alliance to Protect Nantucket Sound, Inc. v. U.S. Dep't of the Army*, 288 F. Supp. 2d 64 (D. Mass. 2003).
[118] *Alliance to Protect Nantucket Sound, Inc. v. U.S. Dep't of the Army*, 398 F.3d 105, 112 (1st Cir. 2005).
[119] *Black's Law Dictionary* 564 (2nd Pocket Ed. 2001).
[120] FINAL REPORT ON THE U.S. COMMISSION OF OCEAN POLICY, AN OCEAN BLUEPRINT FOR THE 21ST CENTURY 333 (2004).

VI. Summary

Under the current legal framework, the U.S. Army Corps of Engineers would have primary authority for permitting an offshore mussel culture operation in federal waters pursuant to § 10 of the Rivers and Harbors Act. Unless a district engineer determines that the project would have more than minimal adverse effects on the aquatic environment, the mussel culture operation may qualify for authorization under the Corps' recently re-issued NWP 48. The National Marine Fisheries Service would have a significant oversight role in the permitting process as the Corps is required to consult with NMFS to minimize impacts to endangered species and essential fish habitat. In addition, states would have the right to review the project pursuant to the federal consistency provisions of the Coastal Zone Management Act. The Environmental Protection Agency, however, would have a limited role unless the EPA makes a determination that a Clean Water Act § 402 permit would be required.