

**STATE OF NEW YORK
DEPARTMENT OF STATE**

Broadwater LNG Project

**Coastal Zone Management Act
Certification.
F-2006-0345**

**COMMENTS OF THE ATTORNEY GENERAL OF CONNECTICUT
REGARDING THE BROADWATER ENERGY PROJECT APPLICATION TO THE
STATE OF NEW YORK DEPARTMENT OF STATE FOR A DETERMINATION OF
COASTAL ZONE MANAGEMENT ACT CONSISTENCY CERTIFICATION**

The Attorney General of Connecticut (“Attorney General”) hereby files these comments in opposition to the request of Broadwater Energy L.L.C. (“Broadwater”) for a certification of consistency for its proposed pipeline and floating liquefied natural gas facility under Section 387(c)(3)(A) of the Coastal Zone Management Act, 16 U.S.C. § 1451 *et seq.* (“CZMA” or the “Act”)

SUMMARY

The Broadwater project is unacceptable. The project as proposed is not needed. The siting is literally “worst case in the worst place.” Overall, the project poses a direct and substantial threat to human health and safety and critical ecosystem resources in the Long Island Sound that are of significant national interest. The project will result in a complete ban on recreational and commercial boating or any use of the Sound over a substantial area around the facility and its resupply tankers. It will also result in permanent damage to significant areas of seafloor. The mere presence of this immense industrial facility will have an immeasurable impact on traditional coastal communities. Its permanent harms clearly outweigh any speculative benefit. While there is a valid need for additional natural gas supplies, this project’s location is unnecessarily and unacceptably harmful. The CZMA program is predicated on the

determination by Congress that the coastal states are in the best position to balance the needs of coastal development against the harms to the coastal environment. Based on a fair consideration of all of the facts, denial of certification of consistency with the CZMA is not only appropriate, it is mandatory under New York and federal law.

I. Background

1. The Project.

The Broadwater Project is immense in its size and scope – and its potential impacts. Not only are the sheer physical bulk and impact enormous, but it is proposed for a uniquely valuable and sensitive environment

As described in the Draft Environmental Impact Statement, (“DEIS”) prepared by FERC staff under the National Environmental Policy Act, 42 U.S.C. § 4321, *et seq.* (“NEPA”) and released on November 17, 2006, the facility will be made up of four interrelated elements. The largest will be the floating storage and regassification unit (FSRU). The FSRU is planned to be about the length of four football fields -- over 1,200 feet long, 200 feet wide and over 100 feet high, with a draft of 40 feet. DEIS, pp 2-22, 2-23. The FSRU is designed to hold up to 8 billion cubic feet of liquefied natural gas along with the necessary machinery to transform it into its gaseous form at a rate of up to a billion cubic feet per day. *Id.* The FSRU will be anchored to the seafloor by a mooring system that will cover 13,180 square feet. DEIS, 2-12. The FSRU will be absolutely the first of its kind, constituting an entirely novel and untested concept. No floating facilities of this, or related, types exist anywhere in the world. In effect, it is a huge laboratory experiment, filled with billions of cubic feet of flammable gas.

The second element of the project is a planned 21.7 mile long undersea thirty inch pipeline from the FSRU to the Iroquois Gas Transmission System (IGTS) pipeline. DEIS, 2-16.

Broadwater plans to employ an underwater plow to install the pipeline. However, if the plow encounters bedrock or other seafloor conditions are unfavorable, the company has indicated that it could pursue blasting or other methods

The third element of the Broadwater project comprises land based systems, including buildings for maintenance and other logistical support. These are expected to have minimal impacts on the Sound. However, the fourth and last element of the project, the LNG tankers that will reload the FSRU, will have a major negative impact on the Sound. These tankers, ranging from the existing 125,000 cubic meters capacity to an as yet unbuilt 250-300,000 cubic meters size, will cross the narrow entrance to the Sound, known as the Race, every few days and will anchor next to the FSRU for unloading of LNG. *See*, United States Coast Guard Waterways Suitability Report (WSR), released September 21, 2006, pp. 55 et seq., 103, 123

2. Interests of the State of Connecticut.

Connecticut's interests are directly affected by this project. For example, the United States Coast Guard's Waterways Suitability Report for the Broadwater Project, released September 21, 2006, demonstrates that the LNG carrier routes will directly impact Connecticut's coastal waters and affect numerous important environmental nearshore and onshore resources on the Connecticut side of the Sound. WSR, pp 76, 81, 90, 95, and 101.

From a broader perspective, the State of Connecticut has long had an interest in protecting its coastal resources. As early as 1786, the legislature of Connecticut recognized the importance of protecting the resources of the Long Island Sound and enacted legislation to regulate shellfishing in order to preserve oyster and clam beds from damage to the ecosystem that even then was beginning. (Connecticut Statutes, rev. 1786, p. 78.)

More recently, the Connecticut legislature has been very clear -- the health of the overall ecosystem of the Long Island Sound is critical to the State and unchecked development and poorly-sited infrastructure are unacceptable.

The General Assembly finds that the growing population and expanding economy of the state have had a profound impact on the life-sustaining environment. The air, water, land and other natural resources, taken for granted since the settlement of the state, are now recognized as finite and precious. . . . Therefore the General Assembly hereby declares that the policy of the state of Connecticut is to conserve, improve and protect its natural resources and environment and to control air, land and water pollution in order to enhance the health, safety and welfare of the people of the state.

Conn. Gen. Stat. § 22a-1.

The legislature has done more, expressly defining the policy of the state and making numerous legislative findings, including the following:

- (1) The waters of Long Island Sound and its coastal resources . . . form an integrated natural estuarine ecosystem which is both unique and fragile;
- (2) Development of Connecticut's coastal area has been extensive and has had a significant impact on the Long Island Sound and its coastal resources;
- (5) The coastal area is rich in a variety of natural, economic, recreational, cultural and aesthetic resources, but the full realization of their value can be achieved only by encouraging further development only in suitable areas and by protection of those areas unsuited to development;
- (7) Unplanned population growth and economic development in the coastal area have caused the loss of living marine resources, wildlife and nutrient-rich areas, and have endangered other vital ecological systems and scarce resources.

Conn. Gen. Stat. § 22a-91 The state has supported its policies with action. Vast sums of public money have been spent to improve municipal waste treatment facilities and reduce pollution and runoff. Significant amounts of taxpayer dollars have been invested in the state's shellfish

industry. The State of Connecticut therefore has a direct and immediate interest in the marine environment that is impacted by this project. As noted in the *Comprehensive Assessment and Report Part II*, released on June 3, 2003 by the State of Connecticut's Task Force on Long Island Sound, (hereinafter, "Task Force Report"), "[a]s custodian for half of Long Island Sound, Connecticut has an obligation to continue to protect and preserve this irreplaceable resource." Task Force Report, p. 8

3. Long Island Sound Coastal Policies

New York's Long Island Sound Coastal Policies ("Policies") is a comprehensive policy document outlining, in detail, the enforceable policies of the State. Many of its provisions are of particular relevance to a review of the Broadwater project. For example, policy 1 mandates "foster[ing] a pattern of development in the Long Island Sound coastal area that enhances community character, preserves open space, makes efficient use of infrastructure . . . and minimizes adverse effects of development." Section 1.2 specifically adopts a policy that "reserve(s) coastal waters for water-dependent uses and activities." Water-dependent uses, in turn, are defined by the State of New York as uses that depend on the water, such as fishing, sea-borne commerce, and recreational sailing. Thus, while ship-borne transport of LNG would be a water-dependent use, a facility for regassification, which could be and usually is accomplished on land, would not.

Other sections of relevance include section 1.4, which requires maintaining "natural, recreational, and open space values" as well as avoiding "loss of economic, environmental, and aesthetic values. . . ." Similarly, Policy 3 expressly states that "[v]isual quality is a major contributor to the character of the Long Island Sound region" and specifically that the "intent of this policy is to protect and enhance visual quality." Section 3.1 goes further, referring to the

need to “mimimiz[e] introduction of discordant features” and to “[p]rotect scenic values associated with . . . public trust lands” The protection of public trust lands is further considered in Policy 9, which requires protecting public visual access, section 9.2, and directly mandates preserving the public interest and public access in and to waters held in public trust by both the state and the towns in Suffolk county. See, sections 9.3 and 9.4.

With regard to direct water quality issues, Policy 5 mandates “restor[ation] [of] Long Island Sound’s water quality” and section 5.2 specifically requires protection of “coastal waters from adverse impacts associated with excavation, fill, [and] dredging” Very importantly, section 5.4 expressly recognizes the need to protect water resources from cumulative water quality impacts.”

Other relevant policies include Policy 6, which mandates protecting and restoring ecological quality throughout the Sound, particularly fish and wildlife habitats, and Policy 10, requiring protection of existing water-dependent uses, minimizing adverse impacts of new uses, and limiting congestion in coastal waters to reduce hazards to navigation and to prohibit encroachments on navigation channels and vessel use areas. Finally, policy 11 requires New York authorities to protect commercial and recreational use of the Sound’s finfish and shellfish resources and particularly emphasizes the need to promote recreational use of the Sound.

Long Island Sound

The importance of Long Island Sound to Connecticut, New York, and the entire country - environmentally, esthetically, and economically – cannot be overstated. Over centuries, for different peoples and cultures, it has been a constant, precious source of nurture and nature. The Sound is one of the largest estuaries in the United States,

where the tidal, sheltered waters support unique communities of plants and animals. Birds, mammals, fish, shellfish, and other wildlife depend on estuarine

habitats as places to live, feed and reproduce. Numerous marine organisms, including many of the commercially valuable fish and shellfish species, depend on the Long Island Sound estuary at some point in their development. Long Island Sound is also economically important to the Connecticut-New York region for a variety of commercial and recreational purposes.

Comprehensive Assessment and Report Part II, Task Force on Long Island Sound, June 3, 2003, (hereinafter “Task Force Report”).

The WSR demonstrates the importance of the Sound as a multiple use waterway, particularly for marine transportation WSR, p. 18. This report notes that there are more than 2,000 commercial vessel arrivals each year in the Sound and 2,000-4,000 additional commercial crossings. WSR, p. 21. These numbers are expected to increase. *Id.*, p. 23. This number, however, is dwarfed by the staggering total of 280,000 registered recreational boaters who live near and periodically use the waters of the Sound. *Id.*, pp. 33-34. Not surprisingly, areas through which the LNG carriers are expected to pass are referred to by the Coast Guard as having “high traffic density” *Id.*, p. 63.

The Sound is vastly important to the economies of New York and Connecticut for other reasons than marine transport. Commercial and recreational fishing has been valued at \$1 billion each year. Task Force Report, Section 2.1, p. 17. The total of all direct and indirect economic use of the Sound produced a “total use value” of more than \$5,200,000,000 per year. Task Force Report, Section 2.1,0. 24.

This resource, however, has been devastated by pollution, overdevelopment and poor planning and repeatedly impacted by utility projects. See, Task Force Report, pp. v; 11-13. In fact, Long Island Sound presently provides a route between Connecticut and Long Island for two electric transmission cables, one natural gas pipeline, and two telecommunications lines, which have been installed on or beneath the seafloor during the last 35 years. Task Force Report, Executive

Summary, p. v. In addition, there are various cables and infrastructure that connect offshore islands with the mainland. Associated with overdevelopment along the shoreline has been a steady increase in pollution which has damaged the Sound.

While severely damaged by centuries of human impact, industrial pollution and overfishing, the Sound remains an 'essential fish habitat' (EFH), defined as being necessary for fish spawning, breeding, feeding, or growth to maturity, for a variety of fish species. DEIS, p. ES-10, Task Force Report, Section 2, pp. 16-18. The health of the Long Island Sound ecosystem is important because "The tidal, sheltered waters of estuaries support unique communities of plants and animals. Estuarine environments are among the most diverse and productive on earth, creating more organic matter each year than comparably-sized areas of forest, grassland, or agricultural land. . . . Birds, mammals, fish, and other wildlife depend on estuarine habitats as places to live, feed, and reproduce." Task Force Report, Section 2.1. In fact, because of its unique siting and biological characteristics, the Long Island Sound is of tremendous importance as a natural and economic resource. Consequently, it is no exaggeration to say that protecting the last vestiges of a heavily impacted but still critically important natural resource is an important national interest.

B. Consistency with Coastal Zone Regulations.

The proposed Broadwater Project is fundamentally incompatible with numerous New York CZMA polices and regulations. The FRSU is not a water-dependent use and, in fact, would interfere with numerous existing water-dependent activities. Further, the project will cause a loss of open space and permanently block recreational use of major areas of the Sound. There will also be substantial negative impacts to visual quality and scenic areas. Finally, there are will be major negative impacts to water quality and the environment.

Policy 1

Policy 1 of New York's Long Island Sound Coastal Policies states that its goal is to "[f]oster a pattern of development . . . that enhances community character, preserves open space, makes efficient use of infrastructure . . . and minimizes adverse effects of development."

Broadwater's project plainly violates each one of these goals.

For example, policy 1.2 requires "reserv[ing] coastal waters for water-dependent uses." The Broadwater project will adversely impact existing water dependent uses. Specifically, the FSRU and the LNG tankers will be surrounded by exclusion zones barring all recreational and commercial shipping access to several square miles of the Sound. The FSRU will be surrounded by an exclusion zone 1210 yards in every direction from the anchoring system. WSR, p. 3. The individual LNG carriers will have an oval shaped exclusion zone 2 miles ahead of the bow of the vessel, 1 mile behind from the stern and 750 yards on either side. WSR, p. 3-4. Sea-borne commerce and recreational boating are defined water dependent uses under the Policies and will be completely excluded from the security zones -- thus banning, not preserving, water dependent uses in these areas of the Sound.

In its Supplement to the April 2006 New York State Coastal Zone Consistency Certification ("Supplement"), Broadwater claims that its project is consistent with Policy 1 because, among other reasons, it brings a new supply of relatively clean energy into the region. Supplement, p.2. While natural gas is cleaner than other fossil fuels, Broadwater's argument begs the question of whether *its* project meets the goals of the Long Island Sound Coastal Management Plan. Any new source of natural gas in the region, for example, new pipelines of Canadian gas, could produce the benefit Broadwater is claiming and would do so without the serious adverse consequences to marine resources.

Section 1.4 of the polices requires that the Department of State evaluate proposals in the context of maintaining “natural, recreational, and open space values.” Furthermore, this same section also mandates avoiding “loss of economic, environmental, and aesthetic values. . . .” Broadwater’s plan violates both aspects of Section 1.4

As noted above, the FSRU and the various security zones materially diminish available recreational and open space in the Sound. This is a concern of great magnitude. According to the Coast Guard, there are as many as 180,000 registered recreational vessels in Connecticut, 80,000 in New York, and 43,000 in Rhode Island. WSR, pp. 33-34. Open space access to the entire Sound is therefore very important to the public in these three states.

Further, the presence of the immense FSRU unavoidably results in a loss of aesthetic values which cannot be seriously denied. A 100 foot high industrial structure in the middle of an untouched scenic vista is utterly incompatible with New York’s policies.

It is also important to note that Long Island Sound Coastal Management Plan Policy 1.1 explicitly recognizes the importance of maintaining the mix of traditional waterfront communities, agriculture, and other traditional marine area activities. Broadwater’s Supplement claims that its project is consistent with traditional waterfront uses. Supplement, p. 10. The claim that a never-before-attempted, massive floating industrial gas barge anchored off the pristine beaches of one of the most beautiful estuaries in the nation is “consistent” with traditional New England waterfront fishing communities is astonishing and transparently false. In fact, it is a direct threat to a way of life that has existed along the Sound since colonial times.

Not only will the security zones for the FSRU identified in the WSR alone result in the loss of 1.4 square miles of the Sound, but the large security zones around the LNG carriers will result in the repeated temporary loss of even greater areas. Because these moving security zones

will cross much of the Sound every few days, they may even have a greater impact on existing water dependent uses through the repeated disruption and delay of recreational and commercial boating and fishing.

These activities are a major part of the fabric of the traditional fishing and other communities along the shores of Connecticut and New York. In addition to the need to protect and preserve the environment of Long Island Sound, section 1.4 also highlights the importance of preventing loss of economic use of the Sound. As previously noted, commercial use of the Sound is of vital economic significance to the region. Over 5600 U.S. flagged commercial vessels and 1466 foreign flagged vessel arrived in Long Island Sound between 2003 and 2005 and these figures do not include the large number of daily ferry trips across the Sound used by commuters. *Id* at 25. The FSRU will be located in an area now frequently used by commercial vessels, and that use will be precluded by the security zone. *Id* p. 31. Further, use of the Race, the narrow eastern entrance to the Sound, will be halted each time an LNG tanker is scheduled to pass through. Finally, an accident or attack on either a tanker or the FSRU will immediately result in a shutdown of all commercial traffic through this heavily used seaway. Clearly, the negative impacts of this project on water dependent commerce alone require denial of approval of this project under the CZMA.

Finally, policy 1.5 emphasizes the need to “[m]inimize the potential for adverse impacts of types of development which individually may not result in a significant adverse environmental impact, but when taken together could lead to or induce subsequent significant adverse impacts.” The Broadwater FSRU, together with its 20+ miles of underwater pipeline, will itself have a massive impact on the seafloor and water quality in the Sound. However, Broadwater is not the only project that has the potential to impact coastal resources in the region. Starting in 1967 with

the construction of seven power lines from Northport, Long Island to Norwalk, Connecticut, there have been an ever increasing number of energy projects in the Sound that threaten to turn the estuary into a giant utility corridor. *See*, Task Force Report, p. 12; State of Connecticut Department of Environmental Protection, denial of Water Quality Certification under Section 401 of the Clean Water Act for Islander East Pipeline Project, dated December 19, 2006 (DEP Islander East Decision), pp. 47-48. The Iroquois pipeline was installed from Connecticut to Long Island in 1991. The damage from the anchor marks and other damage associated with that pipeline can still be seen and the affected area cannot be used for shellfishing purposes. DEP Islander East Decision, p. 43, Task Force Report, pp. 80, 82. The Cross-Sound Cable Company electric transmission line cuts through from New Haven, Connecticut to Shoreham, Long Island and a depression along the cable installation line up to 3 feet deep and 8 feet wide can still be seen. Task Force Report, p. 78. The Islander East project is intended to build another 20+ mile long natural gas pipeline from Branford, Connecticut to Shoreham, Long Island. *Id.* at 85. The Eastchester Project includes a natural gas pipeline along the north shore of Long Island. *Id.* at 86. The Sound has been repeatedly and heavily impacted by a never-ending succession of utility lines which, considered together, occupy a very significant portion of the seafloor.

Each of these projects causes a loss of habitat. This loss of habitat is enormous, and of great importance. As noted in a document prepared by the National Marine Fisheries Service (“NMFS”), adverse impacts from marine pipeline construction are substantial and long-lasting.

Evidence of this from the Hudson River collected from benthic profiling performed by LaMont-Doherty Geological Observatory for the State of New York (New York State Department of Environmental Conservation 2003) indicates that other utility crossings, undertaken in the Hudson even decades ago, continue to have discernible adverse impacts on the aquatic resources in the project alignments. As a specific example, benthic profiling of a water line installation between Newburgh and Wappinger in 1974

indicates that the site has not fully recovered to preconstruction conditions.

Letter, Dr. Hogarth to NOAA General Counsel for Ocean Services, June 3, 2003, p. 2 (Ex. 1).

Regulators have noted that, once damaged, the benthic environment does not recover to its pre-construction condition. See, DEP Islander East Decision, p. 47. Thus, the damage from each project is permanent and cumulative. In this regard, a letter from the Director of the Connecticut Bureau of Aquaculture to the U.S. Army Corps of Engineers, dated May 28, 2002, (attached as Ex. 2) stated:

An additional concern regarding [the Islander East] project and the other proposed submarine utility projects, is the potential cumulative impacts to Long Island Sound's habitat, water quality and fisheries. We recommend that whenever possible, the siting and construction of utilities in the estuarine environment be avoided. In review of pending applications and proposed projects, cumulative impacts need to be considered.

It is now clear that each project cannot be assumed to be the last and that, at a minimum, Broadwater and Islander East must be evaluated simultaneously in order to determine their total environmental impact.

In sum, policy 1 requires DOS to foster development that "enhances community character," maintains "traditional waterfront communities" and "natural areas [and] open space" and minimizes potential cumulative impacts. Broadwater's project is fundamentally incompatible with these policies in that it is a comprehensive assault on traditional community character and will result in the complete loss of access to important areas of the Sound for any recreational or commercial use. Finally, it, along with the numerous other utility projects in the Sound, will together permanently alter significant areas of natural habitat and pose the threat of even greater damage going forward.

Policy 3

Coastal Zone Policy 3 expressly states that “[v]isual quality is a major contributor to the character of the Long Island Sound region and its communities, and the primary basis for public appreciation of the Sound’s landscape” and that the “intent of this policy is to protect and enhance visual quality.” In order to protect the visual quality of the Sound, Section 3.1 mandates “minimizing introduction of discordant features” in order to “[p]rotect scenic values associated with . . . public trust lands. . . .”

The importance of maintaining the scenic quality of a coastal zone area is great. Tourism and overall quality of life are directly related to visual and scenic quality and, as noted earlier, tourism is a major part of the \$5.5 billion a year in economic value generated by Long Island Sound. Furthermore, the environmental regulators of New York and Connecticut have each identified the preservation of the scenic quality of the Sound as a matter of public importance, particularly with respect to public trust lands. (See, Policy 9 which, inter alia, requires protecting public visual access, sections 9.2 – 9.4, which directly mandate preserving the public interest and public access in and to waters held in public trust by both the state and the towns in Suffolk county.)

It would be difficult to imagine a more direct and adverse impact to the scenic and visual quality of the public trust lands and waters of the Sound than the Broadwater Project. The sheer scale of the FSRU will blight the visual quality of miles of coastline of the Sound. At 1200 feet long, 200 feet wide and rising more than 100 feet in the air, it will be visible simultaneously from both shores as the largest man-made object in the Sound, permanently scarring the horizon. From the thousands of large and small ships passing within one or two miles, the visual impact will be overwhelming. Unlike the existing open seascapes that have captivated artists, residents

and tourists, the FSRU will be, first and foremost, an industrial site, an utterly discordant feature that cannot be harmonized in scale or shape to anything currently in or around the Sound

Broadwater claims that its project will simply look, from shore, like a conventional large ship on a typical passage through the Sound. Supplement, p 18. But the project is not a ship and is going nowhere. It will be a permanent eyesore, not only from the shore but also from the tens of thousands of recreational boats and numerous cruise line ships that use the Sound. The proposal is simply incompatible with the carefully preserved character of Long Island Sound

Policy 5

New York's Coastal Zone Policies require the Department of State to evaluate proposed projects with the specific goal of "restor[ing] Long Island Sound's water quality" Section 5.1. Section 5.2 requires protection of "coastal waters from adverse impacts associated with excavation, fill, [and] dredging . . ." Critically, section 5.4 expressly recognizes the need to protect water resources from cumulative water quality impacts."

The sediments underlying Long Island Sound have been adversely affected by years of industrial and other runoff and pollution. As the Task Force Report notes:

[A]verage concentrations of silver and copper in Long Island Sound were four to five times greater than naturally-occurring background values. Zinc, lead, and manganese concentrations were enriched 1.5 to 2 times greater than natural background levels. Consistent with the sedimentary environments, the greatest enrichment of metals is found in the depositional environments and muddy sediments of the central and western basins, due to both proximity to pollutant sources and the natural movement of sediments and contaminants within Long Island Sound. Total Organic Carbon concentrations, at least partially indicative of pollutant additions, also vary across Long Island Sound, with higher concentrations towards the western end of the basin (Appendix C, Figure C-23).

Task Force Report, Section 2.1.2. This fact is of significance particularly because underwater utility construction results in dispersion of sediment over long distances.

The 1967 Northeast Utilities cables and 1991 Iroquois pipeline resulted in damage that is still visible today. DEP Islander East Decision, pp. 43-47, Task Force Report, pp. 74-84. Construction activities associated with the FSRU anchoring system will also result in the dispersion of significant amounts of potentially contaminated sediment into the water column. The scope, duration and severity of the potential sediment plumes is difficult to calculate because much will depend on wind and water conditions at the time of construction. However, even a moderate storm during the pipe laying procedure can result in sediment plume surges with devastating consequences, as occurred during the installation of the Iroquois pipeline in 1991. Task Force Report, pp. 80-84.

Building the FSRU anchoring unit alone will destroy 13,180 feet of seafloor, both by the construction of the unit itself and by the inevitable anchor scars required to position the construction barges. The sediment disturbed by the dredging and dredge boat anchor spuds will be dispersed into the water column.

Much greater concentrations of sediment will result from the pipe laying operation. Broadwater plans to use a plow technique to install the 21.7 mile long pipe. If this approach is successful, it will mean that a trough of sediment approximately 3-4 feet deep, 3-4 feet wide and more than twenty miles long will be disturbed involving thousands of acres of seafloor impact. DEIS, section 2.2.2. This, of course, assumes that the seafloor is conducive to plowing. If bedrock or compacted till prevent use of a plow, then Broadwater must employ even more destructive methods. See, DEIS, section 2.3.2.2. Dredging, for example, involves much greater disruption of the seafloor and introduces significantly more sediment into the water column. Large storms create an even greater potential for mobilizing the disturbed sediment. Whether the sediment is plowed or dredged, the displaced sediment will be vulnerable in any storm. As was

the case in the unfortunate Iroquois project of 1991, displaced sediment can be quickly turned into a massive plume contaminating the water for great distances. See Task Force Report, pp. 80-83. Reports indicate that a storm event during installation caused deposition of sidecast spoils outside the construction area and that a sediment plume up to 4,000 feet from the trench was visible. *Id.* Therefore, when evaluating the Broadwater project, DOS must require the applicant to provide meticulous, worst-case modeling of sediment plumes and the resulting impacts to water quality and habitat.

Consequently, the Policy 5 directive to protect water quality from “adverse impacts associated with excavation, fill, [and] dredging” is directly violated by this proposal because the Broadwater Project, due to its size and scope, is manifestly the largest utility project ever proposed for the Sound and will have a greater impact than any other. In addition, the FRSU will use an average of 5.5 million gallons of water each day to operate the regasification machinery. DEIS, p. 2-20. The thermal impacts to water quality in the Sound have not been evaluated in the DEIS, but they are obviously severe.

Finally, policy 5.4 expressly recognizes the need to protect water resources from *cumulative* water quality impacts. That requirement compels consideration of numerous other planned and proposed projects in the Sound. For example, Northeast Utilities, a Connecticut electric company, plans to install four new electric cables between Connecticut and Long Island. Task Force Report, p. 84. The Sound has been, is being, and will continue to be, damaged by numerous utility projects that cumulatively pose a direct threat to critical coastal resources.

Policy 6

Policy 6 mandates that DOS “[p]rotect and restore the quality of the Long Island Sound ecosystem” and specifically lists biological and physical components of the overall ecosystem.

Policy 6.1 particularly notes the need to “[a]void permanent adverse changes to ecological processes” and to “[a]void significant adverse changes to the quality of the Long Island Sound ecosystem as indicated by physical loss . . . of ecological components ”

There can be no doubt – the Broadwater project will unequivocally result in massive loss of the “physical components,” specifically the seafloor, of the overall ecosystem. The State of Connecticut has long and uniformly negative experience with pipeline construction and past experience in the Sound has demonstrated that the effects of underwater construction operations *persist for decades* and effectively eliminate any possibility of commercial shellfishing operations into the foreseeable future (Testimony of Dr. L. Stewart before the Connecticut Siting Council, April 12, 2002, p. 192 (Ex. 3); Islander East FEIS, p. 3-70.) The FEIS produced by FERC for the Islander East Pipeline Project fully acknowledges that natural gas pipeline installation causes permanent “long-term conversion of shellfish habitat ” Islander East FEIS, Dckt No CP01-384-000, p. 3-71. The Connecticut Department of Environmental Protection has noted that damage caused by installation of the Iroquois pipeline in 1991 is persistent and long-lasting *See*, DEP Islander East Decision, p. 39, Islander East FEIS, Dckt. No. CP01-384-000, p. 3-70. Further, there is uncontroverted evidence that anchor scars up to six feet deep and other holes left by dredging and lay barges from the Iroquois project still exist and prevent use of the area for shellfishing, years after construction was completed (DEP Islander East Decision, pp. 43-48; Transcript of testimony of L. Williams, Connecticut Siting Council, Islander East application, Dckt. No. 221, 4/17/02 at 91-96 Ex 4.) Dr. Lance Stewart, a benthic ecologist, testified that the “continuum of trenching and anchor scars” could create entrapment and anoxic depressions, stating that this sort of “pitting” of the substrate was most harmful. *Id.*, 4/12/02 at 185-187 (Ex. 5).

As the Connecticut DEP has determined: "Time does not necessarily heal the scars left by underwater utility installation." DEP Islander East Decision, p 47. The DEP continues:

Based on agency experience, it is difficult, if not impossible to restore the seafloor to pre-construction conditions because depressions in the sediment become areas of either erosion or deposition. . . . [D]redging and general excavation of the substrate breaks up the compact fine grain sediment and allows water to "fluidize" the consistency. Once these sediments are disturbed by dredging, they will no longer exhibit the consolidation, high density and cohesiveness of the undisturbed, in-situ sediments and they would be easily eroded in areas of high current. Alternatively, depressions left on the seafloor in areas of lower current velocity may become traps for fluidized sediments. This phenomenon is mentioned in the [Islander East] FEIS at 3-65 regarding impacts associated with anchors and cable sweep: "These long lasting depressions can act as sediment traps that develop considerably different communities from the original deposits (Hall, 1994). The persistence of these depressions would represent a long-term conversion of benthic habitat.

DEP Islander East Decision, p.47. There is more than abundant evidence for the "persistence" of impacts associated with utility projects. The DEP noted that an air photo taken on November 1, 2001 clearly shows visible impact scars from the 1967-1969 installation of the Northeast Utilities cables between Connecticut and Long Island. *Id.* pp. 47-48. *See also* Task Force Report, pp. 74-77 (evidence of continued visibility of habitat damage 35 years after installation.)

Pipeline projects in New York have also had unequivocally negative long-term impacts associated with pipeline construction. The letter cited above from Dr. William T. Hogarth of the National Oceanic and Atmospheric Administration stated, regarding the proposed Islander East pipeline, that

The physical displacement of the existing habitat and hydration of the sediment will diminish or exclude resource use for relatively long periods of time other utility crossings, undertaken in the Hudson even decades ago, continue to have discernable adverse impacts on the aquatic resources in the project alignment

Letter, Dr. Hogarth to NOAA General Counsel for Ocean Services, June 3, 2003, p. 2. Ex.1

The DEIS is devoid of a single scientific study or expert conclusion that a pipeline trench can ever return to its preconstruction state. To the contrary, the DEIS itself briefly mentions the recent Eastchester Expansion Project in Long Island Sound and states: “Post-construction monitoring of the bathymetry along the Eastchester Expansion route has shown that attempts at mechanically backfilling the trench were not successful and that natural backfilling of the trench had not substantially occurred along most of the pipeline route . . .” DEIS, p. 3-43. Therefore, all evidence continues to show that once the seafloor of the Sound is damaged by anchor scars and pipeline trenches, it never returns to its natural state and the marine resources in the trench area suffer for decades.

In addition, Broadwater is forced to admit in its Supplement that use “of Sound water will result in impingement and entrainment of Long Island Sound planktonic organisms” and that “[m]arine species that may be impacted by the construction of the Project are those associated with benthic habitats, including demersal finfish, shellfish, early benthic-phase lobsters, and benthic communities.” Supplement, p. 28. Broadwater is similarly compelled to acknowledge that there will be “[i]mpacts on Essential Fish Habitat (EFH) during construction. . . .” *Id*

Further, in addition to the loss of open space and opportunities for recreational and commercial use of the Sound caused by the FSRU and the security zones, it is important to recognize that there are potential grave adverse impacts to coastal dependent uses from the consequences of an accident or attack on the FSRU or the LNG carriers.

For example, an accident on the FSRU or on any of the LNG carriers could have a devastating impact on the overall Long Island Sound ecosystem and such an accident is not at all unlikely. The number of potential vessels in the Sound is astronomical. As noted above, there are as many as 300,000 registered recreational vessels in Connecticut, New York, and Rhode

Island. WSR, pp. 33-34. In addition to the recreational boaters, 5613 U.S. flagged commercial vessels and 1466 foreign flagged vessels arrived in Long Island Sound between 2003 and 2005. *Id.* at 25. Some of these vessels are more than 900 feet long and these numbers do not include the various ferry services making more scores of passages daily across the Sound and carrying millions of passengers and vehicles each year. *Id.* at 24-26. Accentuating the problem is the fact “that the proposed location of the FSRU is in the vicinity of a commercial vessel thoroughfare” *Id.* at p. 33. Commercial vessel traffic is expected to increase. *Id.* at 23.

Further, The U.S. Navy maintains an important nuclear submarine base at New London, Connecticut and Electric Boat has a nuclear submarine construction facility nearby. Consequently, nuclear submarines frequently cross the Sound through the Race. Obviously, a collision between a nuclear-powered and armed vessel and an immense commercial tanker laden with highly flammable natural gas could create an unmitigated catastrophe. Such a collision is not impossible at all. In 2002, the *Norman Lady*, an LNG carrier, was involved in a collision with the *U.S.S. Oklahoma City*, a nuclear powered attack submarine, east of the Strait of Gibraltar. Cabrillo Point Project, DEIS. at C-3. The LNG carrier suffered a breach of its double bottom dry tank area and took on seawater, but did not sink. More recently, on January 8, 2007, another nuclear powered attack submarine, the *U.S.S. Newport News*, collided with the Japanese supertanker *Mogamigawa* in the Straits of Hormuz, a 34-mile wide body of water -- considerably wider than Long Island Sound. Japan Seeks Probe of Ship Collision, Associated Press, January 10, 2007. The risks and dangers shown by these accidents are clear, but the DEIS is utterly silent on the consequences.

Of course, with each vessel that crosses the Sound there is always a risk of collision with another vessel or a grounding. However, for a small pleasure boat or most of the smaller

commercial vessels in the Sound today, most accidents would have consequences of a local nature only. With the FSRU and the LNG carriers, on the contrary, due to their sheer size, if they suffer a catastrophic accident or attack, the scale of the consequences would have much greater impacts on the Sound. WSR, p. 105.

Broadwater, however, repeatedly asserts that LNG carriers have a safe shipping record. To the contrary, LNG tanker accidents have occurred repeatedly. In 1974, the *Methane Princess* was damaged after grounding at or near port. Cabrillo DEIS, p. C-2. In 1979 the *El Paso Paul Kayser* suffered severe bottom damage after it became stranded. *Id.* In 1980 the *LNG Libra* fractured its tail shaft and in 1984 the *Melrose* caught fire in its engine room. *Id.* In fact, the Coast Guard WSR itself explicitly states that “[c]ollisions involving LNG carriers in The Race, Block Island Sound and Eastern Long Island Sound, areas that are part of the thoroughfare used by vessels transiting Block Island Sound and Long Island Sound, account for the majority of the potential navigation safety risk associated with the Broadwater Energy proposal.” WSR, p. 123

Further, in addition to high traffic density, the FSRU and its attendant LNG carriers will have to contend with weather conditions that can, as the WSR notes, include fog for extended periods of time, gale force winds and significant buildup of ice. WSR, pp. 44-46. In addition to “normal” weather conditions in the Sound, the possibility of environmental damage caused by extraordinary events cannot be discounted. Thus, in addition to the ever present threat of fog (encountered 10-12 percent of the time between April and August) and ice (which periodically can cover most or all of the Sound and has blocked ferry movements in the past), the WSR shows that forty tropical cyclones (16 tropical storms and 24 hurricanes) have struck southern New England since 1936. WSR, pp. 44-46

During the 2005 hurricane season alone, hurricanes Katrina and Rita damaged or destroyed 109 offshore platforms, ripping many of them from their moorings, and damaged 60 more. Hurricanes Destroyed 109 Oil Platforms: US Government, Agence France-Press//www.terraily.com//, Oct. 4. 2005 Katrina, while powerful, was ultimately determined by the National Hurricane Center to be only a Category 3 storm at landfall, on a rating system which extends to Category 5 Service Assessment, Hurricane Katrina August 23-31, 2005, U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, p. 1.

If the FSRU is torn loose in a storm, there is practically nowhere it could go without endangering commercial shipping or seacoast communities. Therefore, DOS must assume the probability of a Class 5 storm on the FSRU and determine whether it is possible to protect the marine resources of the Sound in the event the anchoring system fails *before* it can begin to evaluate the full potential impacts of this project. In this regard, the Coast Guard's WSR notes that, in the wake of Katrina, the agency is reevaluating its design standards for securing offshore energy facilities. As the report states: "Because of the damage that did occur during these hurricanes, the Minerals Management Service (MMS) is reviewing the API RP 2A design standard, which is the design standard Broadwater Energy has proposed to use for the designing the fixed portion of the mooring system. To date, this review has not been completed." WSR, p 116.

In the face of the uncontroverted fact that a huge amount of energy infrastructure built to current design standards failed during Hurricane Katrina, there is absolutely no basis for asserting that this proposed facility, with its mooring system construction method as yet unknown, is not likely to break away in a major storm. In fact, recent history suggests exactly the opposite. Absent the presently non-existent new standards, and a strong clear plan for the

design and construction of the mooring system, the public is faced with a DEIS which claims that the project is safe when neither the geotechnical work nor the final construction plans for the anchoring system exist and, at the same time, the standards necessary to review the final system also do not exist. DOS must either assume, plan for, and evaluate the results of the fact that the FSRU will probably break loose in a storm, or await the new Coast Guard standards and a detailed plan regarding construction and operation of the mooring system.

In addition, there are plainly insufficient emergency personnel or equipment to respond to catastrophe. As the Coast Guard WSR states ominously: "Based on current levels of mission activity, Coast Guard Sector Long Island Sound currently does not have the resources required to implement the measures that have been identified as being necessary to effectively manage the potential risk to navigation safety and maritime security associated with the Broadwater Energy proposal." WSR Report, pp. 156-157. There is no State of New York or State of Connecticut fire department. None of the municipal governments have the necessary first response capabilities and there is no indication on the record of how local governments will find the resources to protect their citizens and property in the event of a disaster caused by the FSRU or an LNG carrier.

There is another critical issue that affects New York's Long Island Sound Coastal Policies -- the probability of anchor strikes damaging the pipeline. Broadwater intends to install 21.7 miles of 30 inch pipe under the Sound. The top of the pipe will be 3 feet below the seafloor, but Broadwater planned to backfill only about 10% of the pipeline. FERC has stated that it intends to require Broadwater to backfill the entire length. See DEIS, pp. 3-13 – 3-15.

However, even with this minimal backfilling, there is an unreasonable risk to natural resources from anchor strikes on the pipeline caused by any of the tens of thousands of

commercial and larger recreational boats that use the Sound Connecticut Light & Power Company has an electric cable system that crosses the Sound from Northport, New York to Norwalk, Connecticut. Over approximately 30 years, it has suffered more than 50 anchor strikes severing one or more cables. Testimony of R. Zaklukiewicz, Connecticut Siting Council, Dckt No. 224, CL&P 1385 Cable Replacement Project, June 5, 2002, p. 5 Ex. 6, see also, Task Force Report, pp. 74-77. An anchor for a large vessel can easily sink through many feet of sediment into the seabed DEP Islander East Decision, p. 43. Even if the FERC recommendation to backfill the entire length of the pipeline is followed, the top of the pipeline will be covered only to a depth of 3 feet. The potential for repeated anchor strikes over the planned thirty year service period of this system cannot be overlooked, yet the DEIS is utterly silent on this important and dangerous issue.

This concern is hardly hypothetical. As noted above, existing underwater infrastructure in the Sound has been damaged by anchor strikes. Severing an electric cable only results in grounding of the current into the seafloor. Hitting a natural gas pipeline brings more serious results. A spud anchor dropped from the *Dave Blackburn* on October 23, 1996, in Tiger Pass, Louisiana, struck a 12 inch underwater natural gas pipeline owned by Tennessee Gas. National Transportation Safety Board (NTSB), Safety Recommendation, P-98-26 and -27, October 16, 1998, p.1. “[N]atural gas released from the pipeline enveloped the stern of the dredge and an accompanying tug. . . Within seconds. . . the natural gas ignited. The resulting fire destroyed the dredge and the tug.” *Id.* This NTSB report concludes, “[a]s shown by other fatal accidents investigated by the Safety Board that involved damage to pipelines traversing navigable waterways, underwater pipelines represent a risk for both recreational and commercial vessels.” *Id.*, p. 3. This particular incident involved a dredging barge and its tug. The Sound, however, is

routinely used by large petroleum tankers and other vessels carrying various cargoes including chemicals. An explosion or fire started by an anchor strike on the pipeline could quickly turn into a massive environmental disaster if an oil tanker or other vessel were involved.

However, while the DEIS and the WSR are clear that there are any number of potential threats to the FSRU and the LNG carriers from the density of marine traffic and sometimes appalling weather conditions, these reports do not provide adequate analysis of the *effects* of a catastrophic accident or attack on the coastal resources. In part, this absence of information and analysis follows from the fact that there is, as yet, no emergency response plan for Broadwater. Without a response plan, it is impossible to evaluate the full impact of a fire, oil or chemical spill, grounding or other accident because, as in the case of the *Exxon Valdez* disaster, much of the environmental damage is likely to be caused, not by an initial grounding, for example, but by a confused or inadequate emergency response.

Consequently, this project would violate Policy 6.1 due to the strong potential for an accident or fire, as well as the probable significant collateral damage to water dependent uses from such an accident or fire. In addition, one must assume that emergency response to any disaster will be inadequate and ineffectual in the absence of a valid emergency response plan, supported by adequate resources.

Policy 9

Policy 9 expressly provides “for public access to, and recreational use of, coastal waters, public lands, and public resources of the Long Island Sound coastal area.” Policy 9 adds: “[e]xisting public access and opportunities for recreation are inadequate to meet the needs of the residents of the Sound, let alone residents of the state.” DOS is directed to “maintain and

improve existing public access,” “increase public access throughout the Sound,” and “capitalize on all available opportunities to provide additional visual and physical public access. . . .”

Policy 9.3 is even more specific and refers to the need to “[p]reserve the public interest in and use of lands and waters held in public trust by the state, . . . and the towns in Nassau and Suffolk counties” and the need to “[l]imit grants, including conversion grants, in fee of underwater lands to exceptional circumstances.”

No project could more violate policy 9 than Broadwater. As extensively discussed above, this project will directly ban all public access in public trust lands held by the states of New York and Connecticut and Suffolk County. This project will not only degrade visual access, it will destroy access to important portions of the Sound for recreational and commercial use of any kind by anyone except Broadwater. Further, instead of limiting grants of underwater lands, this project mandates the loss of not only the acreage under the FSRU and the pipeline but the entire security zone as well. There is nothing exceptional about this project that justifies this conversion of public trust land. This facility could be placed on land, where all other LNG terminals are placed. There is no need or excuse to take this public trust land and therefore no justification for violating policy 9

Policy 10

Policy 10.1 requires the protection of existing water-dependent uses and mandates that regulators should “[a]void actions which would displace, adversely impact, or interfere with water-dependent uses.”

It is self-evident that a complete ban on fishing, shellfishing, recreational boating or any other use of the waters around the FSRU and the LNG carriers directly contravenes policy 10.1 by displacing, adversely impacting and interfering with long-established water-dependent uses.

Further, both the presence of the FSRU and its security zone, as well as the periodic disruptions of maritime traffic occasioned by the passage of the LNG carriers, will violate policy 10.6, which states, in part, that DOS should “[p]rotect and maintain existing public and private navigation lanes” and “[a]void . . . water uses which would impede navigation.”

Another critically important aspect of policy 10 is policy 10.7, which flatly states that it is the policy of New York to “[p]rohibit any increase or additional use of coastal waters if such an increase or addition poses a public safety hazard, which cannot be mitigated.” Broadwater is such a public safety hazard. As discussed above, there have been repeated accidents in the marine shipment of LNG. In 1965, the *Jules Verne* leaked LNG, instantly fracturing deck plates. Cabrillo Point DEIS, Appendix C p. C-1. In 1979, not one, but two ships -- the *Mostefa Beb-Boulaïd* and the *Pollenger* -- experienced valve failures leading to leakage leading to metal fractures in either deck plates or tank cover plates. *Id.* A similar incident occurred in 1985 on the tanker *Isabella*. *Id.* at C-3.

Further, Broadwater is a perfect terrorist target, as is clear from a review of recent authoritative reports that both maritime activities and energy infrastructure remain important terrorist targets. For example, The Federal Bureau of Investigation’s Efforts to Protect the Nation’s Seaports (“FBI Report”), a March 2006 report prepared by the U.S. Department of Justice, Office of the Inspector General, fully acknowledges “the vulnerability of seaports and maritime activities to a terrorist attack.” FBI Report, page ix. The report continues, “[b]ased on suspicious activity reports and the vulnerability of ports, [the 2004 National Threat Assessment (NTA)], concludes that al Qaeda will most likely resume its maritime strategy. The NTA names vehicle-borne improvised explosive devices as the type of weapon that al Qaeda will most likely

use for a maritime attack, and cites maritime facilities, infrastructure, merchant vessels, and warships as the most likely maritime targets.” *Id*, p. 52.

It is not only the Department of Justice that has concluded that the United States faces a direct, if not increasing, threat of maritime terrorism. The recently published New York State Terrorist Threat Report states that terrorists are “increasingly shift[ing] their focus to maritime operations,” in particular in order to “inflict[] catastrophic economic harm.” New York State Office of Homeland Security Focus Report: Maritime Terrorist Threat (“NY Terrorist Report”), February 21, 2006, p. 2 “[I]nformation gleaned as a result of the November 2002 capture of al Qaeda’s nautical specialist, Abd al-Rahim al-Nashiri, confirmed that the Moroccan cell was just the crest of a planned wave of nautical terrorism.” *Id* “The strategy called for ramming underway vessels with explosive-laden speedboats, detonating vessel-borne improvised explosive devices in ports, attacking large cargo ships and supertankers” NY Terrorist Report, p. 3. “Among the vessels that could be used by terrorists to create a massive vessel-borne improvised explosive device (VBIED) are large ships carrying liquefied petroleum gas (LPG) and liquefied natural gas (LNG), crude oil, toxic chemicals, and ammonium nitrate.” NY Terrorist Report, p. 14 “An ignited LNG vapor cloud would generate extremely high heat output and cause extensive loss of life and damage to property. Moreover, released LNG would be more difficult to contain at sea than on land since it would disperse faster on the ocean. LNG also vaporizes more quickly on water because the ocean provides a relatively enormous heat source. For these reasons, most analysts conclude that the shipping, loading and off-loading LNG are significant terrorist targets.” *Id* The Broadwater project thus provides an attractive target for purposes of economic jihad –conveniently near New York City, an established target for terrorism.

This threat is real. Al-Qaida operatives have repeatedly attacked energy infrastructure systems in Saudi Arabia and Iraq. A seaborne attack was made on the French tanker *Limburg* in 2002 and there was a separate similar attack on a gas tanker in Yemen in 2001. Cabrillo DEIS, page C-5. Further, there have been several successful terrorist or pirate attacks on tankers and shipping in the Middle East and Southeast Asia, including the infamous seizure of the *Achille Lauro*. *Id*

Clearly, terrorists desire to attack the United States energy infrastructure and they have a demonstrated capability to launch seaborne attacks or hijacking of surface vessels.

Policy 11

Policy 11 notes that “[c]ontinued use of the Sound’s living resources depends on maintaining long-term health and abundance of marine fisheries resources and their habitats. . . .” Policy 11.3 in particular encourages maintenance of a “stable commercial fishing fleet” and policy 11.4 urges promotion of recreational use of marine resources.

Of course, the flat ban on commercial and recreational fishing in the area around the FSRU is incompatible with policy 11. In addition, the entrainment and destruction of juvenile fish by the daily use of millions of gallons of seawater by the FSRU poses a direct threat to the “health and abundance of marine fisheries resources.” Finally, the damage to habitat caused by the construction work and the risk to habitat from accident or attack on the FSRU or any of the LNG carriers again contravenes the directives of policy 11.

Policy 13

Policy 13, unlike many of the earlier policies, focuses directly on the use and development of energy resources. Policy 13 expressly directs that conservation is the first priority of DOS in reviewing projects in the Sound. In addition, policy 13.3 unequivocally

directs that “new energy generating and transmission facilities [must be sited] so they do not adversely affect natural and economic coastal resources” and policy 13.4 states the “Liquefied Natural Gas facilities must be safely sited and operated.”

The Broadwater project will “adversely affect natural and economic coastal resources” by interfering with commercial and recreational use of substantial areas of the Sound. The construction impacts alone will adversely affect miles of seafloor. Siting the FSRU adjacent to a major commercial shipping lane will adversely affect economic use of the Sound. Beyond all of this, in the event of fire, collision or grounding of the FSRU or any of the LNG carriers, the impact to natural resources and economic use of the Sound will be incalculable.

Conclusion

New York's Long Island Sound Coastal Policies are the detailed and considered result of careful regulatory planning and are closely matched to important public goals. The Broadwater project will result in serious damage to vital coastal resources and permanently convert important areas of public trust natural resources to private use in contravention of these policies. Even assuming the need for the project as described by Broadwater, other alternatives can meet that need with much less damage to the Long Island Sound. Accordingly, Broadwater's request for determination of consistency with the CZMA must be denied.



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EXHIBIT 1



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910
THE DIRECTOR

JUN - 4 2003

MEMORANDUM FOR: Brandon Blum
Office of General Counsel for Ocean Services

FROM: *R. Kent*
for William T. Hogarth, Ph.D.

SUBJECT: Islander East Pipeline Company Consistency Appeal

I am responding to the memorandum from the former Deputy Under Secretary for Oceans and Atmosphere, Mr. Scott Gudes, regarding a Department of Commerce administrative appeal by the Islander East Pipeline Company (Islander East or appellant) pursuant to the Coastal Zone Management Act (CZMA). The appeal petitions the Secretary for an override of the State of Connecticut's objection to Islander East's proposed natural gas pipeline. The pipeline would extend from a connection with an existing natural gas infrastructure near North Haven, Connecticut across and beneath the waters of Long Island Sound (the Sound) connecting to an inland terminus at Brookhaven, Long Island, New York. The State of Connecticut has determined that the proposed action would adversely impact natural resources, land and water uses in their coastal zone beyond acceptable levels. In his January 31, 2003 memo, Mr. Gudes asked NOAA's National Marine Fisheries Service (NOAA Fisheries) to provide comments on the Islander East appeal. We are responding to those substantive grounds as they relate to our mandate to protect, manage, and restore the nation's fishery resources. We are unable to provide comments on the procedural grounds of timing of communications or national security interest.

Based on our understanding of the proposed action and the specifications contained within Mr. Gudes' memo, the State of Connecticut decision raises important concerns with respect to the environmental impact of the proposal. Portions of the pipeline route transit ecologically sensitive areas of importance to the state and nation, and there is a likelihood of incurring significant adverse environmental impacts during pipeline installation. There are reasonable alternative alignments, and we have identified less destructive installation methodologies and procedures, both of which would significantly lessen adverse impacts on natural resource, while advancing the appellant's objectives.

NOAA Fisheries' Comments on the Issues being Considered in the Appeal

For the Secretary to find for the appellant, he must determine that the project satisfies two substantive grounds. The first is that the project is "consistent with the objectives" of the CZMA. This ground is subdivided into three interrelated items. The Secretary must find that the pipeline: 1) furthers the national interest as articulated in sections 302 or 303 of the CZMA in a



significant or substantial manner; 2) outweighs the national interest associated with the activity's adverse coastal effects, when those effects are considered separately or cumulatively; and 3) has no reasonable alternatives that could be conducted in a manner consistent with the enforceable policies of the State of Connecticut's Coastal Zone Management Program.

The second substantive ground for overriding a state's objection is whether the proposed activity is necessary in the interest of national security. The Secretary must find that a national defense or other national security interest would be significantly impaired if the activity in question was not permitted to go forward as proposed.

Islander East Company proposes a pipeline project in the shoal waters of Connecticut to dredge a trench and to store the removed sediment "in-water," immediately adjacent to the excavation. Within that 1.3 km (1.1 mile) long trench area and adjacent seafloor, as well as offshore to the 15 meter isobath, immediate and protracted destabilization of the seafloor will be incurred. The project construction footprint encompasses an area of 1,270 hectares (3.1 square miles). The sediments in the project area are mostly composed of fine particles that are tightly consolidated in an undisturbed state. When disturbed, however, as through dredging, they become very loosely consolidated and easily resuspended into the water column (Laybourn, 1984). Wave energy is strong enough to disperse these destabilized, excavated sediments, and may result in continued impacts on nearby sea floor habitats. The physical displacement of the existing habitat and hydration of the sediment will diminish or exclude resource use for relatively long periods of time. Evidence of this from the Hudson River collected from benthic profiling performed by Lamont-Doherty Geological Observatory for the State of New York (*New York State Department of Environmental Conservation 2001*) indicates that other utility crossings, undertaken in the Hudson even decades ago, continue to have discernible adverse impacts on the aquatic resources in the project alignments. As a specific example, benthic profiling of a water line installation between Newburgh and Wappinger in 1974 indicates that the site has not fully recovered to pre-construction conditions. Thus, sediment dispersal and acute adverse habitat degradation from the Islander East proposed construction will effect habitat function for long periods. FERC's Islander East Pipeline Project FEIS (2002) states on page 5-5 that, "Based on a review of sea floor recovery rates and analysis of existing conditions, most disturbed benthic communities would be expected to recover within 5 years." However, the document further states, "...disruption of nearshore Connecticut shellfish habitat and deep anchor pits or depressions created by construction could take longer to recover and in some cases may develop different benthic communities." This indicates that shellfish habitat may take much longer than five years to recover and may never fully recover to pre-existing use condition for these resources. Moreover, hydrated sediment is too fluid to support the weight of adult clams, the size and weight of which is dependent on the consistency of the sediment. As sauced clams grow and gain weight, they may sink deep enough into these sediments and smother as oxygen depletes (Wilber and Clarke 2003). The nature and persistence of these physical impacts were deemed by the state to be inconsistent with 14 enforceable policies of the Connecticut CZMIP (Connecticut DEP letter to Islander East Co., 2002).

As presently proposed, the 1,270 hectares of pipe laying and multiple pass, plowing, and backfill programs would physically and adversely impact the Long Island Sound seabed, and would disperse significant volumes of resuspended sediment onto nearby spawning, nursery, and maturation habitats for finfish, mollusks, and crustaceans. Suspended sediments have been shown to degrade habitat functions and values and exclude motile species (Wilbur and Clarke 2001; Limburg *et. al.* 1999; Benfield and Minello 1996; Johnson and Wildish 1982). Connecticut DEP has concluded that those actions would be inconsistent with ten enforceable policies of their CZMP (Connecticut DEP letter to Islander East Co., 2002). These impacts also have national interest implications regarding fishery resources which are managed by NOAA Fisheries, either solely or jointly with the State of Connecticut. Although the State of Connecticut's consistency determination focused on lobsters and quahogs, the New England Fishery Management Council and the Mid Atlantic Fishery Management Council did designate the project area as essential fish habitat for as many as 23 aquatic species managed under the Magnuson-Stevens Fishery Conservation and Management Act. This is an important consideration for NOAA Fisheries as the project could affect habitats used by these species.

NOAA Fisheries' communications to FERC and the Army Corps of Engineers (ACOE) present similar arguments regarding the proposed pipeline. Discussions among the appellant and the regulatory agencies indicated significant, unacceptable, and avoidable individual and cumulative adverse impacts associated with the project. NOAA Fisheries has expressed these conclusions and their justification to both FERC on May 20, 2002, during their National Environmental Policy Act review process (FERC/EIS - 0143F), and to the ACOE, New England District, on July 3, 2002 in response to their public notice for this project. Those impacts were characterized as two principal types--removal or burial of both resource and habitat within the actual construction corridor, and intensified suspended sediment-induced impacts in the far-field. Both impact types have been shown to be associated with the pipe installation methodologies proposed by Islander East and are destructive to habitats and resources of concern to NOAA Fisheries.

Many of the adverse impacts associated with the proposed pipeline relate to the installation techniques proposed by the appellant. As noted above, NOAA Fisheries has identified that the impact area contains both species and habitats managed under the Magnuson-Stevens Fishery Conservation and Management Act as well as the Fish and Wildlife Coordination Act, and that those resources would be adversely impacted by the pipeline installation. The present design calls for the creation of open trenches and pits with adjacent, in-water storage of the excavated material and subtidal discharge of drilling mud and its contents in water depths where simple pipe laying and burial procedures cannot be employed (waters < 7 meters). In waters deeper than 7 meters, the project calls for a total of four passes of the installation and burial equipment along the remainder of the approximately 32-kilometer underwater section between Branford, CT and Wading River, NY. Both the inshore and offshore activities will result in seabed disruptions that have been characterized by the appellant as adversely impacting approximately 1,274 hectares

Additional impacts are created by the proposed lay barge mooring and positioning system which will require approximately 70 anchor placements per kilometer. These habitat displacements and

dispersion of sediment created by the anchoring procedures are seen as pits and fluidized sediments. Habitat found in waters deeper than 15 meters are more stable (i.e., less influenced by natural disturbance events) than those in shallower waters. Because of that stability, disturbance in deeper waters usually result in protracted damage to such habitat, perhaps much longer than five years (SAIC 1995). Pits created by anchor placements, particularly of the size used for pipe laying, can capture organic materials and semi-motile species creating hypoxic or anoxic traps incapable of supporting benthic organisms. (Bohlen, Cohen and Strobel 1992). Hydrated sediments are incapable of providing support for molluscan organisms that can grow as heavy as northern quahog or surf clams. Eventually, these molluscs sink in the unstable sediment, and without contact with the overlying oxygenated waters, they suffocate (Hirsch, Disalvo and Peddicord 1978). Because much of the central Sound floor is composed of fine grained materials, sediment reconsolidation will be protracted. Near bottom turbidity in such depths diminishes efficient feeding by aquatic resources and may inhibit both spawning and hatching success by exhausting resources needed for gonadal development and by suffocating released gametes (Wilbur and Clarke 2001).

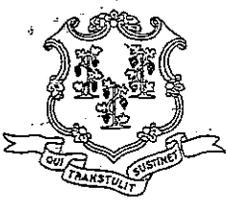
In determining whether the national interest of the proposed pipeline outweighs the adverse coastal effects, either separately or cumulatively, we note that there are several other natural gas pipeline and energy transmission interconnection proposals seeking access to the same market. Other proposals, such as the Iroquois Eastern Long Island Extension Project, as mentioned in the Islander East FEIS, have significantly fewer and smaller individual and cumulative impacts associated with their design than those found in the Islander East proposal. Further, the State of Connecticut has authorized the placement of utility structures in their coastal zone, indicating that some proposals can comply with the Connecticut Coastal Zone Policies. FERC identified and discussed a number of alignment and system alternates in their final environmental impact statement (FERC/EIS-0143F 2002), and concluded on page 4-3 that an Eastern Long Island (ELI) system alternative is more environmentally benign than the appellant's. NOAA Fisheries has recommended that the appellant employ such alternative alignments and identified less destructive installation methodologies that would reduce further local and regional adverse impacts. Selection of an alignment with fewer shellfish resources, elimination of the trenching, and reduction in the number of plow and backfill passes are alternatives that would greatly reduce the adverse impacts associated with the Islander East proposal.

Finally, we note that Islander East and the principal regulatory agencies (State of Connecticut and federal) are involved in technical discussions, concurrent with this appeal process, regarding designs and practices that could greatly reduce the adverse impacts associated with the present proposal. The Coastal Zone Management Act, Federal Consistency Regulations (15 C.F.R. Part 930) Sections 930.129(b), (c) and (d) provide for those discussions.

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EXHIBIT 2



STATE OF CONNECTICUT

DEPARTMENT OF AGRICULTURE

Bureau of Aquaculture and Laboratory

May 28, 2002



Cori M. Rose
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

RE: Public Notice, File Number: 200103091, Algonquin Gas Transmission Company and Islander East Pipeline Company, LLC.

Dear Ms. Rose:

Pursuant to Connecticut General Statutes Sections 22-11d, 26-192 and 192a; staff of the Bureau of Aquaculture has reviewed the above captioned public notice concerning the proposed construction of a 24" diameter natural gas pipeline by Algonquin Gas Transmission and Islander East Pipeline Companies. We have also reviewed the draft environmental impact statement generated by the Federal Energy Regulatory Commission (FERC/EIS-0143D) and application materials submitted to the Connecticut Siting Council and the Connecticut Department of Environmental Protection concerning this project.

We have determined that the siting and the construction methods for the marine phase of the project, will likely cause significant damage and harm to shellfish resources and shellfish habitat. Shellfish aquaculture, commercial and recreational shellfish harvest operations, are likely to be impacted as well. This determination is based on the review of the information provided in the above referenced documents, consultations, as well as staff field experience with a similar project. We therefore recommend that the marine portion of the current application be denied.

Siting Concerns.

The proposed pipeline route is sited in a well known shellfish concentration area that provides habitat for populations of eastern oysters (*Crassostrea virginica*), hard clams (*Mercenaria mercenaria*), soft clams (*Mya arenaria*) blue mussels (*Mytilus edulis*) and channel whelk (*Busycon canaliculatum*). Extensive privately owned shellfish grants, leased shellfish grounds, and public shellfish lands are present. Commercial shellfish aquaculture, transplant and harvest operations occur year round in the area of the proposal. All Branford waters and the offshore areas under the jurisdiction of the Connecticut Department of Agriculture have been classified as Shellfish Growing Areas in accordance with the National Shellfish Sanitation Program and meet the requirements of the U.S. Food and Drug Administration.

The submerged land through the proposed route that is not currently leased, is a productive marine habitat and is a significant area for future expansion of the shellfish industry.

Construction Methods.

For the marine phase of the project the applicant has proposed to use a combination of construction methods for pipeline installation including horizontal directional drill, mechanical dredge, sub-sea plow or jet sled and possible blasting.

The horizontal directional drill has the potential for frac-out and loss of drilling muds with associated contaminants into the environment causing harm and damage to the shellfish beds and other organisms. Problems frequently occur with the use of this method of construction as experienced on projects in the Housatonic River wetlands, Thames River and most recently in New Haven Harbor (Cross Sound Cable Project). The applicant has indicated a significant amount of drilling mud will be released at the proposed exit pit in the sea floor.

The use of mechanical dredge(s) to create the exit pit and open cut trench in the sea floor will likely cause significant environmental impacts and irreparable damage/alteration of habitat. These alterations of the sea floor profile may render the impacted area unsuitable for commercial fishing and shell fishing. The resultant topographic irregularities may adversely affect the efficiency and safety of the operation and handling of harvesting equipment currently employed by the local seafood industry. The mechanical dredging, handling of spoils, in water storage of spoils and backfilling activities will cause impacts to shellfish resources and habitat due to suspended sediment and sediment transport. Additionally there is a concern regarding the multitude of "scars" and benthic irregularities that will be left in the sea floor caused by numerous sets of anchors and cable sweeps to maintain vessel and barge positions. Suspended sediment and scouring due to prop wash from tugs maintaining position and moving barges is significantly more disruptive than that of the normal boating and harvesting activity that takes place in the near shore area in and around the shellfish beds.

The use of a plow or jet sled for pipe burial through a sea floor corridor of approximately 23 miles, will result in impacts due to suspended sediment, alteration and/or destabilization of the sea floor, and damage or death to marine life.

An additional concern regarding this project and other proposed submarine utility projects, is the potential cumulative impacts to Long Island Sound's habitat, water quality and fisheries. We recommend that whenever possible, the siting and construction of utilities in the estuarine environment be avoided. In review of pending applications and proposed projects, cumulative impacts need to be considered. Alternatives and options regarding energy sources, siting and construction methods should be fully assessed on a regional basis by the regulatory community.

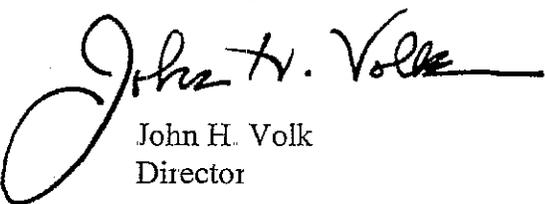
File No. 200103091, ACOE

Page 3.

In summary, we believe that the proposed project for the reasons stated above, will have significant short and long term impact to the marine environment, particularly to the shellfish habitat and shellfish resources within the near shore area.

Thank you for the opportunity to comment. Please contact me if you need any additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "John H. Volk". The signature is written in a cursive style with a large, looping initial "J".

John H. Volk
Director

cc: CT Siting Council
CT Department of Environmental Protection
CT Seafood Council
U.S. Dept. of Commerce, NOAA, NMFS
Federal Energy Regulatory Commission
State Office of the Attorney General ✓
Town of Branford Shellfish Commission

EXHIBIT 3

HEARING RE: ALGONQUIN GAS & ISLANDER EAST
APRIL 12, 2002 (10:01 AM)

1 to density of the material --

2 DR. STEWART: After it's impacted --

3 MR. ASHTON: -- and they're two separate
4 issues --

5 DR. STEWART: Right. And the same that
6 I think we see lingering with Iroquois is that once you
7 have a depression unless you bring it back in and
8 compact it, it tends to keep scarring itself out, so
9 you continue to have silt holding basins until the
10 energy of the seabed flow discharges it, so you have --
11 several things, it's in a state of equilibrium where
12 it's taken decades to get to a stabilized solid state,
13 so -- yes, sir --

14 MR. HEFFERNAN: I gather what you're
15 saying then it could be -- let's say the line is
16 installed and this depression or compression, or
17 whatever it is --

18 COURT REPORTER: Excuse me, sir, could
19 you speak into a microphone. Thank you.

20 MR. HEFFERNAN: It can be restored is
21 what you're saying -- I gather that's what you're
22 saying --

23 DR. STEWART: No, the question was what
24 I would like to see. Whether it can be done, and in an

EXHIBIT 4

HEARING RE: ALGONQUIN GAS & ISLANDER EAST
APRIL 17, 2002 (10:00 AM)

1 - with all due respect, that cuts to the heart of the
2 way I think about things, and -- and I will answer that
3 question -- I believe that speculation in ground is the
4 most abhorrent counterproductive, against the entire
5 intent and spirit of the statutes and Connecticut's
6 program for the management and the shellfish program
7 over its public trust lands. And as a shell fisherman
8 for over 30 years, I think it's the wrong thing to do.
9 It's not shellfishing, it's speculation. We lease
10 these pieces of bottom for the cultivation of
11 shellfish. When I got into this business, I was
12 brought up the hard way from the bottom up, and that's
13 all I know. And I know there are people out there that
14 would love to do that for reasons other than the
15 cultivation of shellfish, and it's wrong. And that's
16 the only way I can answer that, sir.

17 CHAIRMAN GELSTON: Thank you.

18 MR. HORNE: Based on your experience in
19 Milford, what effect would anchor or spud holes have on
20 the ability to cultivate shellfish beds?

21 MR. WILLIAMS: Anchors or spud holes or
22 any type of depression in the bottom of cultivable
23 shellfish beds represents a real obstacle. They
24 represent an area that slowly fills in with apparently

HEARING RE: ALGONQUIN GAS & ISLANDER EAST
APRIL 17, 2002 (10:00 AM)

1 fine grain material based on my experience. They also
2 represent a hazard in that -- and again based on my
3 experience, when one of our dredges drops into one of
4 those holes, they're very often go to -- migrate to the
5 other side because of travel of the boat, the dredge
6 grabs the other side of the bottom of the hole and then
7 everything goes tight, and in several instances I've
8 actually parted the tow line to a clam dredge. So they
9 represent obstacles that you have to avoid. And based
10 on my experience, we've never been able to cultivate
11 shellfish in these areas after they've been created.

12 MR. HORNE: During the construction of
13 the Iroquois pipeline were there spoil mounds or berms
14 of the type that have been described that would be
15 constructed in Branford between mile post say 10.9 and
16 12?

17 MR. WILLIAMS: Yes, there were.

18 MR. HORNE: Were you -- did you observe
19 an effect of storm action on the erosion of those
20 berms?

21 MR. WILLIAMS: Yes, I did.

22 MR. HORNE: Could you tell us about what
23 the effect was?

24 MR. WILLIAMS: The effect of some of the

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1 weather events was a wider dispersal of the sediment
2 plume that we had observed on a day-to-day basis during
3 the construction process. In fact, it -- during a
4 weather event from the east, we had quite a plume that
5 went over the Charles Island bar to the west farther
6 than we ever had experienced it before. So it -- there
7 was quite a bit of dispersal during the weather events.

8 MR. HORNE: Thank you. One last
9 question. Is it possible for commercial shellfishing
10 to occur in the area that was disturbed by the 1991
11 Iroquois construction?

12 MR. WILLIAMS: Up until the time in 1995
13 that I was a subcontractor to Tallmadge Brothers, the
14 scarred area from the Iroquois installation was not
15 cultivable. And we tried.

16 After 1995 there was some undesignated
17 ground to the south that some leases had come up for
18 bid that I had tried the bottom -- and this was after
19 '95, I can't be specific on -- but again you could
20 always tell when you got near the scar from the
21 pipeline, there was -- there just wasn't anything there
22 to speak of. And we had a lot of trouble fishing the
23 dredges on that outer portion. So to answer your
24 question, the simple answer is no.

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1 MR. HORNE: Thank you. I have no
2 further questions, Mr. Gelston.

3 CHAIRMAN GELSTON: Thank you. The Town
4 of Guilford. (No audible reply). The Town of
5 Branford?

6 MS. GILSON: Thank you, Mr. Chairman.
7 For the record, Elizabeth Gilson, the Town of Branford.
8 Good morning, Mr. Williams. I have a couple of
9 questions. Mr. Horne took many, so I'll try to be
10 efficient here.

11 You testified -- you've reviewed the
12 Islander East application, isn't that correct?

13 MR. WILLIAMS: The application I have,
14 yes.

15 MS. GILSON: And you testified regarding
16 the anchor scars and cables. I have a couple of
17 questions to follow up. How big is the anchor hole, do
18 you know?

19 MR. WILLIAMS: Well --

20 MR. TAIT: That depends upon the size of
21 the anchor?

22 MS. GILSON: Right, and that's why --
23 the -- well, their anchors specified --

24 A VOICE: (Indiscernible) -- testifying,

HEARING RE: ALGONQUIN GAS & ISLANDER EAST
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1 Mr. Tait?

2 MR. TAIT: No, I'm asking what size was
3 the anchor that you're talking about?

4 MS. GILSON: The anchor sizes are
5 specified, I believe, in the application.

6 MR. TAIT: Refresh my recollection.

7 MS. GILSON: I -- maybe the witness can
8 do better.

9 MR. WILLIAMS: The size of the anchors
10 specifically I can't say. I saw them, they're quite
11 large, however -- could you repeat the question again.

12 MS. GILSON: Well, I wanted to know how
13 big a hole was --

14 MR. WILLIAMS: Okay, yeah --

15 MS. GILSON: -- suppose to be --

16 MR. WILLIAMS: Yeah, I don't know how
17 big the holes are suppose to be, but I know based on --
18 well again on-site experience with my boat and also
19 based on the map that was provided at the meeting that
20 I attended, that the -- some of the holes were actually
21 quite large and in --

22 MR. TAIT: Can you quantify that?

23 MR. WILLIAMS: Quantify?

24 MR. TAIT: How many feet --

HEARING RE: ALGONQUIN GAS & ISLANDER EAST
APRIL 17, 2002 (10:00 AM)

1 MR. WILLIAMS: Yes. With all due --

2 MR. TAIT: -- quite large means?

3 MR. WILLIAMS: With all due respect, to
4 put this in perspective, some of the anchor scarring
5 with the Iroquois project were actually over 500 feet
6 long.

7 MR. TAIT: And how wide -- or just a
8 drag scar --

9 MR. WILLIAMS: That was a drag scar.

10 MR. TAIT: How wide?

11 MR. WILLIAMS: I don't know how wide
12 they would be, sir. I --

13 MR. TAIT: One foot, two foot, three
14 feet --

15 MR. WILLIAMS: No, no, no, no. They
16 would probably be in the magnitude of -- uh -- I would
17 -- I would say, as accurate as I can, probably seven to
18 eight feet that I could see on my sounder. It was --
19 some of them were fairly sharp and then up again fairly
20 rapidly, and --

21 MR. TAIT: How deep would they go?

22 MR. WILLIAMS: I saw on one of the lots
23 one that was six feet deep.

24 MR. TAIT: So six feet by eight feet by

EXHIBIT 5

HEARING RE: ALGONQUIN GAS & ISLANDER EAST
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1 the anchors and cables with or without the cable buoys
2 that they are proposing on the health of the seafloor
3 in this mile-wide corridor centered around the
4 pipeline?

5 DR. STEWART: Yes. This -- this really
6 is what motivated me becoming involved with the
7 discussions of this case. It -- it presents not a spot
8 impact that many environmental --

9 MR. O'NEILL: Why don't you move the
10 microphone over to the doctor, so he --

11 DR. STEWART: Okay, thanks. This whole
12 -- this continuum of trenching and anchor scar marks
13 that are considerable in their own right, being 175
14 feet by 8 feet deep, provide trenches and essentially
15 an entrapment for this floating mix of very
16 concentrated plankton, larval fish, nutrients, and many
17 of the microscopic organisms that create the food
18 chain. It's really the richness that creates the
19 ocean. As this passes back and forth on the tide, it's
20 subject to entrapment in the trenches as opposed to a
21 dredged material pile which tends to be attractive for
22 fish, for -- (indiscernible) -- type of things -- so a
23 trenching and any pitting, in all my years of diving
24 which has been 35, we find to be the most harmful or

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1 the least likely to be colonized by important species,
2 especially your commercially important species, your
3 mega-benthic ones like the crabs, the lobsters, the
4 shrimp. And there are five or six different species of
5 crabs.

6 It's one of the things that has
7 impressed me least about this report is it deals with
8 in-fauna, very micro-scale. None of your important
9 economically important species are studied here for
10 their index of abundance or their behavioral
11 modifications that might occur. So it's not only the
12 anephloid layer that can be trapped -- and if you look
13 at these lines of interception of north to south, all
14 of your movement migration patterns and your flow of
15 tidal cycle involves an east to west course, six hours
16 at a half of knot is a tremendous volume of material
17 that can get entrained.

18 The depressions tend to become anoxic
19 because they're below the horizon, the EH horizon, this
20 is a depositional basin with high pollutants. One of
21 the things that we studied early on some of the
22 offshore environments off the edge of the continental
23 shelf. When you have fine silts washed down to the
24 deeper water environments, you'd think they'd be

EXHIBIT 6

rather involves a project necessary to replace an integral part of the transmission facilities serving southwestern Connecticut and thereby to improve the existing cable system.

Q. What are the specific benefits of replacing the existing cable system?

A. The first benefit would be an improvement in the reliability of the cable system resulting from a reduction in the risk of lengthy interruptions in service caused by external damage from anchors, tow cables, or other similar objects. The existing cables have been particularly susceptible to this type of damage throughout their life because these cables were laid directly on the seabed (with the exception of two miles or so near the Connecticut and Long Island shorelines where the cables were typically buried three (3) to five (5) feet during installation). The cables have suffered physical damage over fifty (50) times in the last thirty (30) years. In the last ten years alone, there have been nineteen (19) such incidents, most or all of which occurred at locations where the existing cables were not originally buried. The new cables, in contrast, would be buried to a nominal depth of approximately six feet below the seabed and therefore will be less susceptible to mechanical damage. The second benefit of this project will be a reduction in future maintenance and repair costs. As a result of their susceptibility to external damage, the high cost of marine repairs arising from such damage, and the concomitant cost of obtaining insurance for such contingencies, the operation and maintenance costs of the existing cables are the highest in the Northeast Utilities ("NU") transmission system on a dollar per mile basis. The third, and perhaps most significant, benefit of this project is the complete elimination of future accidental releases of dielectric fluid into the